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IN THIS ISSUE

RESEARCH PAPERS

Graduate nurses' experience of feedback, support and anxiety: a pilot study

Potential drug - drug interactions in patients with acute lymphoblastic leukemia: a cohort study

Antipsychotic use for behaviours by persons with dementia in residential aged care: the relatives' perspectives

SCHOLARLY PAPERS

The art of clinical supervision: the Traffic Light System for the delegation of care

A nurses' guide to ethical considerations and the process for ethical approval of nursing research

Assessment and management of acute pain in older people: barriers and facilitators to nursing practice

35:1

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AJAN
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September 2017 - November 2017
Volume 35 Issue 1

CONTENTS

RESEARCH PAPERS

SCHOLARLY PAPERS

AUSTRALIAN JOURNAL OF ADVANCED NURSING REVIEW PANEL: AUSTRALIA

Tod Adams, Masters Nursing (Nurse Practitioner), Grad. Cert Aged Care, Grad. Cert. Coronary Care, Grad. Cert Health Management, Bachelor health Science (Nursing), NSW Health, SESIAHS, Shoalhaven Hospital, New South Wales

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Jenny Fenwick, RN, PhD, Curtin University, Western Australia

Ritin Fernandez, RN, MN(critical care), PhD Candidate, Sydney South West Area Health Service, Sydney, New South Wales

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Graduate nurses' experience of feedback, support and anxiety: a pilot study

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KEY WORDS

feedback, support, graduate nurse, anxiety, experiences

ABSTRACT

Objective

The aims of this study were to investigate the association between feedback and anxiety, while also exploring the feedback and support experiences of graduate nurses.

Design

This study used a mixed methods approach.

Setting

Participants completed an online survey.

Subjects

The study included 107 Australian graduate nurses.

Main outcome measures

Anxiety and feedback.

Results

Using bivariate regression a negative relationship was identified between feedback and anxiety. Further analysis using one-way analysis of variance revealed that participants who received regular and quality feedback and support, reported the lowest anxiety. The second aim was assessed by reviewing participants' subjective comments regarding their experiences as graduate nurses. Results revealed high variability in feedback and support experiences. The data gathered suggests graduate nurses experience anxiety during their transition from university to professional nursing.

Conclusion

The provision of regular feedback and support was associated with reduced anxiety in graduate nurses. These preliminary findings highlight the importance of regular and appropriate feedback and support to facilitate learning, successful role transition and improved patient outcomes.

INTRODUCTION

It is well established that the transition to a new professional role can be difficult. This is particularly true for nursing graduates who have reported stress, disillusionment and anxiety related to their role transition from student to professional nurse (Duchscher 2009). After completing university and attaining registration, many first year graduate nurses (GNs) gain employment within a graduate nurse program (GNP). A GNP is intended to facilitate role transition and provide support to alleviate distress. Despite the objectives of these programs, many GNs continue to experience stress, emotional exhaustion, isolation, lack of support and concerns for their patients' safety. Support refers to the provision of assistance, guidance and responses to GNs needs by more senior nurses (Beecroft et al 2006). One component of support that has been reported to assist GNs is feedback. Feedback is defined as information provided to a student that describes their performance of a task. This information is intended to improve future performances (van de Ridder et al 2008; Ende 1983).

Literature Review

There is agreement that feedback is important, however, consensus regarding how best to deliver feedback is less clear (Nottingham and Henning 2014). Ende (1983) stated that feedback is crucial to the learning process, and with practice, is not hard to implement.

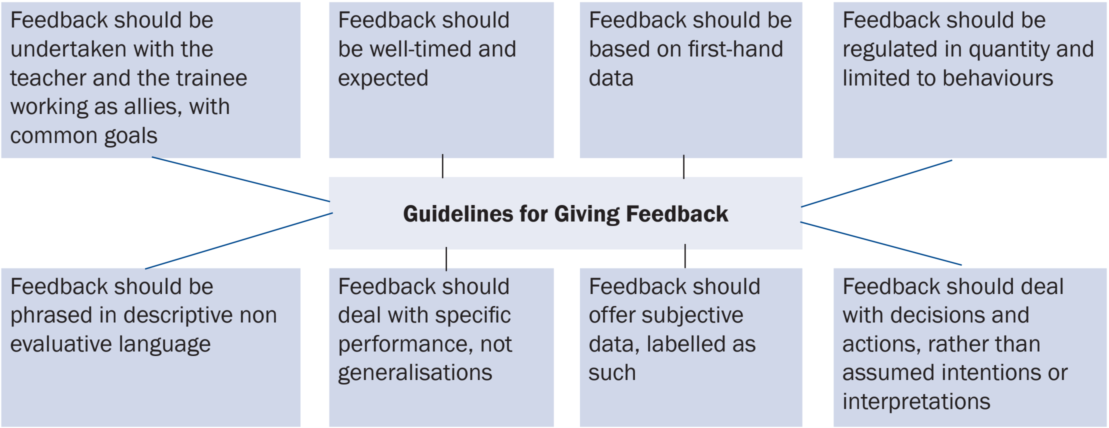

Figure 1: Ende's guidelines for giving feedback; Source: Ende, J. 1983.

These guidelines have been fundamental to research in the area of feedback and are used in a range of disciplines (Grover et al 2014; Nottingham and Henning 2014; van de Ridder et al 2008).

Consistent with Ende's guidelines, Duchscher (2009) stated that new nurses need frequent and regular feedback to help them develop professionally and reinforce their practice. Haggerty et al (2013) found that when GNs received support and appropriate feedback, not only were there improvements in GNs confidence and job satisfaction, but there were also improved patient outcomes. This is consistent with other reports of improved patient care when GNs received regular feedback and support from experienced nurses (Lewis and McGowan 2015; Pineau Stam et al 2015; Horsburgh and Ross 2013; Ferguson 2011; Martin and Wilson 2011; Johnstone et al 2008).

Ende (1983) noted that the absence of feedback can lead to errors and mistakes remaining unchanged, and good performance not being reinforced, thus hindering the transition to expert clinician. This delayed transition is often described in nursing literature, where GNs reported they lacked sufficient feedback during their GNPs (Parker et al 2014; Phillips et al 2014; Saghafi et al 2012; Duchscher 2009; Wangensteen et al 2008). Feedback may also have the potential to reduce disillusionment and anxiety associated with the transition to a new role (Duchscher 2009). Feelings of inadequacy and lacking confidence in one's nursing performance can increase stress and anxiety, which in turn can lead to emotional exhaustion and ultimately resignation from the profession (Scott et al 2008).

Not only is feedback important for the individual GN, it may also be essential to promoting patient safety. The early months after graduation are associated with the highest rates of clinical errors for GNs (Martin and Wilson 2011; Saintsing et al 2011). Lack of feedback and unaddressed errors, can be harmful to patients and costly for hospitals (Cantillon and Sargeant 2008; Grover et al 2014). Feedback appears fundamental to supporting GNs. The provision of regular feedback also appears important to professional development, reduction of anxiety, and promotion of patient safety. While qualitative studies have noted incidental findings that feedback is important for GNs, there is a dearth of literature focused on GN's feedback experiences.

The aims of this pilot study were:

1. To explore the relationship between feedback and anxiety.
2. To investigate GNs experiences of feedback and support during their GNP.

METHOD

Participants were required to be a GN currently employed in a GNP in Australia, or have completed a GNP in Australia within the last two years.

Participants were recruited using a passive snowballing method via the social media site, Facebook. Participation was voluntary and anonymous with ethical approval from Deakin University HEAG. Recruitment was also aided by sending emails at two intervals, to a list of Alumni Bachelor of Nursing graduates, from the university where the study took place.

Participants were 107 registered nurses (female, n=101; males, n=6). Participants in this study were either currently undertaking a GNP (2015, n=37), or had completed one up to two years prior to participating in the study (2013, n=25; 2014, n=45); Participants ages were varied with 52% between 20-24 years. The majority of participants, (87%) completed a GNP within the public system. And (54%) of the sample had completed their GNP fulltime (40 hours per week).

The survey consisted of three sections, and included a total of 107 self-report questions.

Section A

This included ten questions addressing demographics and information regarding participants' GNP.

Section B

As no previous inventory to measure the variables of feedback and support in a quantitative way existed, the Experiences of Feedback and Support Instrument (EFSI) was developed. Questions were based on existing literature and were piloted for their face validity. The final EFSI had 57 questions. As this was a pilot of the instrument, a comments section was included to gain qualitative data from participants. Full details of the instrument development methodology is yet to be published. The authors are available to be contacted regarding further information about the instrument.

Section C

This section required participants to complete the State Trait Anxiety Inventory (STAI), (Spielberger et al 1983). The STAI consists of two sections, each containing 20 questions. These two sections measure participants' feelings at the time of the survey (state anxiety), while also measuring how participants generally feel (trait anxiety). Strong reliability (0.65 - 0.75) and construct validity have been shown for the STAI (Spielberger et al 1983). Participants were required to self-report using a 4-point Likert scale (1=Not at all; 2=Somewhat;

3=Moderately so; 4=Very much so) with the higher the score denoting higher levels of anxiety (Spielberger et al 1983).

Participants completed an anonymous online survey consisting of the three sections (repetitive). After collecting data, statistical analyses were conducted using SPSS Version 22. Additional data from the comments were (data is plural) hand sorted for predominant themes. Individual scores for the separate variables were added to create total scores for EFSI, state anxiety and trait anxiety.

FINDINGS

Relationship Between Anxiety and Feedback

A bivariate regression was used to test the hypothesis of the relationship between feedback and anxiety. The results are presented in table 1. Separate analyses were run for state and trait anxiety, as they measure different constructs. Although the total amount of variance explained by EFSI score was not large, it did show a significant medium negative relationship between anxiety and EFSI scores, as determined by r >.30 (Field 2014). This suggests that as the positive feedback experiences increase, anxiety decreases.

Table 1: Regression Analysis between Anxiety and EFSI Scores

Anxiety	β	R square	F value	p value
STATE	-.32	.10	11.88	<.001
TRAIT	-.34	.12	3.72	<.0001

To further explore this relationship, separate one-way ANOVAs were completed to determine if and where differences existed. For this analysis, cut offs were applied to EFSI scores to create three categories for this variable. Low feedback was defined as scores <128 (n=31) and included participants responses that disagreed or strongly disagreed with all questions and those who agreed with less than a quarter. Moderate feedback was defined as scores between 129 up to 155 (n=43); this included participant's responses that agreed with more than a quarter to 75% of questions. Finally, high feedback was defined as scores >156 (n=33). This would have been the score achieved if the participant agreed with more than 75% of the 57 items where each item was on a 4 point Likert scale. Mean anxiety scores from the ANOVA analysis are presented in table 2.

Table 2: Mean Anxiety Scores From ANOVA

	STATE		TRAIT	
Level of feedback	**M**	**SD**	**M**	**SD**
LOW	38.77	13.67	39.54	10.64
MODERATE	39.13	9.92	41.20	8.29
HIGH	32.32	10.18	33.63	9.63

State anxiety

A one-way ANOVA revealed there was a significant effect of feedback on state anxiety, F (2, 104) = 4.04, p=.02, =.07. Using Cohen's criteria we can see that this is a small effect size (.01-.09). A Tukey post hoc test revealed that state anxiety score was statistically significantly higher in participants receiving moderate feedback compared to those who received high amounts of feedback (p=.03). There were no statistically significant differences found between the low and moderate feedback groups (p=.99) or low and high feedback groups (p=.06).

Trait Anxiety

A one-way ANOVA indicated there was also a significant effect of feedback on trait anxiety, F (2, 104) = 6.33, p=.003, =.11. Using Cohen's criteria we can see this is a moderate effect size (.09-.25). A Tukey post hoc test revealed that trait anxiety score was statistically significantly higher in the moderate feedback group compared to the high feedback group (p=.002). Anxiety scores were also statistically significantly higher in the low feedback group compared to the high feedback group (p=.04). No statistically significant difference was found between the low feedback and the moderate feedback groups (p=.74).

Graduate Nurse Experiences of Feedback and Support

Specific questions from the EFSI that tapped directly into Ende's (1983) elements of feedback revealed trends that provided an indication of GNs experiences of feedback and support. These trends were assessed alongside the subjective comments (n=43). These comments revealed insights into GNs experiences of feedback and support. Recurrent and similar comments are presented here as two themes; 1) variation in the feedback GNs received and 2) the availability of staff to provide support.

Variation in feedback

It was evident there was high variability in feedback experiences, with many participants reporting vastly different experiences in the amount of feedback and support in different locations. One participant expressed this variation as:

> *In my first rotation I felt very much a part of the team… On my second rotation it was completely the opposite. All of the grads (8 of us) felt isolated and belittled…(Participant 52).*

Encouragingly, some GNs reported an abundance of support and feedback that helped them understand their role and improve their practice. GNs commented on how feedback helped them recognise gaps in their knowledge that led to improved performance and increased confidence. One participant stated:

> *…feedback was great, almost every day we had our educators floating around, reading our assessments, telling us how we can improve and how to better assess our patient…(Participant 44).*

The importance of feedback was highlighted by participants' responses to EFSI item 46 which asked whether: "Receiving feedback made me feel supported", to which 87% of participants agreed. Having goals is an important part of the feedback process, and 57% of participants reported their goals were regularly reviewed with their supervisor. Results indicated 52% of participants reported receiving regular feedback regarding their progress and performance. Some GNs reported receiving harmful feedback. This appeared to occur when feedback was given in a rude manner or in inappropriate locations, such as in public:

> *I had feedback by a senior staff member inappropriately in front of a patient which caused huge embarrassment… (Participant 71).*

> *I was once yelled at in front of a lot of staff in the nurses station… (Participant 2).*

While these incidents were not the majority, (as 72% of participants reported receiving feedback in appropriate locations, it is concerning for the GNs to whom this did occur.

Responses from participants indicated that receiving judgmental feedback related to a participant's personality rather than their nursing performance was very damaging. GNs commented on the lasting negative feelings this provoked and the devastating impacts on their confidence:

> *Some negative feedback made me feel inadequate as a nurse (Participant 71).*

> *The feedback I received was not constructive, more of criticisms and comparisons to my peers (Participant 2).*

Conversely, many participants commented that respectful and constructive feedback made them feel supported by the nursing staff. This is reflected in 66% of participants reported that the feedback they received was descriptive of their performance. It was encouraging to find that 84% of participants reported receiving feedback in a respectful and supportive way.

> *…Feedback was given on specific tasks immediately after completion and the feedback was very focused…(Participant 78).*

Availability of support

There were several comments relating to GNs being unable to find someone to help them. Numerous participants reported that other nurses were "too busy" to help them and further felt unable to ask for assistance or support when needed. This was stated as:

> *I asked for help on many occasions with tasks I was unfamiliar with, and most times ward staff would not help me because they were too busy (Participant 2).*
>
> *Grads were left to their own devices to either sink or swim (Participant 80).*

This was supported by 54% of participants who reported they lacked support during their GNP. This theme in particular, highlighted GNs need for clarification and assistance in managing complex and acutely unwell patients. This theme emphasised the potential risk to patients and how this can be a stressor for GNs who do not receive the appropriate support to care for them. This can lead to mistakes and errors in patient care:

> *I was not orientated, I was basically left on my own to manage patients of a surgical specialty even though I constantly asked and told staff I needed help and wasn't confident…(Participant 65).*

> *The only time I received feedback was when I made a serious mistake, and I feel like it could have been prevented if I had more support (Participant 28).*

Timing of feedback can influence its effectiveness; results here were mixed with 50% of participants reporting that the feedback they received was immediately after performing a task. Multiple GNs commented on the absence of supervision, and having to rely on their own assessments of their performance, as they did not receive any feedback. There appeared to be an unsaid rule, that is, no feedback means you are doing well. One GN describes how this eventuated:

> *I was also told by other nurses that the fact I was often put in rooms at the end of the ward where I couldn't be observed, meant that I was doing a good job... (Participant 59).*

Another concerning finding was the overall culture and environments GNs worked in. Participants reported negative environments including feeling excluded and described some nurses as being "clicky" or "bitchy". It was worrying to note that some GNs reported bullying and experienced depression due to lack of support. Just over half (51%) of the participants acknowledged experiencing stress as a result of insufficient support. Overall ward culture also impacted on GNs experiences:

> *The feedback I received reflected the lack of support and bitchy nature of the ward (Participant 88).*

> *A great deal of the staff, throughout the hospital, appeared to be disgruntled and I heard several on my ward complain about their job and not wanting to be there... after a short while I tended to feel the same (Participant 80).*

DISCUSSION

This study aimed to explore GNs experiences of feedback and support. In particular this study aimed to investigate if there was a relationship between anxiety and the feedback and support GNs received. Results indicated that high levels of feedback and support were needed, (as opposed to low and moderate levels), in order to be effective.

These results were supported by the comments from the survey that provided subjective information on GNs feedback and support experiences. While participants reported the supportive benefits of feedback, almost half reported not receiving feedback frequently enough. These findings resonate with previous research that found GNs reported receiving minimal amounts of feedback during their GNP (Parker et al 2014; Phillips et al 2014; Saghafi et al 2012; Duchscher 2009; Wangensteen et al 2008). These results are also supported by findings that GNs experience heightened anxiety in the absence of feedback (Marks-Maran et al 2013; Ostini and Bonner 2012; Wangensteen et al 2008). These principal findings revealed that GNs were reporting higher anxiety compared to the general Australian population (Crawford et al 2011). However, it was found that when GNs received positive feedback and support experiences, their reported anxiety was lower than the general population's anxiety levels. For feedback to be effective at reducing anxiety, large amounts of feedback are needed, as moderate amounts of feedback were still associated with high anxiety. This is consistent with previous research where GNs were requesting frequent and regular feedback to assist them in feeling supported and improving their ability to care for patients (Parker et al 2014; Saghafi et al 2012; Duchscher 2009). This could be linked to existing literature which reports that despite supervisors reporting they gave feedback, this same feedback was often not recognised by novices as feedback, and so was not effective in improving practice (Watling and Lingard 2012; Cantillon and Sargeant 2008; Clynes and Raftery 2008; van de Ridder et al 2008). It is possible that GNs are not recognising feedback, or potentially, feedback is provided in an unclear manner. There is literature suggesting feedback needs to be clearly labelled as feedback before it is provided in order for the student to understand the intended message (van de Ridder et al 2008). Such initiatives are recommended and supported by these results.

Participants reported how receiving feedback in inappropriate locations or in a way they perceived to be disrespectful caused significant distress. Previous research has emphasised the importance of timing, location and approach to provision of feedback in determining the effectiveness (Nottingham and Henning 2014a). If feedback is delivered abruptly or unexpectedly, it can be detrimental to a GNs confidence (Haggerty et al 2013; Wangensteen et al 2008). Comments also revealed GNs problematic experiences of trying to find support or help, with some participants reporting a lack of supervision and minimal opportunities to be observed. These findings are consistent with previous studies which found GNs reported problems in finding senior nurses to supervise and support them, with many GNs perceiving other nurses as unavailable or disinterested (Parker et al 2014; Saghafi et al 2012; Johnstone et al 2008; Beecroft et al 2006). This is concerning as accurate feedback is dependent on the observation of a behaviour or action (Grover et al 2014; van de Ridder et al 2008; Ende 1983).

The present findings add to existing literature investigating the variation of feedback and support experiences on different wards. These results add to the discussion on the benefits and disadvantages of rotations during GNPs. Some participants reported wards being complete opposites in terms of available support. This is similar to previous research that found GNs reported feeling like they were ‘starting again’ each rotation which was anxiety provoking (Johnstone et al 2008). The findings from the comments exploring feedback and support experiences appeared dependent on the ward environment. Experiences were highly variable; with some GNs forming strong relationships with other nurses while other participants experienced isolation and were bullied. One key element in the feedback process is the importance of the relationship between a novice and the supervisor (Watling and Lingard 2012; Cantillon and Sargeant 2008; Clynes and Raftery 2008).

LIMITATIONS

The greatest confound of this study was the lack of an existing inventory to measure feedback and support. The option to participate and leave comments was voluntary. This can lead to a disproportionate amount of participants selecting themselves to participate based on personal experiences of significant stress or anxiety. This could potentially be unrepresentative of the general nursing population. It may be useful for future ESFI to include the option to answer each question separately for different rotations as vast differences were reported. This tool requires further use in larger samples which will allow for more rigorous psychometric testing of validity.

CONCLUSION

This study found that frequent and positive feedback and support experiences are associated with lower anxiety levels in GNs. There are no current standards, guidelines or requirements for the amount of support or feedback GNs should receive; it is left to the discretion of each ward. Although GNs may remain in the same hospital throughout their GNP, wards vary significantly in the culture and degree to which the environment is supportive. Further research is needed to investigate how much feedback is optimal which may then lead to more effective ways to support GNs. Additional research may allow recommendations and policies to be created that guide education and orientation programs. GNs who feel supported and receive regular feedback report lower anxiety levels. An improved culture of support, which includes high levels of regular feedback for our novice professionals, is needed in our hospitals in order to improve GNs transitions. The benefits of this include reductions in anxiety and intentions to leave the nursing profession while, importantly, leading to safer patient care.

RECOMMENDATIONS

GNs may benefit from ward staff and educators being reminded of the importance of feedback and additional training in providing it. Positive feedback experiences might play out as presented in the following example. A GN receives information from a supervisor, (a senior nurse), in an appropriate location, (not in front of patients or other people). The information is respectful and descriptive of a specific performance, such as a patient assessment. It should occur immediately after the performance, and occur on a regular basis that allows the GN's goals to be reviewed and achieved.

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Potential drug–drug interactions in children with acute lymphoblastic leukaemia: a cohort study

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KEYWORDS

drug interaction; polypharmacy; precursor cell lymphoblastic leukaemia-lymphoma; neoplasms; paediatrics.

ABSTRACT

Objective

To evaluate the potential drug interactions in patients with acute lymphoblastic leukaemia in the remission induction period of treatment.

Design

A prospective cohort study.

Setting

A tertiary referral centre.

Subjects

Twenty-two children undergoing treatment for acute lymphoblastic leukaemia. The median age was 4.5 years (minimum of 1 and maximum of 18 years) with male predominance (54.4%).

Main outcome measure

Presence of potential drug interactions in patients undergoing treatment for precursor cell lymphoblastic leukaemia-lymphoma. The potential drug interactions term refers to the ability of a drug to affect the pharmacologic intensity as well as the therapeutic effect of another and cause adverse reactions, as well as the possibility of clinical manifestations.

Results

All participants were exposed to at least one potential drug interaction. About 60% of interactions classified as more severe. Every new drug included in the treatment increased the chance of potential drug-drug interactions by 0.4 times.

Conclusion

These results demonstrated the patients under chemotherapeutic care for lymphoblastic leukaemia-lymphoma have high potential for drug interactions of greater severity.

INTRODUCTION

After accidents, paediatric cancer is the second leading cause of infant mortality. About 1,250 children younger than 15 years old are expected to die from cancer in 2016. The acute lymphoblastic leukaemia accounts for 30% of all malignant neoplasms in children and 75% of all childhood acute leukaemia's (de Lima et al 2016; Jiménez de Samudio et al 2016; Cazé et al 2010).

The treatment period of acute lymphoblastic leukaemia is at least two years and is characterised by long periods of hospitalisation. In the first stage of treatment, named remission induction, patients undergo high-dose chemotherapy aiming for complete clinical remission of the cancer. Due to this treatment regimen, myelosuppression and other related clinical complications occur (Loghavi et al 2015; Pui et al 2015; You et al 2015).

The concomitant use of numerous medications is essential, making the incidence of polypharmacy inevitable. This is characterised by the use of five or more drugs generally used for the purpose of avoiding or reducing undesired effects and complications of treatment (Gillette et al 2015; Secoli 2010). The need to use polypharmacy makes it essential to assess potential drug–drug interactions (PDDI) related to its administration, as most drugs have interactive potential; this subject is not often discussed in the practice of health professionals (de Lima et al 2016; Sharifi et al 2014).

Drug interaction occurs when there is interference with the effect of a drug due to prior or concomitant administration of other drugs or food. Healthcare providers rarely consider potential drug interactions as a factor that may be responsible for ineffective therapy (Dai et al 2016; Miller et al 2015; Payne et al 2015).

Therefore, it is essential for the healthcare team to reflect on PDDI as they are responsible for the prescription and administration of medications, thus playing an important role in identifying potential drug interactions or reducing adverse reactions of these interactions (Dai et al 2016; Miller et al 2015; Payne et al 2015). Therefore, this study aimed to evaluate the potential drug interactions in children with acute lymphoblastic leukaemia in the remission induction period of treatment.

METHOD

This is a prospective cohort study conducted in the cancer centre at the University Hospital of the Federal University of Santa Maria, Santa Maria, Brazil, from April 2013 to April 2014. This is a reference centre in paediatric hemato-oncology for the southern region of Brazil. The study was approved by the Ethics Committee of the Federal University of Santa Maria.

A consecutive sample was composed of all patients with first hospitalisation during the data collection period, with confirmed diagnosis of acute lymphoblastic leukaemia. The choice of patients at first admission is justified by the fact that these patients are hospitalised for at least 30 days.

Data were collected daily by the researcher, using a questionnaire composed by demographics data, patient identification (name, age, and gender), data on hospitalisation (date of admission and length of stay), and information on prescription drugs (name, dose, route, administration times, and drug use time).

The dependent variable is the presence of PDDI. The PDDI term refers to the ability of a drug to affect the pharmacologic intensity as well as the therapeutic effect of another and cause adverse reactions, as well as the possibility of clinical manifestations (Secoli 2001).

Drugs were initially classified according to the Anatomical Therapeutic Chemical (ATC) of the World Health Organization, which allows active substances to be divided into different groups according to the organ or system in which they operate and their therapeutic properties, both pharmacological and chemical. For the identification of PDDI, level 5 of the ATC, which corresponds to the chemical, was used (WHO 2013).

All drugs have been included for analysis of potential drug interactions, using the electronic database (Micromedex® Healthcare Series). This database allows the user to sort the potential drug interactions by second gravity, evidence, and onset of effect. Additionally, no description of the clinical impact of drug interactions is given (Hutchison et al 2003).

Descriptive statistics were used to present potential drug interactions. Linear logistic regression was used to obtain estimates of odds ratios (OR) and confidence intervals, with a significance level of $\alpha = 0.05$. Data analysis was performed using SPSS software (Version 21.0).

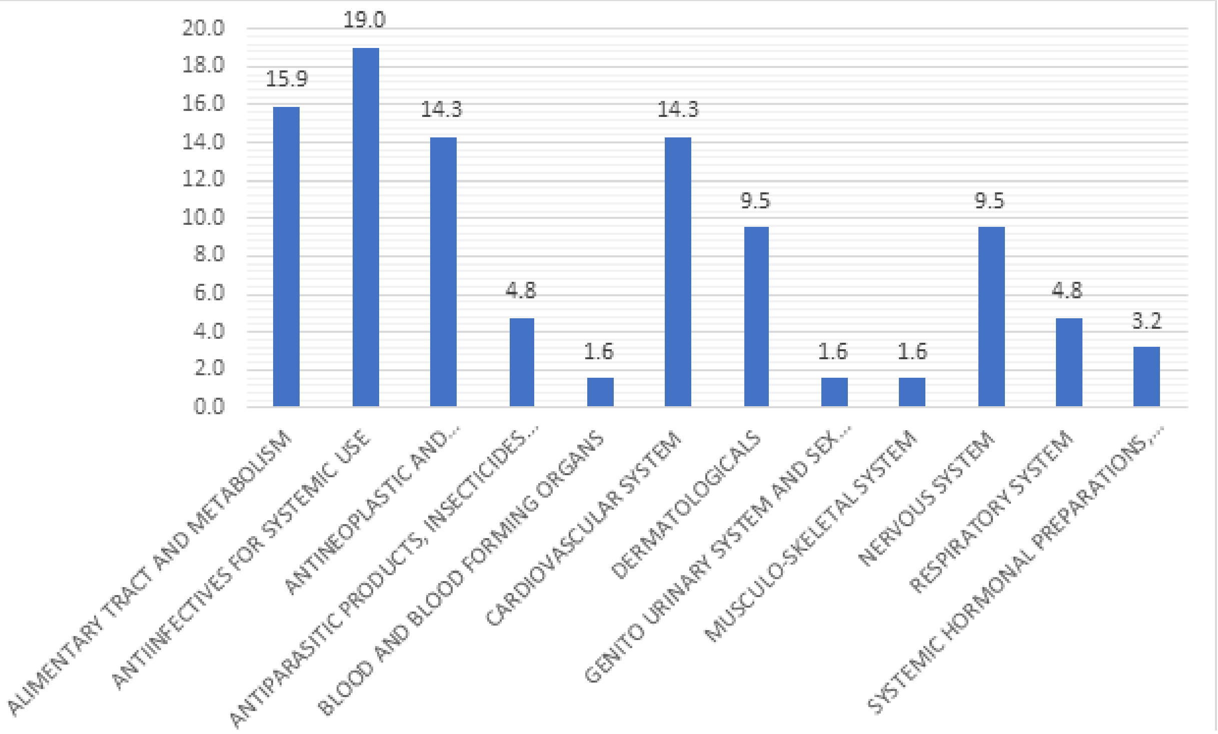
FINDINGS

The study included 22 children undergoing treatment for acute lymphoblastic leukaemia with the median age was 4.5 years (minimum of 1 and maximum of 18 years) with male predominance (54.4%). They were exposed to a median of 19.5 PDDI (minimum of 8 and maximum of 101 PDDI).

The median time of hospitalisation was 36 days (minimum of 30 and maximum of 63 days), during which 869 prescriptions were given and a total of 4,481 doses of medication were administered. The median days of treatment with potential drug interactions was 11 days (minimum of 4 and maximum of 41 days), resulting in a 39.7% prevalence of days with potential drug interactions.

Sixty-six different drugs were identified. According to the ATC, the majority of these (19%) belonged to the class of anti-infective drugs for systemic use (Group J), followed by drugs with action on the digestive system and metabolism (Group A), representing 15.9% and drugs with action on the cardiovascular system (Group C), with 14.3%, as shown in figure 1.

Figure 1: Distribution of the prescription drugs according to the classification Anatomical Therapeutic Chemical Code (ATCC) as level 1. Santa Maria, RS, Brazil, 2014



Medications that had a higher frequency of administration were sulfamethoxazole/trimethoprim (634 administrations), Omeprazole (495 administrations), prednisolone (405 administrations), and Dexamethasone (283 administrations).

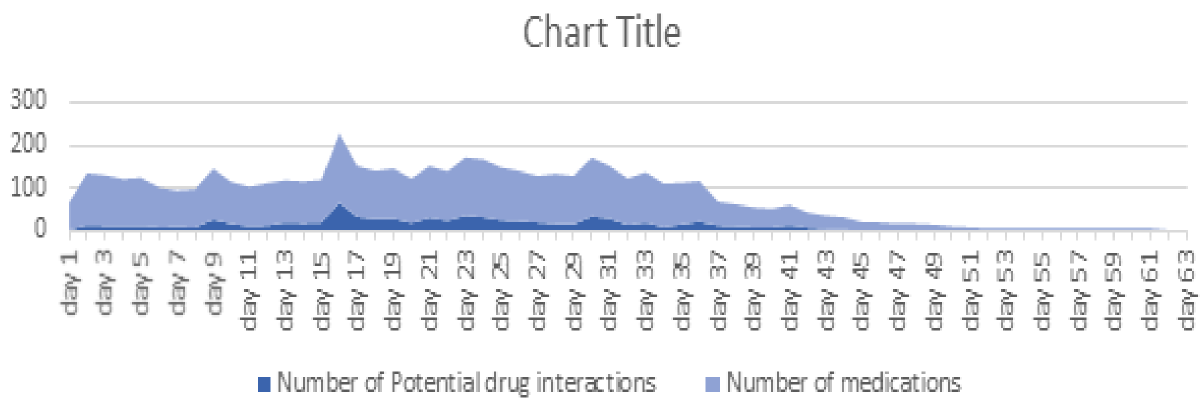
They identified 758 PDDI in the study period. The most frequent potentially interactive combination was asparaginase x Prednisolone (more severe), followed by Fluconazole x sulfamethoxazole/trimethoprim (more severe) and Fluconazole x Omeprazole (moderate severity). Approximately 60% of potential drug interactions were more severe. The main potential drug interactions are described and listed in table 1.

Table 1: Potential drug–drug interactions in children with precursor cell lymphoblastic leukemia-lymphoma. Santa Maria, RS, Brazil, 2014.

Drug 1	Drug 2	Effects *	%
Asparaginase Erwiniachry Santhemi	prednisoLONE	Increased risk of asparaginase toxicity	10,0
Fluconazole	Sulfamethoxazole / Trimethoprim	Increased risk of cardiotoxicity	8,4
Fluconazole	Omeprazole	Increased plasma concentrations of omeprazole	8,4
Fluconazole	predniSONE	Decrease in the metabolic degradation of predniSONE and an increase in predniSONE efficacy	6,5
Dexamethasone	vinCRIStine Sulfate	Decreased vinCRIStine plasma concentrations	6,3
Enalapril Maleate	Sulfamethoxazole / Trimethoprim	Increased risk of hyperkalemia	5,5
Sulfamethoxazole Trimethoprim	Methotrexate Sodium	Increased risk of methotrexate toxicity	4,9
Hydrochlorothiazide	predniSONE	Hypokalemia and subsequent cardiac arrhythmias	4,5
Asparaginase Erwiniachry Santhemi	vinCRIStine Sulfate	Increased risk of toxicity	4,4
Omeprazole	Methotrexate Sodium	Increased concentration of methotrexate and its metabolite and an increased risk of methotrexate toxicity	4,1

A children data receive at least 5 drugs have 2 times more risk of occurrence of PDDI, because each new prescription medication added to the course of treatment grow 0.413 times (OR = 0.402, CI = 0.186 to 0.617) the risk of occurrence of PDDI. It can be verified by figure 2.

Figure 2: Association observed between drug administration and PDDI. Santa Maria, RS, Brazil, 2014



DISCUSSION

Despite evidence of international guidelines that guide the chemotherapy combinations for the treatment of acute lymphoblastic leukemia, addressing the PDDI and adverse events associated with them (Alvarnas et al 2015; Yeoh et al 2013; Cazé et al 2010), all study participants were exposed to at least one PDDI.

In line with other research, the association between polypharmacy and PDDI was confirmed (Sharifi et al 2014; Secoli 2010). Polypharmacy is a risk factor in patients undergoing different types of treatment and is especially related to those individuals who have in their therapeutic regimen, at least one chemotherapeutic drug (Sasaki et al 2013; Hohl et al 2001; Sheppardet al 1974). This may be exacerbated by the administration of more than one drug dose in which the study demonstrated 0.4 times greater risk of presenting PDDI per drug administered.

The addition of each drug increases the risk of adverse events by 10% (LeBlanc et al 2015). However, polypharmacy is a key strategy for the treatment of precursor cell lymphoblastic leukaemia-lymphoma. Initial treatment consists of the use of methotrexate, vincristine, Daunorubicin Hydrochloride, ELSPAR, Etoposide, and Cytarabine. In addition, in cases of opportunistic infections, comorbidity, or palliative character, polypharmacy is mandatory (Dai et al 2016; Alvarnas et al 2015; Wu and Li 2014).

Febrile neutropenia already presents with hemodynamic repercussions and signs of infection and is characterised by an urgent risk of dissemination and septic shock. The infection time frame, sepsis, septic shock, and organ and organ system dysfunction resulting from neutropenia are the main causes of mortality in children with cancer and the main reasons for indicating intensive care (Caniza et al 2015; Alexander 2014; Sasse et al 2005).

In this initial phase of treatment, a dose of chemotherapy will be reduced or delayed as a result of myelosuppression and/or presence of infection, necessitating the use of other medicines to control symptoms and other complications to continue the treatment (Irving 2016; Wu and Li 2014; Cazé et al 2010).

Independent of the time of treatment, 57.3% of PDDI were classified as moderate. As patients in treatment for precursor cell lymphoblastic leukaemia-lymphoma present vulnerability in terms of disease characteristics and also because most are children, this reaction can interfere in important ways in quality of life, leading to negative outcomes. In these cases, one has to consider modifying the therapy, as PDDI may result in increased toxicity, changes in plasma concentration, and changes in the metabolic degradation of drugs, as well as so many other systemic effects that can affect the outcome of therapy and interfere with the prognosis of the patient.

The daily prescriptions included an average of 4.9 medications per day, appearing to be in accordance with the clinical demands that the patients presented in the period due to the proposed therapy. Neutropenia caused by a strong chemotherapy regimen administered in the remission induction phase justifies the class of anti-infective drugs that has been the most frequently prescribed (Buie et al 2015; Schroder et al 2001). Similarly, drugs that act on the digestive system (second-most prescribed drugs) are fundamental in relieving nausea, vomiting, epigastric pain, and other common symptoms of post-chemotherapy.

Sulfamethoxazole/trimethoprim, which is provided in the treatment plan for all patients, was the most used drug and its management is maintained even after hospital discharge, since it is the first option for antimicrobial prophylaxis of infections in immunocompromised patients (Davis et al 2014; Schroder et al 2001). As to the administration of omeprazole, prednisolone, and dexamethasone, they are prescribed regardless of treatment response and potential complications.

Considering that the prescription is the point of origin for the use of the drug, a careful evaluation of the antineoplastic therapy regimen should be carried out to identify and predict potential drug interactions and adverse effects (LeBlanc et al 2015; Payne et al 2015; Sharifi et al 2014). Therefore, prescribers should consider the aspects related to patients to assess the risk-benefit of maintaining or not maintaining the drug combination. Furthermore, conducting biochemical and clinical examinations before and after the introduction of other drugs will certainly help to reduce PDDI.

Although there are contributions and a pioneering study in Brazil, it is important to note the limitations of the research. The evaluation of potential drug interactions was taken from a convenience sample of patients in hospital, an aspect that limits the applicability of the results. Some combinations of drugs identified as potential drug interactions were necessary due to the treatment regimen or unavailability of alternatives with less interactive potential.

Real outcomes of drug interactions have not been evaluated in this quite difficult aspect because the establishment of cause and effect is complex, especially due to the presence of polypharmacy and potentially interactive features of many antineoplastic agents.

Although the study has not evaluated the adverse drug reactions, the findings although limited, are relevant to patients with precursor cell lymphoblastic leukaemia-lymphoma, especially to present the clinical findings of potential drug interactions. In addition, the therapeutic regimens used in the induction of remission treatment step are similar throughout the world.

CONCLUSION

It was found that every new drug inserted in the treatment of precursor cell lymphoblastic leukaemia-lymphoma increases the chance of risk for the occurrence of potential drug interactions by 0.4 times.

The potential drug interactions identified in this study of moderate and higher severity are events that, in addition to influencing the therapeutic response causing changes in plasma concentrations of drugs, systemic toxicity, cardiotoxicity, and can interfere with the treatment provided in the period induction of remission of precursor cell lymphoblastic leukaemia-lymphoma.

RECOMMENDATIONS

Nursing should interfere in the occurrence of PDDI, since the time of administration and planning drug application ranges are medicated effective in eliminating or reducing the adverse effects of these interactions. The findings of this research can be applied in clinical practice, permitting the identification of potential drug interactions and adverse effects of medication.

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Antipsychotic use for behaviours by persons with dementia in residential aged care: the relatives' perspectives

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KEYWORDS

relatives, dementia, behaviours, antipsychotics, residential aged care

ABSTRACT

Objective

To explore relatives' experience, knowledge and perceptions of challenging behavioural and psychological symptoms of dementia (BPSD) and association with antipsychotic use for persons with dementia in residential aged care.

Design

A qualitative Interpretive Description design using semi-structured interviews was used for understanding the construct and context of perceptions and experiences using a six-step process to analyse themes.

Settings

South Australia, Victoria and Western Australia.

Subjects

Six relatives of a person with dementia in residential aged care.

Main Outcome Measure

Themes describing relatives' experiences, knowledge and perceptions of antipsychotic medication use for the person with dementia in residential aged care.

Results

Three themes were identified: 1) lack of education and information - relatives found it difficult to differentiate between behaviours influenced by disease or antipsychotic medication; 2) need to be included in decision-making - relatives' believed challenging behaviours resulting from BPSD could be prevented with a more person-centred approach; and, 3) influence of aged care culture on attitudes towards use of antipsychotic medication - relatives' identified this could be problematic depending on use of agency staff and time pressures.

Conclusion

Relatives of persons with dementia require support and education about the progression of dementia, BPSD and the risks and benefits that antipsychotic medication may have on BPSD. Most importantly, relatives need to be involved in decision-making regarding the use of antipsychotic medication. Nurses have a role to educate care staff on the use of person centred care in preference to medication for better care of the person with dementia.

INTRODUCTION

Over 50% of residents living in residential aged care (RAC) have dementia (Australian Institute of Health and Welfare (AIHW) 2015). Caring for residents with dementia in RAC who display challenging behaviours resulting from Behavioural and Psychological Symptoms of Dementia (BPSD) is perceived by care staff as the most difficult aspect of managing the daily needs of these residents (Lawrence et al 2016; Ervin et al 2014). Behavioural and psychological symptoms of dementia can escalate in residents with dementia in the residential aged care setting due to neurobiological disease, staff or environmental factors, unmet needs, or chronic ill health, e.g. sensory loss, pain and urinary incontinence (Cohen-Mansfield et al 2015; Kales et al 2015). Brodaty et al (2003) found that up to 90% of residents in RAC will display BPSD based on these factors. To mitigate BPSD, antipsychotic medication may be used despite many recommendations for using non-pharmacological management first (American Psychiatric Association (APA) 2016; Kales et al 2015; Peisah and Skladzien 2014).

The use of non-pharmacological management is preferred as antipsychotic medication may elicit interactions with neuroreceptors that may adversely affect residents' health, e.g. postural hypotension and tardive dyskinesia (Kales et al 2015; Monthly Index of Medical Specialties (MIMS) 2015). For the person with dementia, antipsychotic medication may also increase morbidity and mortality (Park et al 2015; United States Department of Health and Human Services 2015; Kleijer et al 2009; Gill et al 2007) as well as mask non-dementia symptoms such as pain and delirium (APA 2016; Park et al 2015). Therefore, use of antipsychotic medication may not only be ineffective for addressing the cause of BPSD but, may act as a form of chemical restraint that can lead to physical and psychological harm (Peisah and Skladzien 2014).

To minimise the use of chemical restraint for the person with dementia, guidelines for non-pharmacological management have been generated by a number of professional organisations (APA 2016; National Institute for Health Care Excellence (NICE) 2015; World Health Organization (WHO) 2012). These guidelines emphasise the need to consider person-centred care as the initial non-pharmacological approach. Person-centred care considers the unique social context of a person's experience and how that experience may trigger behaviours associated with unmet needs, environmental factors or pain (Cohen-Mansfield 2001; Kitwood 1997).

It has been identified that limited training and education for staff in person-centred care compounded by low staffing levels impacts on the ability to use non-pharmacological management and contributes to antipsychotic medication use (Lawrence et al 2016; Cohen-Mansfield et al 2013; Ervin et al 2014; Productivity Commission 2011). Relatives of people who have dementia and live in a RAC setting have a key role to play in collaboration with care staff about behavioural management; yet, relatives' perspectives on the use of antipsychotic medication for the person with dementia in RAC remains largely unknown. The aim of this study, therefore, was to explore the relatives' perspectives on antipsychotic medication use to control BPSD for the person with dementia living in RAC.

METHOD

Thorne's (2008) Interpretive Description qualitative methodology was used to explore relatives' understanding of the use of antipsychotic medication for managing BPSD in their relative with dementia in the RAC setting. The primary objective of this methodology is creating knowledge and understanding for practice that incorporates societal contexts influencing practice and the person in care (Thorne 2008). Use of this methodology enabled development of a comprehensive understanding of when antipsychotic medications were being used for the person with dementia as well as the context of engagement with relatives in relation to decision-making around their use. For this qualitative methodology, no specific number of participants is required. Rather, data is collected until no new material or information arises from within the context being studied. Guest et al (2006) have indicated a total of six interviews are sufficient to determine themes in qualitative data analysis. For this research six respondents met the inclusion criteria. The four themes identified covered all qualitative data provided by the participants leading to saturation of information such that no new information emerged.

Ethical approval for the study was provided by Flinders University South Australia Social and Behavioural Research Ethics Committee (Project Number 6789).

Recruitment for the study was conducted through and with permission of Alzheimer's Australia (SA) via offline and online newsletters and networks. Relatives expressing an interest to participate were sent a letter of introduction and participant information sheet. Informed consent was given in writing or verbally at the time of interview. To be eligible for the study, relatives needed to be the primary carer or have experience of the person with BPSD and knowledge of the medications used to control those behaviours. The person with dementia needed to have resided in RAC within the past two years at time of interview in 2015.

Audiotaped semi-structured interviews were conducted face-to-face in a mutually agreed location or by telephone for between 30 minutes and two hours. Semi-structured interviews used open-ended questions about dementia, behaviours, antipsychotic medications and person-centred care. Participants were probed to elicit more detail about how knowledge was gained, how this knowledge may have influenced their perspective on antipsychotic medication use or behaviour management and other elements of importance relating to the societal context of antipsychotic medication use. Audio-taped interviews were transcribed and then analysed using Thorne's (2008) Interpretive Descriptive methodology as a framework to develop an understanding of the societal context of relatives' viewpoints on antipsychotic use and how this applied in nursing practice. Further analysis to identify barriers and facilitators for the use of antipsychotic medication instead of person-centred care was undertaken using the six-step process of Braun and Clarke (2006). This six-step process involved: familiarisation with the data; generating initial codes; searching for themes; reviewing themes; defining and naming themes; and producing a report (Braun and Clarke 2006, p87).

Trustworthiness of the data was established through addressing credibility, transferability, dependability and confirmability as defined by Oman et al (2003). Credibility of the data was confirmed by comparing and contrasting the occasions when antipsychotic medication use was described from one participant interview to the next as it developed within the context of RAC management of people with dementia with BPSD. This was then compared with what was known about this phenomenon as described by the literature. Transferability was confirmed through clarification of experiences described by participants with other nursing colleagues working in RAC, who were not part of the investigation. Dependability was assessed through review of the research design and process from colleagues in the residential aged care community and the transcription of data verbatim. Confirmability was ensured by all investigators evaluating the interpretation of the data and themes through the use of the 6-step process of Braun and Clarke (2006). By establishing trustworthiness through credibility, transferability, dependability and confirmability, commonalities arising from within the interviews could be compared with any alternative constructs emerging being tested against relatives' and nursing staff knowledge and experiences of the RAC. Furthermore, all authors cross-checked and reviewed the transcripts, participated in the analysis and agreed on the final themes and sub-themes generated.

FINDINGS

Demographics of Participants

From ten respondents, six relatives from three different Australian states met the inclusion criteria and participated in the study (table 1). All of the relatives were female with ages ranging from 45 to 62 years.

Frequency of visitation to the person with dementia's RAC facility ranged from daily to three or four times a week or once a fortnight. All relatives held healthcare advance directive authority.

Persons with dementia included four mothers, one husband, one father-in-law and one friend. Types of dementia identified included Mixed, Vascular, Lewy Body with Parkinson's disease and Alzheimer's disease. Persons with dementia ranged in age from 54 to 81 years and were in RAC ranging from one to three years at the time of interview. All relatives identified the use of Risperidone, an atypical antipsychotic, as one of the medications given to their relative in RAC. Participants are quoted throughout using pseudonyms to maintain confidentiality.

Table 1 : Demographic information of participants (n=6) and persons with dementia (n=7)

Participants - Relatives					Person with Dementia			
Pseudonym	***Gender***	***Age (years)***	***Relationship***	***Length of time as carer***	***Age (years)***	***Gender***	***Type of Dementia***	***Length in RAC***
P1	F	61	Daughter	3 years	80	F	AD, LBD	<1 year
P2	F	56	Daughter–in-law	3 years	71	M	LBD	1.5 years
			Friend	3 years	54	M	VaD	2 years
P3	F	62	Wife	2 years	75	M	FTLD, AD	1 year
P4	F	45	Daughter	8 years	84	F	AD	2 years
P5	F	56	Daughter	3 years	78	F	VaD, AD	3 years
P6	F	50	Daughter	2 years	81	F	AD	1 year

AD = Alzheimer's Disease, LBD = Lewy Body Dementia, VaD = Vascular Dementia, FTLD = Frontotemporal Lobe Dementia

Themes

Three major themes were revealed relating to the societal context of antipsychotic use for the person with dementia in RAC. These themes are:

1. a lack of education and information;
2. the need to be included in decision-making; and
3. the influence of aged care culture on relatives' attitudes towards use of antipsychotic medication.

The description and analysis of these themes are elaborated further below.

Lack of education and information

Relatives' perceived they were lacking knowledge about their relatives' dementia, medication management and behaviour in RAC. The lack of disease knowledge was articulated by Participant 1:

> *I was never prepared for her getting up in the night and not knowing who I was..., for that lack of sleep and..., you know you put something down one day and give her something to eat that she would like... and the next day it would be "what's that"? I had no idea, I don't know how we managed (P1).*

The majority of relatives had little knowledge about antipsychotic medication, indicators for its use or the effects that it might have on behaviour. However, Participant 2 articulated that person-centred care was a better approach to prevent and manage challenging behaviours resulting from BPSD: '*I do know that antipsychotics were used to basically modify behaviour when in fact changing to a person-centred way of caring would have been far more appropriate*' (P2). While Participant 3 understood that medication was preferentially used over person-centred care: '*Too often PRN (provide as necessary) is used instead of patient-centred management*' (P3).

Although relatives' knowledge about dementia, behaviours associated with dementia and antipsychotic medication use differed, they were all able to articulate a sense of knowing what normal behaviour was for their relative, when that normality was upset and why. One participant provided an example from her father-in-law and friend: '*A few times they'd (father and friend) both say - why am I feeling drunk all the time? I'm not drinking any wine - they won't let me'(P2).* While this relative understood that it was the antipsychotic medication making the relative feel differently, Participant 4 was less able to link behaviour to medication use:

> *She was just really placid. Sometimes she would just be like a really frightened child…some of the bizarre behaviour, [I didn't know if] that was just because of the drugs or was that just part of the behaviour, and I wouldn't be able to know that (P4).*

The inability to differentiate behaviours resulting from medication use versus disease progression created discomfort and confusion in the relatives with regard to antipsychotic medication use for the person with dementia:

> *It's also hard to know at each step, is it happening because of the disease or is she medicated? I don't know because she's become incontinent as well, so that's pretty tough on her too [be]cause a couple of times [when] I've been down for the weekend, she's soiled her pants and it really distresses her. I don't know if that's part of the lack of, is it being so relaxed that you haven't got control of your bowels or is it the disease? I don't know. (P6).*

After time, all of the relatives were able to distinguish medication effects from the regular behaviour of their relative after the person with dementia had been in RAC for a while:

> *I used to call it her Campari (Risperidone). Some of the nurses would give it to her before I got there and she would be asleep when it was teatime. And to be asleep at teatime in a nursing home is awful because you're [not] going to [get fed]. Mum is a foodie as well so I know [she's] going to wake up later and [she's] going to be hungry and [she's] not going to get anything to eat until 8 o'clock the next morning, so that would make you pretty cranky (P1).*

Nevertheless, relatives were still puzzled and conflicted about when it was appropriate to use antipsychotic medication for their relative. This was because the use of antipsychotic medication traded-off one behaviour, e.g. calling out in a raised voice and disturbing other residents, for another, e.g. being quieter and less agitated. Although many relatives understood there may be a need for this trade-off, it was not necessarily a comfortable one for relatives to accept.

The need to be included in decision-making

Lack of communication and education by care staff to relatives' about why antipsychotic medication was being used instead of non-pharmacological alternatives left relatives confused, anxious and frustrated as the personality and behaviour of their loved one changed. This did not engender trust in the process or staff as a participant described: '*Nobody volunteered information. In my memory, there wasn't a lot of volunteering, there was no counseling of her care. No, I don't think we ever got what we could expect' (P1).* Participant 1's experience was common although not universal.

Two of the relatives were willing to have care staff take the initiative for antipsychotic medication use, but for four of the relatives, not being communicated with about care management, led them to seek out additional knowledge about dementia, behaviour management and antipsychotic medication use so they could be more actively involved in the decision-making that occurred as described in the following excerpt.

> *Yes, I got a lot of information from their [Alzheimer's Australia] fact sheets and I got [some] from the care package through them so I used them a lot. Plus, I have a friend who is a lecturer's assistant so we both were skilled in dealing with problems from the wrong end and trying to sort back through it. So, Alzheimer's [fact sheet] was quite useful for that, and I would often refer a lot of people to 1800.... [Be]cause now that people knew Mum had it really bad and I'd have people saying can you talk to my Mum? And they'd come and talk to me or bring me to their house and I'd always say ring 1800 ... before you have a disaster, before someone gets hurt, before they wander away (P1).*

Not only did relatives gain knowledge from Alzheimer's Australia for when and how antipsychotic medication should be used for the person who has dementia, they also accessed television, support groups, Google, YouTube, the Internet and conferences to inform themselves. Participant 2 described information she received when attending a conference on dementia:

> *Well, if you read the work that Brodaty (an eminent dementia researcher) has been doing with his study, he actually now says that dementia is the one contraindication to prescribing antipsychotics; that they should only be prescribed for people with true mental illness and dementia is not a mental illness (P2).*

As relatives' knowledge about dementia, medication management and behaviours increased, several relatives began initiating ways of caring for their relative to mitigate the effect of the antipsychotic medication. One participant described that she: *'Never 100 per cent succeeded on this, but if she (her mother) had her medicine just before dinner, she could eat some of what I took her and then she could settle down and the medication would take effect' (P1).*

Some relatives, such as Participant 2, became vigilant in making sure antipsychotic medication was not being used without their consent:

> *They'd take him off (the medications) when we complained then the next pharmacy bill would come back in, and we'd find he'd been put back on. Then if we would forget to check or complain he would have just stayed on them (P2).*

Some relatives like Participants 2 and 4 described being frustrated and upset when informed of antipsychotic medication use after it had already taken place. Often this communication came via a bill for pharmaceuticals as described by one participant: '*I thought "oh, what's that" and I got the bill from the chemist and I Googled it but it was never sort of oh, we're giving your mother this' (P4).*

Not all relatives, however, felt the need to participate in medication management with care staff. Participant 6 preferred to be guided by the expertise of the staff:

> *I'm guided by the professionals. They're very good at consulting, but they're also very good at getting their point across. They'll say, this is what we recommend and I'm sure if I said no it would be OK, but what if I said no and it wasn't the right decision? So, I sort of like to go with their opinion. I mean I feel it is a privilege that they are consulting with me really [be]cause they're the ones that are caring for her (P6).*

This illustrated the dilemma that all of the relatives faced – they had relinquished care of the person with dementia to professionals who they thought would know how to manage them better, yet the use of antipsychotic medication often left the relative and their loved one upset and uncomfortable. Managing the tension this caused relatives was dependent on the professionalism of the care staff and the culture of the residential aged care facility.

Influence of aged care culture on relatives' attitudes towards the use of antipsychotic medication

Three of the relatives in this study had previous experience with the aged care system either personally or professionally (P1, P2 and P5) while for the others (P3, P4 and P6) their experience with RAC was new and associated with the entry of their relative to RAC. Participants with more experience, better understood different levels of care and felt more empowered to advocate for their relative as one relative described: '*I've had more ability to properly advocate for him in low care. The staff were more receptive. The staff were more willing to make changes or to be more person-centred' (P2).* This experience was not always able to overcome the administration of antipsychotic medication administration, however, and when relatives described inappropriate use of antipsychotic medication, they often referred to this as 'chemical restraint'.

Relatives describing antipsychotic medication use in this manner felt it was the RAC facility rather than the person with dementia who benefited as one participant described: '*They used to talk at the home quite often that they resisted any physical restraint or chemical restraint but you know, with the moods Mum used to have, sometimes she was chemically sedated or chemically restrained' (P2).* One relative felt the use of antipsychotics was: *'just a way of managing people... I suppose it does save them money so they don't have to have as many staff on if all the residents are just slumped in a chair or a bed' (P4).* Another participant was willing to concede that there might be times when it is beneficial to use antipsychotics: '*But I don't think it should be over-used like [staff thinking] 'we're too busy to deal with him, we'll just sedate him and put him to bed' (P3).* Nevertheless, one participant was able to describe the positive aspects of using antipsychotic medication as chemical restraint: '*She (Mum) was constantly on her feet walking everywhere, and I think that chemical restraint actually probably gave her a bit of a rest which I think was good for her' (P5).* Although some relatives accepted that antipsychotic medication may have had a place in the management of behaviour of their relative, it was more often the culture of the RAC that they emphasised as influencing its use.

According to all of the relatives, inadequate numbers of regular staff led to high rates of agency staff and the number of agency staff was a key indicator of antipsychotic medication use on their relative. If regular staff were present, one participant saw a marked difference in behaviour in her loved ones' when mainly agency staff were present rather than regular staff: '*In the early days, where Dad was, there was just this constant barrage of agency staff. Both Dad and my friend were just happier to see a person they knew. It's just that [they had that] level of being calmer because they knew people' (P2).* To alleviate the dependency of care staff on antipsychotic medication use, relatives offered ideas on alternative therapies and activities for their relative to mitigate BPSD behaviour. However, relatives often did not see these ideas acted upon as a participant explained: *'I gave them about 20 ideas for men, and I haven't seen any implemented. Sometimes I just feel the whole lot lack imagination' (P3).* Overall, not being able to sufficiently influence the care of their loved one, such that antipsychotic medication use could be avoided, left relatives feeling disempowered, ill-informed and dissatisfied with the care their relative received.

DISCUSSION

In this study, most of the participants interviewed struggled to identify whether the behaviour displayed by their relatives with dementia in RAC was representative of disease progression or antipsychotic medication use. However, once relatives learned that the person with dementia was being treated with antipsychotic medication, relatives improved their knowledge, not only about the disease, but also about the applicability of this medication for the person with dementia. Relatives did this to distinguish for themselves the difference between deteriorating behaviour resulting from disease progression or some other factor such as antipsychotic medication use. Bonner et al (2015) indicated that much of the use of antipsychotic medication for the person with dementia was for non-psychotic purposes. Relatives in this study provided evidence of this by describing occasions such as mealtimes when antipsychotic medication was used inappropriately and articulated their concerns about when and how this medication was being applied in relation to the direct need or behaviour of their relative at the time.

The results of a systematic review by Brownie et al (2014) recommended that to make the transition from home to RAC easier for families and the person with dementia, it was important to: facilitate partnership with family members in dementia care; provide access to information and promote communication with residents, families, counsellors and social workers; help residents and their families build coping skills; and continue meaningful activities for engagement and preservation of the social role of the resident. If these guidelines had been followed, trust between relatives and the care staff may have led to shared decision-making such that when BPSD arose, the method of management could be agreed upon without administering antipsychotic medication.

Lee et al (2015) identified that four key factors influence good practice in care of the person with dementia, namely; leadership and management of care, integrating clinical expertise, continuity of care and use of guidelines. Participants in our study identified these factors were missing as indicated by a lack of consultation with the relative, inconsistency in staffing, apparent lack of person-centred care and lack of information to relatives about when antipsychotic medication should be used.

Cornege-Blokland et al (2012, cited in Petriwskyj et al 2013) found less than half of family members consulted about antipsychotic medication use felt adequately informed about potential side-effects before consenting to its use. Relatives in our study who informed themselves about dementia, antipsychotic medication and its side-effects, felt empowered to advocate for better care of their relative. Nurses in RAC who accept and respect such advocacy may enable relatives to become more confident in the professionalism and clinical expertise of the care staff and facility. However, as Cornege-Blokland et al (2012, cited in Petriwskyi et al 2013) discovered, request for antipsychotic medication was most often initiated by nurses. This situation may undermine trust by relatives if antipsychotic medication is seen to be used for the benefit of staff rather than the person who has dementia with BPSD.

In our study, when relatives felt confident to trust that carers had sufficient clinical expertise to integrate the use of medication in the care management of their relative, then they were more accepting of its use at times designated by the nurse or carer for managing BPSD in their relative.

Livingston et al (2005) found that one of the few effective strategies for enhancing care of the person with dementia was education of staff on dementia, changes in staff behaviour, and different forms of BPSD management. When care staff are taught to use guidelines, such as those advocated by the National Prescribing Service (2013) on appropriate use of person-centred care and antipsychotic medication for the person with dementia, then it may be possible that the person with dementia in RAC will have a better chance of living the rest of their life without the burden of additional symptoms that inappropriate use of antipsychotic medication can bring (Park et al 2015). However, a study by Ostaszkiewicz et al (2015) found nurses in RAC indicated that although they knew person-centred care was a preferred method for managing BPSD in residents with dementia, they often felt using this method was better accomplished when the resident was sedated or had some form of restraint. Petriwskyj et al (2013) suggested there is still much to be learned in both research and practice of when and how to use antipsychotic medication and person-centred care for the person with dementia displaying BPSD.

Although participants in our study expressed they would have appreciated more shared decision-making about antipsychotic medication use as well as seeing the adoption of alternative methods of management of BPSD for the person with dementia in RAC, nevertheless, all relatives in this study expressed gratitude for the efforts of most of the care staff they encountered and understood the pressures on care staff of trying to provide person-centred care within the RAC setting.

CONCLUSION

This study identified three themes in relation to the societal context of practice affiliated with antipsychotic medication use for BPSD of people with dementia living in residential aged care (RAC) facilities. These themes were first, a recognition that relatives lacked sufficient knowledge to identify the source of undesirable behaviours occurring within the RAC setting; e.g. medication use or disease progression. To address this lack of knowledge, some relatives educated themselves about these issues to advocate for the person with dementia and prevent them from being subjected to use of antipsychotic medication rather than non-pharmacological care. Although knowledge and advocacy empowered relatives, this advocacy had limited success in decreasing the use of antipsychotic medication as the disease progressed as some relatives and care staff preferred the perceived benefits of the medication despite potential risks. The second theme identified barriers to provision of non-pharmacological management which relatives described as resulting from a lack of shared decision-making between staff and relative. Lack of shared decision-making led to the emergence of the third theme which centred on residential aged care practices influencing use of antipsychotic medication in RAC. Practices in favour of antipsychotic medication use were influenced by staff turnover, limited staff education and limited time to support non-pharmacological care management.

As a result of this study, it is recommended that nurses engage relatives in discussion about strategies for managing BPSD when this arises in the person with dementia in the RAC setting. To engage in such discussions, it is important for nursing staff and carers in RAC facilities to have knowledge about dementia, potential societal, physical, environmental and psychological causes of BPSD and to be prepared to offer non-pharmacological management of behaviour as first line treatment rather than depending on the expediency of antipsychotic medication administration. Discussions with family members should be conducted prior to the administration of the antipsychotic medication and in an informative and sensitive manner to avoid misunderstanding and negatively contributing to what is already an emotionally charged time for relatives and the person with dementia. This, in turn, engenders trust in relatives that staff are doing what is best for their loved one.

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The Art of Clinical Supervision: the Traffic Light System for the Delegation of Care

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KEY WORDS

clinical supervision, delegation of Care, student nurse, clinical teaching

ABSTRACT

Objective

The Traffic Light System for the Delegation of Care was developed as a tool to assist student nurses and their allocated clinical supervisor on clinical shift, to determine their scope of practice for the delivery of patient care.

Setting

Western Australian health services.

Primary Argument

With each clinical placement student nurses are required to determine their scope of practice according to the health service polices and guidelines in conjunction with their own School of Nursing practice policies and legislation. Health service nurses support students in this scope of practice determination, but often themselves are perplexed by the different placement structure in each university course, and the lack of consistency across these.

Conclusion

Participant feedback and implementation of the tool supports its usefulness as a practical strategy to assist decision-making in the delegation of care to student nurses.

INTRODUCTION

The Art of Clinical Supervision (ACS) is a one-day seminar for nurses facilitated by academic staff in the School of Nursing and Midwifery at The University of Notre Dame Australia. Initially designed as an intervention strategy for a PhD in 2013 with 200 participants, the programme has now been delivered to more than 3,000 health professionals across Western Australia (WA). Of significance, the ACS was developed to improve participant knowledge and attitude towards students and clinical supervision, as well as to provide practical tips to assist with clinical teaching and supervision (Russell et al 2016; Russell 2013). This article is the focus of one of these teaching tips – the Traffic Light System for the Delegation of Care.

DISCUSSION

Clinical supervision, in the context of entry to practice nursing education, is the relationship between the student nurse, and the registered nurse responsible for their practice on clinical placement. In Australia, a clinical supervisor is "an appropriately qualified and recognised professional who guides learners' education and training during clinical placements. The clinical supervisor's role may encompass educational, support and organisational functions. The clinical supervisor is responsible for ensuring safe, appropriate and high quality patient-client care" (Health Workforce Australia [HWA] 2014, pp.22). Other terms used to describe this relationship include preceptor, mentor, coach, buddy and facilitator (Dimitriadou et al 2015; Manninen et al 2015).

The clinical supervisor, in providing opportunities for practice, must determine what care can and cannot be performed by the student nurse. This discussion between the student and the clinical supervisor should sit within the delegation framework. The Nursing and Midwifery Board of Australia (NMBA) defines delegation as:

> *the relationship that exists when a RN delegates aspects of their nursing practice to another person such as an enrolled nurse, a* ***student nurse*** *or a person who is not a nurse .... In some instances* ***delegation may be preceded by teaching and competence assessment*** *(2016, pp.6).*

Through the delegation of care, the clinical supervisor (unit registered nurse) remains accountable; however, the accepter of the delegation, the student, also assumes responsibility and ensures that they are appropriately educated and able to complete the delegated task (NMBA 2016; NMBA 2013a).

Delegation of care by the clinical supervisor facilitates student nurse learning; delegation of clinical care facilitates student competence to support their professional development. These activities of delegation remain within the scope of the nursing role, and are learnt at appropriate times during the student's course of study. That is, dependent on where the student is within their course will influence what nursing activities the student can engage in. Due to the varied student placement experiences, and dependent on the institution of enrolment, students are ready at different times to perform aspects of nursing care. Thus, students do not always have a set of rules or a precise list of what can and cannot be practiced, at a particular point in their course, creating a sense of uncertainty for staff and students.

The Traffic Light System for the Delegation of Care was designed to assist clinical supervisors in their delegation of care to a student nurse. The tool is based on the NMBA Nursing Practice Decision summary guide (2013b) and the National Framework for Decision Making (2013a) for the allocation of care to members of the health care team, including student nurses. The framework provides clinical supervisors with a structure to decide if an episode of patient care can be delegated to a student, or another member of the health care team. The NMBA (2013a, pp.19) criteria for delegation to a student states:

- Performance of the activity is congruent with the educational goals of the program in which the student is enrolled, and with the professional role that the student will undertake once they graduate.
- The educational institution supports the performance of the activity by the relevant group of students.
- The student is competent and confident to perform the specific activity for the consumer in the current context.

Whilst these may seem straightforward, the ability to determine appropriate delegation in practice can be fraught with confusion. In delegating, the registered nurse must consider the knowledge and the ability of the student to safely undertake the task (Saccomando and Pinto-Zipp 2011); this can be confronting with multiple schools of nursing, each with their unique curriculum pathway, and students experiencing varying opportunities throughout their clinical placement journey.

Therefore in consideration and preparation of delegating care, both time and preparation are key. Thought must be given to how much time the clinical supervisor has to provide the necessary teaching to ensure safe practice, based on what the student already knows, and does not know (Saccomando and Pinto-Zipp 2011). Hasson et al (2012) refer to this action of delegation as “the right task, circumstance and person” (pp.229). That is, does the clinical situation allow for the safe delegation of care, and is the student equipped with the essential knowledge, skill and ability to practice within the current clinical context (NMBA 2016).

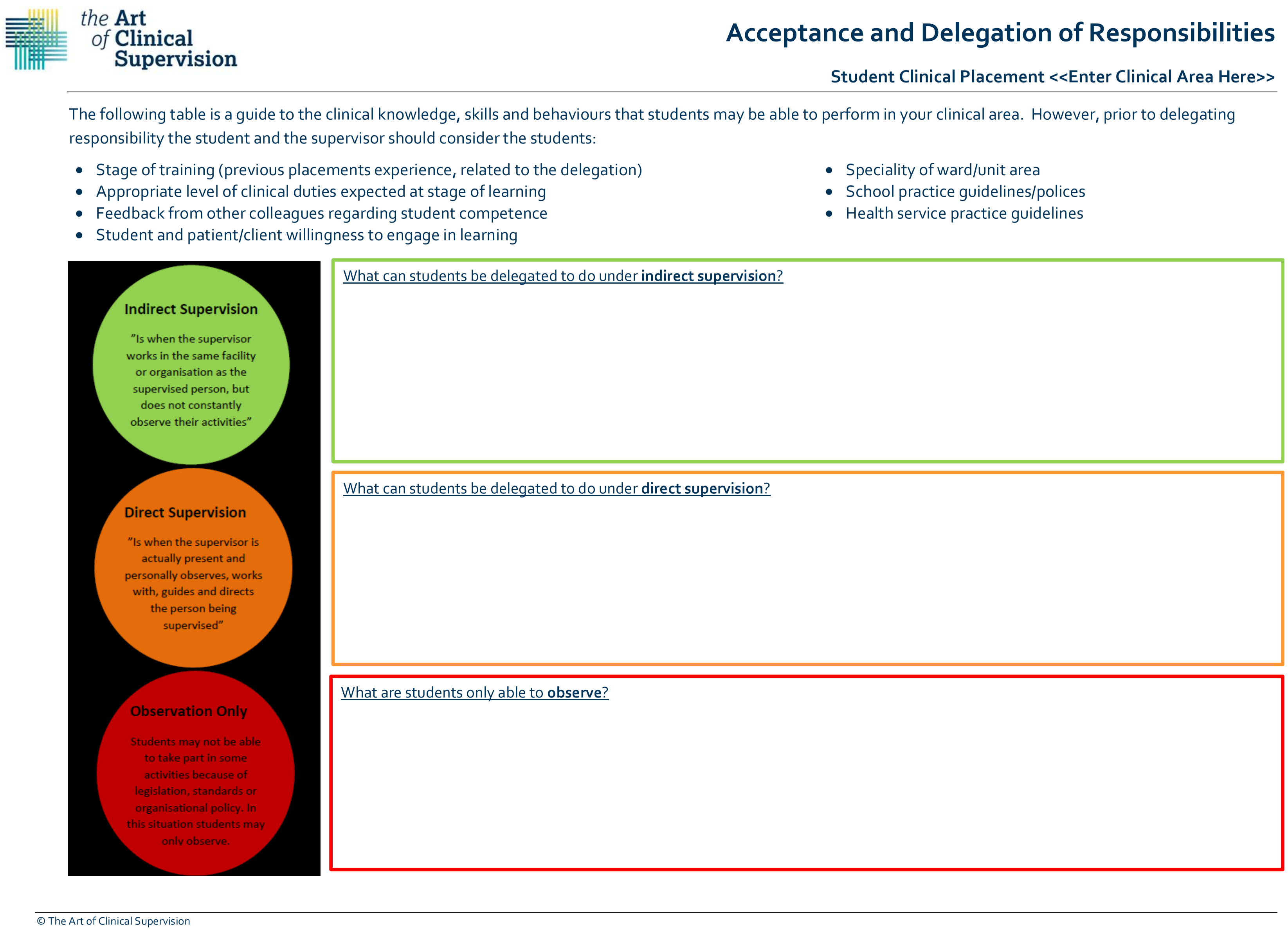
Further consideration of the delegation includes the level of student supervision. This supervision can occur ‘directly’ or ‘indirectly’ dependent on the student’s experience and the complexity of the care. Direct supervision involves the presence of the clinical supervisor to provide direct observation, guidance and direction. Indirect supervision involves the clinical supervisor being available to the student should they need support. Therefore whilst the clinical supervisor does not directly observe practice they are accessible to provide assistance if required (HWA 2014). Despite these guidelines and frameworks for practice clinical supervisors have often struggled with the delegation concept.

TRAFFIC LIGHT SYSTEM FOR DELEGATION OF CARE

The Traffic Light System for the Delegation of Care was developed as a tool to assist clinical supervisors to determine a student’s scope of practice and the type of supervision required. The tool is reviewed during the Art of Clinical Supervision seminar (Russell et al 2016), the seminar was an intervention for a doctoral research study. The study described the positive impact of the seminar on participant’s knowledge and attitude towards the role of clinical supervision. Due to the success of the seminar, first presented in 2012, the seminar continues for all health service employees across WA on request. A further 3,000 participants have attended since the initial 200 doctoral participants. Attendees to the seminar are provided with a paper copy of the tool in a seminar resource pack. The tool is intended to be used as an A3 poster for display in key nursing locations, e.g. treatment room, and is available to participants in digital form on request.

The tool is to be used at a unit/ward level, this ensures consistency of delegation and supervision requirements; therefore reducing confusion for staff and students. Staff together discuss what students can do under indirect supervision ‘Green Traffic Light’, what they can do whilst directly supervised ‘Orange Light’, and what they cannot do ‘Red Traffic Light’. Starting with the Red Light is often the easiest, in particular with those nursing actions unauthorised by legislation and hospital policy. For example in Western Australia, students cannot participate in patient restraint. Examples of a completed Traffic Light poster are provided in figure 2. Please note these examples relate only to the Western Australian health care context.

Figure 1: Traffic Light System for Delegation of Care



the Art of Clinical Supervision

Acceptance and Delegation of Responsibilities

Student Clinical Placement <<Enter Clinical Area Here>>

The following table is a guide to the clinical knowledge, skills and behaviours that students may be able to perform in your clinical area. However, prior to delegating responsibility the student and the supervisor should consider the students:

- Stage of training (previous placements experience, related to the delegation)
- Appropriate level of clinical duties expected at stage of learning
- Feedback from other colleagues regarding student competence
- Student and patient/client willingness to engage in learning
- Speciality of ward/unit area
- School practice guidelines/polices
- Health service practice guidelines

Indirect Supervision

"Is when the supervisor works in the same facility or organisation as the supervised person, but does not constantly observe their activities"

What can students be delegated to do under **indirect supervision**?

Direct Supervision

"Is when the supervisor is actually present and personally observes, works with, guides and directs the person being supervised"

What can students be delegated to do under **direct supervision**?

Observation Only

Students may not be able to take part in some activities because of legislation, standards or organisational policy. In this situation students may only observe.

What are students only able to **observe**?

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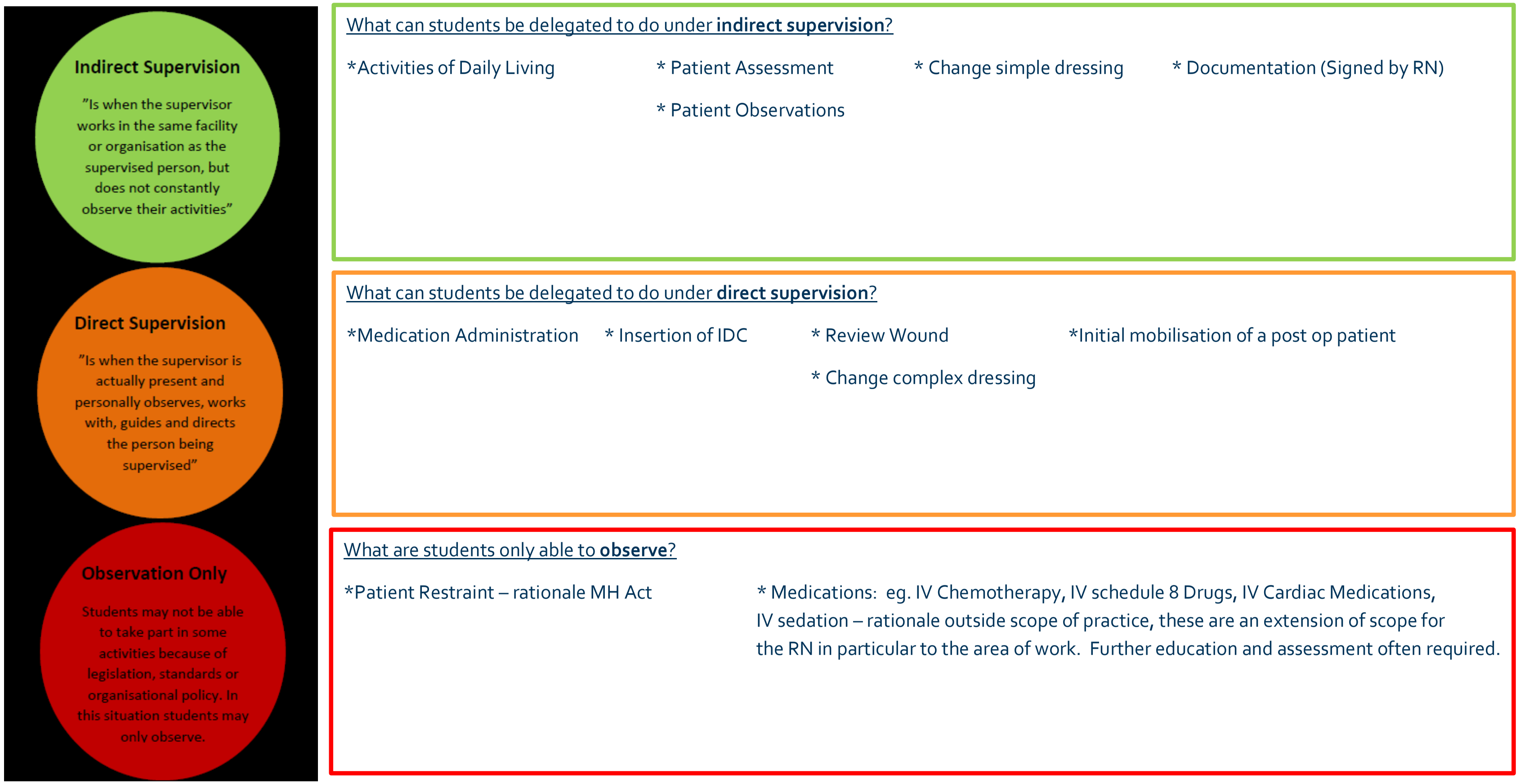
Figure 2: Traffic Light System for Delegation of Care with Example



Indirect Supervision

"Is when the supervisor works in the same facility or organisation as the supervised person, but does not constantly observe their activities"

What can students be delegated to do under **indirect supervision**?

- *Activities of Daily Living
- * Patient Assessment
- * Patient Observations
- * Change simple dressing
- * Documentation (Signed by RN)

Direct Supervision

"Is when the supervisor is actually present and personally observes, works with, guides and directs the person being supervised"

What can students be delegated to do under **direct supervision**?

- *Medication Administration
- * Insertion of IDC
- * Review Wound
- * Change complex dressing
- *Initial mobilisation of a post op patient

Observation Only

Students may not be able to take part in some activities because of legislation, standards or organisational policy. In this situation students may only observe.

What are students only able to **observe**?

- *Patient Restraint – rationale MH Act
- * Medications: eg. IV Chemotherapy, IV schedule 8 Drugs, IV Cardiac Medications, IV sedation – rationale outside scope of practice, these are an extension of scope for the RN in particular to the area of work. Further education and assessment often required.

Implementation of the Traffic Light System for the Delegation of Care involves all nursing staff, including the staff development nurse and the ward/unit manager. Staff discussion about what students can and cannot do, and under what supervision must be agreed to. Through this discussion, the Traffic Light System brings consistency of the delegation of care to student nurses during their clinical placement. In teaching The Art of Clinical Supervision, participants often noted their workplace provided no direction about student delegation, and they could not comment with certainty that they delegated care in the same way as their peers. Many questioned what they 'did' or 'did not' allow a student to do, or the level of supervision provided was consistent, given the decision was made at an individual level, with no unit/ward input. This ward/hospital input only occurred through specific policies e.g.: students cannot administer intravenous cardiac medications (Russell 2013).

FEEDBACK

Feedback from the ACS participants, through ongoing survey evaluation, strongly endorses the Traffic Light System, with participants articulating it encourages discussion within the workplace, agreement on the allocation of nursing care to the different levels of supervision, and importantly provides clarification and direction for staff and students in the delegation of patient care. The following email statements are from two WA nurse educators who requested digital copies:

> *"I think this would be a fantastic tool for our nurses and instead of reinventing the wheel I was wondering if we could use your version" (2016), and "I really enjoyed the day, really keen to see a culture change, the traffic light sheet was the one we needed. We are going to mock up a clinical supervisor pack and give the guys some guidance as to where the students will be at" (2016).*

CONCLUSION

Students on clinical placement have often described their frustration over the different perspectives held by nursing staff in what they can and cannot do. One day encouraged to partake in clinical care and the next told it is outside of their scope. This lack of consistency creates a sense of frustration and confusion. Creating a forum for discussion with all staff through the use of the Traffic Light System for the Delegation of Care promotes consistency of practice.

Ensuring staff consistency in delegation ensures patient safety, and a positive learning experience for students. A student entering a workplace with Traffic Light Posters immediately portrays to the student their role in the delivery of patient care and confirms any unsure expectations about the placement opportunities for practice.

The Traffic Light System provides a tool to assist with the delegation of care to student nurses. Such tools can be useful to create a sense of consistency, reduce confusion, and wasted time in determining what a student can and cannot do. Ultimately this ensures a clinical environment that promotes safety of practice for the student, which impacts on patient care and outcomes.

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A nurses' guide to ethical considerations and the process for ethical approval of nursing research

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KEY WORDS

ethics, ethical practice, nursing research, ethics committees, evidence-based practice (EBP)

ABSTRACT

Objective
A sound knowledge of the ethical principles that guide nursing practice and research are essential for any researcher. This article provides discussion regarding the principles as well as the history behind ethical practice in the construction of nursing research. The article also breaks down the process for achieving ethical consent and includes a simplified framework to guide the process of seeking ethical approval.

Primary Argument
Nurses new to the field of conducting research may benefit from an organised structure that helps them understand the sequence of events required to gain appropriate ethical approval and ensure an ethical approach is adopted. It is crucial for all researching nurses to understand, and adhere to, already well developed nationally and globally prescribed ethical and validated research study structures to be able to achieve ethical, valid and reliable research outcomes.

Conclusion
A framework is provided within this article to outline the process of gaining ethical consent for research. The information presented in the framework is based upon the discussion within the article and may assist the nurse researcher, who is unfamiliar with the process of obtaining ethics committee consent, to plan and prepare for their research approval, in a systematic logical manner. The framework reflects the National Health and Medical Research Council (NHMRC) criteria which guides Human Research Ethics Committees (HRECs). Nursing research needs to be able to ethically contribute to the body of Evidence Based Practice.

INTRODUCTION

There are two main areas to consider regarding ethics in nursing research. Firstly, there are the principles that guide the day-to-day practice of nurses (Stephens and Brighton 2015; Nursing and Midwifery Board of Australia 2013) and secondly, the important components to remember when conducting research. This paper will therefore define and apply the six ethical principles relevant to health professionals (Lumby 2016; Stephens and Brighton 2015), discuss the historical background that underpins the relevance of adhering to codes of ethics and conduct, particularly when researching human participants (Johnstone 2016), and lastly, provide an overview of the steps required to ethically undertake nursing research and gain ethical consent from the appropriate committees.

ETHICS, ETHICAL PRINCIPLES AND ETHICAL CONSENT FOR UNDERTAKING RESEARCH

Ethics refers to the moral principles that guide decision-making and behaviour (Stephens and Brighton 2015) or how to best live a life which is moral (Johnstone 2016). Harris et al (2014) further clarify the definition of ethics as the rules and standards by which a community regulates the behaviour of its members. Moral principles, therefore, arise from beliefs about what can be considered right or wrong, which may be socially, professionally or philosophically based (Stephens and Brighton 2015). Johnstone (2016) states there is no philosophically significant difference between the terms *ethics* and *morality* which can be used interchangeably however, Atkins et al (2014, p26) disagree, believing ethics differ from morals stating that moral principles are rule-like expectations or beliefs that a person considers to be ethical. Ultimately, the main message for nurses and nurse researchers is to live, work and research ethically and to follow a “good life” from which all humans can flourish physically, emotionally, psychologically, morally, interpersonally and socially (Atkins et al, 2014, p24).

The Nursing and Midwifery Board of Australia (NMBA) (2013) has a Code of Ethics by which all nurses should abide whether practising within a hospital setting, an educational institution or whilst undertaking any research to protect the moral interests and welfare of patients (Adrian and Chiarella 2016; Johnstone and Crock 2016) and act as advocate (Epstein and Turner 2015; NMBA 2013). If a researcher is specifically undertaking human research it falls under the label of Bioethics (Stephens and Brighton 2015) which is derived from the Greek *bios* meaning life (Johnstone 2016). Bioethics refers specifically to ethics that are applied to human life or health decisions (Johnstone 2016).

Ethical consent to undertake research is given by appropriate ethics committees. As one example of ensuring researchers, pursuing publication, have adhered to National and Global ethical standards, the British Medical Journal (2017) require every research article submitted to *The BMJ* to include a statement that the study obtained ethics approval (or a statement that it was not required), including the name of the ethics committee(s) or institutional review board(s), the number/ID of the approval(s), and a statement that participants gave informed consent before taking part. In addition they welcome detailed explanations of how investigators and authors have considered and justified the ethical and moral basis of their work. Hand in hand with this is the necessity to ensure that ethical principles are acknowledged within any research undertaken as discussed below. Through rigorous procedures following ethical standards both professions show a high commitment to quality and safety (Arries 2014).

Medical practice is guided by the Hippocratic Oath (Harris et al 2014) whilst nursing practice follows six main bioethical principles that underpin professional behaviour (NHS Scotland 2017; Lumby 2016; Stephens and Brighton 2015). Firstly, *autonomy* refers to the right for a person to make their own decisions (Stephens and Brighton 2015) which basically means that people should be respected as self – determining choosers

(Johnstone and Crock 2016) and be free to act upon their preferences (Johnstone 2016). This also applies to any person who is the subject of research. Every potential subject has the right to be fully informed and the right to refuse participation (Jirojwong et al 2013; 2014). Hand in hand with this is the principle of *justice*, broadly defined or known as, fairness (Johnstone 2016; Stephens and Brighton 2015). Whether patient or research subject, the nurse or nurse researcher, needs to weigh up and prioritise but remain as fair as possible. A component of the principle of justice is the subjects right to fair treatment and equal opportunity (Johnstone 2016). Specifically, there is a right to privacy which means that, both in nursing practice and whilst undertaking research, confidentiality should be afforded to each patient or subject (NMBA 2013).

With any research, ensuring the principle of *non-maleficence*, or to do no harm, is paramount (Johnstone and Crock 2016; Stephens and Brighton 2015) which entails a stringent obligation not to injure others (Johnstone 2016). Florence Nightingale, in her Notes on Nursing, stated the first duty of a hospital "is to do the sick no harm" (Robb 2014). Research in to human subjects should, therefore, have the ultimate intention of *beneficence*, defined simply "to do good" (Johnstone and Crock 2016; Stephens and Brighton 2015, p95; Perrin 2014) which entails a positive obligation to act for the benefit of others (Johnstone 2016). This specifically entails that the research ensures the subjects have freedom from harm, freedom from coercion and the risk of exploitation is avoided (Perrin 2014). The researcher should weigh up the risk to benefit ratio. There needs to be clear understanding of the risks and benefits that may be incurred in a study.

The remaining two principles are *fidelity* and *veracity*. Fidelity is to be faithful to agreements and promises (Stephens and Brighton 2015) which links strongly to ensuring the patient, or subject, remains autonomous and fully informed. Veracity refers to telling the truth (Stephens and Brighton 2015). The ethical nurse, or nurse researcher, is able to explain the rationale behind every action and recognises standards to be upheld. As nurses are accountable for their actions it is essential that these principles are understood and the research process follows accordingly (Adrian and Chiarella 2016; NMBA 2013;).

HISTORICAL BACKGROUND

Nursing codes for professional practice and ethics have been developed over the years to protect both the nurse and the patient or client. Codes underpin morality and consequently permission from an ethics committee is a pre-requisite to carrying out any research on human subjects (Liamputtong 2013). This requirement has been established due to a long and harrowing background of unethical behaviour and research that serves to highlight the enormous relevance and importance of human consent (Slowther et al 2006).

One of the most notorious examples of unethical medical research was carried out during the Second World War (WWII) in Germany by Dr. Josef Mengele, who became known as the Angel of Death (United States Holocaust Memorial Museum 2016; Cefrey 2001) or the 'White Angel' because of his coldly cruel demeanour (United States Holocaust Memorial Museum 2016). His experiments became infamous because of his interest in experimenting on twins (Cefrey 2001, p11). It is known that 1,500 pairs of twins were subjected to immoral research (Liamputtong 2013). Mengele's practice included injecting dye in to the eyes of the twins in a bid to change their colour (United States Holocaust Memorial Museum 2016). This was an attempt to ensure the future of the Aryan race desired by Hitler – tall, blonde with blue eyes (United States Holocaust Memorial Museum 2016). Twin research was seen as an ideal tool in weighing the variant factors of human heredity and environment. Mengele, with his mentor, had performed a number of legitimate research protocols using twins as test subjects throughout the 1930s. Now, at Auschwitz, with full license to maim or kill his subjects, Mengele performed a broad range of agonising and often lethal experiments with Jewish and Roma ('Gypsy') twins, most of them children (United States Holocaust Memorial Museum 2016).

Following WWII many members of the Nazi regime were brought to trial however Mengele managed to escape (Cefrey 2001). The Nuremberg Trials commenced in December 1946 (Jirojwong et al 2013), lasting until 1949, in response to the Nazi experimentation on innocent people who did not consent to participation in atrocious experiments during the Third Reich/Nazi regime (Jirojwong et al 2013; Slowther et al 2006). From the trials came the seven Nuremberg Principles which now form the bedrock of modern international criminal law and justice (International Nuremberg Principles Academy 2016). The formation of the principles led to the Nuremberg Code to control future trials involving human subjects, a set of research ethics principles for human experimentation. There are ten specific points in the Nuremberg Code that serve as a standard against which to measure individuals rights when participating in experimental and clinical research. The first point specifies the voluntary consent of human beings is absolutely essential (United States Holocaust Memorial Museum 2016). The fourth point is significant in that it asserts any experiment should avoid all unnecessary physical and mental suffering and injury (United States Holocaust Memorial Museum 2016).

Following the Nuremberg Code came the Declaration of Geneva (1948), a revision of the Hippocratic oath, which states “A physician shall act in the patient’s best interest when providing medical care”. The World Medical Association (WMA) developed the Declaration of Helsinki, which was adopted by the 18th WMA General Assembly in Helsinki in Finland, in June 1964 (WMA 2016). It contains 37 basic aims and principles for human research including research on identifiable human material and data (WMA 2016). The contents of the Nuremberg Code, and following declarations have, over the years, been filtered through to every profession to accept the responsibility of a Code of Ethics.

However, despite the promise of ethical behaviour in research, trials still went ahead which were immoral and unjust. There are many known unethical research studies which have left the non-consenting participants damaged beyond repair or dead (Brandt 2012). Disrespect for human life and paternalism are clearly evident in the following example of immoral research, namely the USA Government Tuskegee Syphilis Study. Paternalism by definition is where there is a relationship of uneven power between the recruiter and the individuals being recruited (Perrin 2014). The Tuskegee Syphilis Study was held between 1932-1972 and investigated the effect of syphilis on approximately 399 poor African Americans plus 201 as a control group (Perrin 2014; Liamputtong 2013; Brandt 2012). The men were never told they were in a research study and did not receive proper medical care to treat the syphilis (Perrin 2014). Treatment was deliberately withheld to study the course of the untreated disease despite penicillin having been found to be the cure in 1947 (Liamputtong 2013) and widely available in the 1950’s (Brandt 2012). By the end of the study only 74 were alive, 28 had died directly of syphilis, a 100 due to related complications, 40 wives were infected and 19 children had been born with congenital syphilis (Perrin 2014). On 16 May 1997, after 65 years, President Clinton apologised for the USA Government’s syphilis study in Tuskegee but the lack of respect for autonomy and indifference to informed consent left a legacy of mistrust (Perrin 2014).

Another later example of unethical behaviour is the prescribing and use of the medication Thalidomide. Thalidomide was marketed in the late 1950’s as a wonder drug – a tranquiliser, pain killer, used for insomnia, coughs and headaches (Hajar 2011). It was given to pregnant women to help with morning sickness and was considered safe however more than 10,000 children in 46 countries were born with malformations or missing limbs (Woodruff Library 2016; Hajar 2011). No animal studies had been conducted to investigate the safety of Thalidomide on the unborn child (Hajar 2011). Many of the victims of Thalidomide did not survive more than a year. Later, Thalidomide underwent rigorous testing. On 26 May 2006, the U.S. Food and Drug Administration (USFDA) granted accelerated approval for Thalidomide (Thalomid), in combination with dexamethasone for the treatment of newly diagnosed patients with multiple myeloma (MM) (USFDA 2015). Thalidomide has also been found to reduce multiple symptoms commonly associated with cancer-related anorexia and improved quality of life (Davis et al 2012).

Given this background, it is essential, when choosing your topic, the nurse researcher needs to consider vulnerable subjects such as the elderly, children, people who are mentally, physically or emotionally disabled, people who are institutionalised, pregnant women or anyone in a position of limited power or input (Johnstone and Crock 2016; NMBA 2013). The nurse and nurse researcher can play a significant ethical role in supporting the person's trust and ensuring they are unharmed and their vulnerability is not further undermined (Atkins et al 2014; Slowther et al 2006). This has long been acknowledged as an important component of nursing and nursing research.

Nurse educators in the late 1980's such as Leino-Kilpi and Tuomaata (1989) noted scientists and scholars were paying more attention to the problems of research ethics. They stated two key questions in data collection were the accuracy with which the research design was followed and the treatment of the subjects who were the sources of information. The authors noted the most important requirement in the publication of research results is the necessity for honesty (Leino-Kilpi and Tuomaala 1989). Some years prior to their observations Sheehan (1985, p336) discussed that honesty is basic to all human relationships and whilst there may be conflicting interests, potential conflict and tension in both nursing practice and research, nursing in all its guises must be able to fundamentally sustain constant reflection and eternal vigilance to ensure moral integrity. This observation also applies to the storage of data ensuring patient confidentiality and protection from unwanted public viewing and hacking. When a nurse chooses to research they must make a moral commitment to care for all patients (Lachman 2012).

APPROACHING AN ETHICS COMMITTEE

The role of Human Research Ethics Committees (HREC's) is to make fair and just decisions to protect human subjects (Liamputtong 2013). Historically, in Australia, the Medical Council issued a statement in 1966 in a direct response to Helsinki, to make it a requirement that all proposed research involving human subjects be examined by an institutional ethics committee (Liamputtong 2013, p28). By 1985, human research without permission from an appropriate ethics committee could not be provided with public funding. This was followed by the establishment of The National Health and Medical Research Council (NHMRC) in 1992 which has established further guidelines including that an ethics committee be made up of research, health and social care professionals, a lawyer, lay members and someone from the pastoral community (Liamputtong 2013, p28; Hunter New England Local Health District 2016). Ethics Committees within hospitals have levels of research requiring different reviews from a HREC from low and negligible risk (LNR) to non-research activity which may simply be a presentation on medical procedures (Hunter New England Local Health District 2016).

There are more than 200 HRECs in institutions and organisations across Australia. They play a central role in the Australian system as they review research proposals involving human participants to ensure that they are ethically acceptable and in accordance with relevant standards and guidelines. In undertaking this role, HRECs are guided by relevant standards. Standards include those outlined in the National Statement on Ethical Conduct in Human Research issued by NHMRC. Researchers, Institutions and Human Research Ethics Committees (HRECs) are advised to use the NHMRC web site to ensure they are accessing the current version of the National Statement, and to check regularly for updates (NHMRC 2017). They also provide access to the appropriate forms for ethical consent of a research proposal as outlined in table 1.

CONCLUSION

Every nurse and nurse researcher has a duty to ensure they uphold the ethical principles to safeguard their patients (NMBA 2013). An appreciation of the history behind the development of codes of conduct and ethics can only reinforce the importance of ensuring patient safety when undertaking research. Following appropriate guidelines and making certain the correct avenues are followed for gaining ethical research consent and permission will aid in protecting participants and researchers from inappropriate research. The framework below has been designed to simplify the process of gaining appropriate ethical consent to undertake research.

Table 1: Ethical considerations and the process for ethical approval of nursing research

Choosing your topic	What are the ethical implications of the topic for research? Think about power relationships and patient vulnerability. How will you ensure your participants are protected from harm? Consider the six ethical principles and how they are addressed in your research.
Choosing your research design	Will it be qualitative or quantitative? Think about how you will gain consent? Depending on the design this may be done electronically, face to face or through mail drop. How will you maintain privacy, anonymity and confidentiality? Think about your sample of respondents and their specific cultural, religious and language needs.
Approaching an ethics committee	This depends on your research topic and audience. You may need to approach a university ethics committee or a hospital based one. Find out from your supervisors who you need to approach.
Ethics forms and approaching your participants	The NHMRC (2017) provides information on Human Research Ethics Application (HREA) Resources at https://www.nhmrc.gov.au/health-ethics/human-research-ethics-application-hrea. Researchers of all disciplines can complete forms available on the website for submission to the appropriate HREC. Universities and hospitals are the most likely to have a Human Research Ethics Committee (NHMRC 2017). You will be asked to use the Human Research Ethics Application found at https://hrea.gov.au/ with a support site found at https://www.nhmrc.gov.au/health-ethics/human-research-ethics-application-hrea/hrea-support? The Aboriginal Health and Medical Research Council of NSW (2017) operates as a HREC to assess research proposals affecting the health and wellbeing of Aboriginal people and communities in NSW. You can find this information if you follow the link: http://www.ahmrc.org.au/ethics.html Standardised participant and information consent forms can be accessed from NHMRC at https://www.nhmrc.gov.au/health-ethics/national-approach-single-ethical-review/standardised-participant-information and hospital based HRECs, such as NSW Health (2017) have online information, found on the Intranet http://www.health.nsw.gov.au/ethics/Pages/contacts-hrecs.aspx including Participant Consent Forms. Other specific districts, such as Sydney Local Health District, have websites explaining how to access information from their Research Ethics and Governance Office http://www.slhd.nsw.gov.au/RPA/Research/
Storage of data	Where will you store your data? Think how you can keep it safe from public viewing or potential hacking. Is it safe, secure and backed-up? Will you be able to access it in 1 year, 2 years, 5 years? How will you ensure you remember the specifics of the data? Can it be made available for archiving, discovery, and possible publication or reuse?

(Aboriginal Health and Medical Research Council of NSW 2017; Hunter New England Local Health District 2017; NHMRC 2017; Deakin University 2015; Jirojwong et al 2014; 2013).

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Assessment and management of acute pain in older people: barriers and facilitators to nursing practice

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KEYWORDS

pain, ageing, older person, acute, nurse

ABSTRACT

Objective
The aim of this review was to examine the pain management practices of nurses, and identify barriers and facilitators to the assessment and management of pain for older people, within the acute hospital setting.

Design
Integrative literature review.

Setting
Acute care for inpatients in a tertiary hospital.

Subjects
Older people defined as 65 years of age or over.

Primary argument
A nurse's individual practice was found to significantly influence how pain is managed in the older patient; this encompassed nurses attitudes, communication, documentation, and the use of pharmacological and non-pharmacological strategies. Nurses' ability to provide optimal care was found to be influenced by organisational factors such as workforce planning and the workplace environment. Provision of knowledge and skills to both nurses and older patients through education was found to facilitate better pain management; whilst a model of care whereby the nurse has authority and the patient is perceived as a passive recipient, was found to be a hindrance to optimal pain management outcomes.

Conclusion
Findings indicate that nurses need to improve communication with older patients, increase their knowledge of pain assessment and management principles in regards to this population, and have a greater awareness of human and social influences. Whilst organisational factors can impact upon nursing care, pain management needs to be highly prioritised and promoted as essential. Targeted education is required to overcome many of the identified barriers, and is a key recommendation from this review.

INTRODUCTION

Populations are rapidly ageing worldwide (World Health Organization 2015). The progressive loss of function associated with ageing often carries a significant burden of pain; in the acute hospital system, older people have the highest rates of hospitalisation, surgery, injury and disease (Gibson and Lussier 2012). Therefore it is imperative that health professionals are familiar with pain management approaches for the older person (Herr 2010).

The negative effects of pain can be particularly compromising in the older patient (Wells et al. 2008), and management strategies differ significantly from other groups (McLeish et al 2009). As well as the physiological changes associated with ageing, older people may have co-morbidities, sensory or cognitive impairments, and/or be taking multiple medications (Prowse 2006).

Pain management in the acute hospital setting is primarily a nursing responsibility (Prowse 2006). Effective treatment of pain should be achievable for all (Catananti and Gambassi 2010); however it is well documented that pain in older patients is frequently poorly managed (Halaszynski 2013; Herr 2010). In the acute hospital setting, multiple audits conducted have shown that pain management for the older patient is inadequate (Mehta et al 2010; Niruban et al 2010; Herr and Titler 2009; McLeish et al 2009; Eid and Bucknall 2008; Hwang et al 2006).

Previous literature reviews have explored the prevalence of (Prowse 2006) and health professionals contribution towards (Brown 2004) postoperative pain in older people; both identified there is little research focused on older people within the acute hospital setting (Prowse 2006; Brown 2004). This review sought to review current literature, and further explore the assessment and management of pain for the older patient within the acute hospital setting, with an aim to identify both barriers and facilitators to nursing practice.

METHODS

The integrative review method allows the combination of quantitative and qualitative studies, drawing together various perspectives of the phenomenon of concern (Whittemore and Knafl 2005). The Joanna Briggs Institute [JBI] (2014) review guidelines were followed. The literature search was limited to articles published between January 2004 and March 2014, and available in the English language. Databases searched were: Medline, Pubmed, CINAHL, Proquest Nursing Database, the Cochrane Library, Joanna Briggs Institute [JBI] and Psychinfo. The internet search engine www.googlescholar.com was also accessed.

Keywords:

Aged, elderly, geriatric, gerontology, older person*, older adult*, older people

Acute setting*, acute hospital, inpatient*

Nurs*, nursing, nursing assessment, nursing management

Acute pain, pain score, pain scale, pain assessment, analgesia, post-operative, postoperative, surgical pain, self-report, pain management

Included studies were required to focus solely on adults aged 65 and above, as well as pain management. Studies were required to have been conducted within the acute or sub-acute inpatient tertiary hospital setting; studies conducted within specialty areas such as emergency departments were included. Studies were also required to examine the practice of nurses; studies that also looked at other health workers were able to be included if the data regarding nurse participants was grouped separately.

Due to differences in physiology and management, studies on chronic or cancer pain were excluded. As many older people have some cognitive impairment (Halaszynski 2013), it was decided to only exclude studies that focused on moderate to severe dementia. Studies that focused on community care or nursing homes were excluded. Whilst ethical approval was not required for this review, the included studies were examined for ethical considerations.

Retrieved studies were assessed for methodological quality using the JBI (2014) critical appraisal tools which corresponded to the respective methodology of the studies. Studies were subject to a secondary review by the second and third authors; those which met less than seventy percent of criteria were excluded.

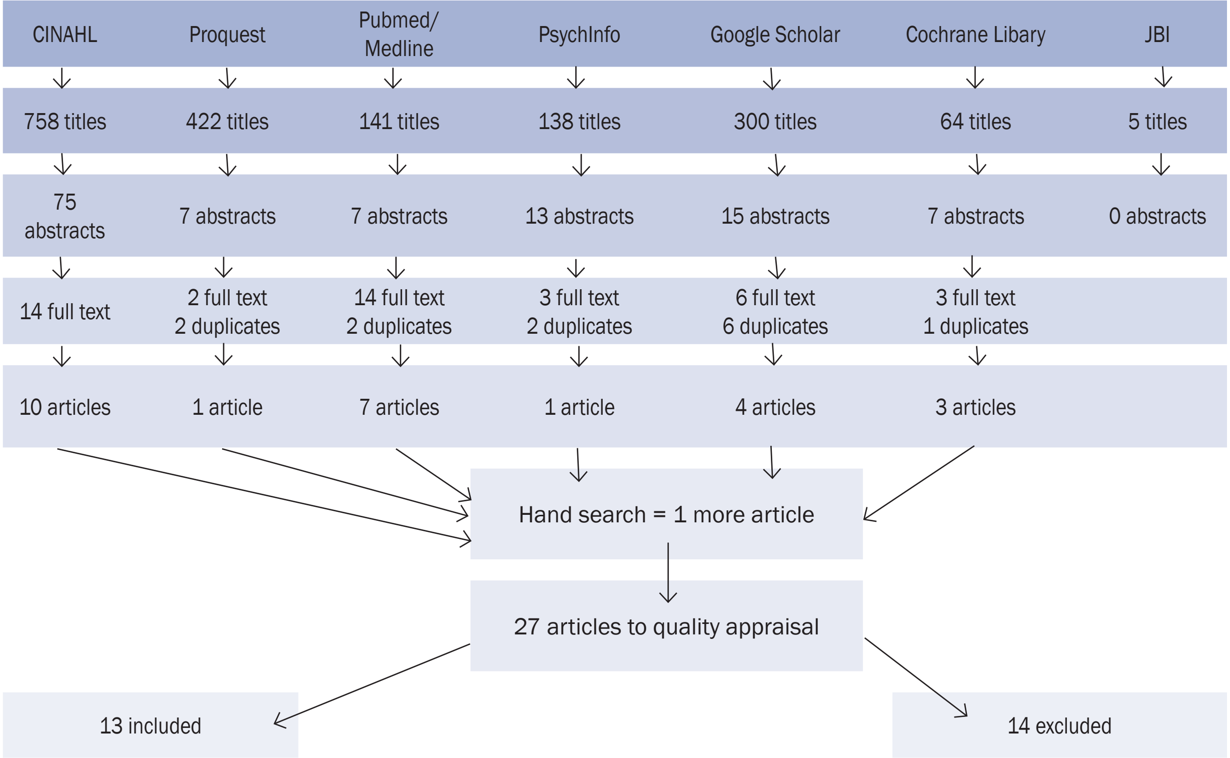
Standardised JBI (2014) data extraction forms were used to extract key findings that were relevant to the review objectives. A thematic analysis approach was taken (Whittemore and Knafl 2005). All extracted findings were reviewed and grouped into a set of conclusions, on the basis of similarity in meaning. These conclusions were then analysed into themes, which were then grouped into categories according to sufficient similarity in themes, to form a single set of synthesised findings.

RESULTS

The results of the search strategy are presented in figure 1. Twenty-seven articles were sourced of which thirteen were included in the review. Across these studies, a total of 9,161 older patients, and 756 nurses were represented. A total of one hundred and one findings were extracted from the thirteen studies. These findings were synthesised into fourteen themes, which were grouped into four categories; nursing practice, organisational factors, knowledge and education, and power balance.

Fourteen studies were excluded; five were audits which did not identify specific barriers or facilitators to pain management for the older patient. A further six studies, and two expert opinion papers, were excluded as they did not meet inclusion criteria. One study was found to use research findings that were already included in the review.

Figure 1: Search strategy table



CINAHL	Proquest	Pubmed/ Medline	PsychInfo	Google Scholar	Cochrane Libary	JBI
758 titles	422 titles	141 titles	138 titles	300 titles	64 titles	5 titles
75 abstracts	7 abstracts	7 abstracts	13 abstracts	15 abstracts	7 abstracts	0 abstracts
14 full text	2 full text 2 duplicates	14 full text 2 duplicates	3 full text 2 duplicates	6 full text 6 duplicates	3 full text 1 duplicates	
10 articles	1 article	7 articles	1 article	4 articles	3 articles	

Table 1: Synthesised Results

Category	Themes	Number of Findings Extracted from Studies
Nursing practice	Attitudes of nurses	N= 6
	Communication between nurses and older patients	N=11
	Documentation of pain assessment findings	N=6
	Pharmacological strategies in pain management	N= 4
	Non-pharmacological strategies in pain management	N=6
Organisational factors	Collaboration within the multi-disciplinary team	N=5
	Cultural factors in the workplace	N=9
	Workforce planning	N=8
Knowledge and education	The impact of nursing education	N=9
	Nurses' knowledge, confidence, and experience.	N=7
	The complex needs of the older patient	N=8
	Patient knowledge and education	N=7
Power balance	Patient perceptions and expectations	N=12
	Nursing authority	N=4

Category one: Nursing practice

Four studies described attitudes of nurses that negatively influenced the assessment and management of pain in the older patient (Manias 2012; Coker et al 2010; Brown and McCormack 2006; Sauaia et al 2005). Nurses were observed to avoid and not respond to indicators of pain in older people (Manias 2012; Brown and McCormack 2006) and did not always believe the patient's self-report of pain (Manias 2012; Coker et al 2010; Sauaia et al 2005).

Communication was identified as an important influencing factor that negatively impacted upon pain management. Nurses used vague, ambiguous language when asking older adults about their pain (Manias 2012; Brown and McCormack 2006). Furthermore, assessment often lacked any in-depth questioning (Herr et al 2004) and for those patients with communication barriers, nurses did not always alter their approach (Manias 2012; Brown and McCormack 2006). Nurses' perceptions of pain intensity correlated poorly with patient reports (Coker et al 2008), and nurses demonstrated limited awareness of patients' pain, often missing cues that should have prompted further assessment (Manias 2012; Brown and McCormack 2006).

From the nurses' perspective, patient communication was reported to be a significant barrier to pain assessment (Herr et al 2004). Older patients often had trouble using pain assessment tools (Coker et al 2010), and the use of different language by older patients to describe pain, such as 'discomfort', was noted, which can potentially mislead the nurse into thinking that the pain is tolerable (Manias 2012; Coker et al 2010).

Documentation of a pain assessment was found to significantly improve the odds of a prescription for analgesia in older patients (Iyer 2011). Whilst identified as a potential facilitator, documentation may also be a barrier to pain management if it is not being completed to an adequate standard. Nursing documentation of pain assessment and management was found to be sub-optimal (Iyer 2011; Coker et al 2010; Coker et al 2008), particularly in those over seventy (Iyer 2011).

A lack of consistency in the use of pharmacological strategies in nursing practice was a further barrier to pain management (Manias 2012; Coker et al 2010; Gregory and Haigh 2008). The analgesia patients received was dependent upon each individual nurse; findings indicated that nurses preferred to utilise fixed-dose analgesia only, and can be reluctant to administer Pro-Re-Nata [PRN] analgesia (Manias 2012; Coker et al 2010; Gregory and Haigh 2008).

The use of non-pharmacological strategies was identified as a potential facilitator to managing pain in older patients (McCaffery and Locsin 2006). However, nurses also reported that non-pharmacological methods of pain relief were unavailable for them to use (Coker et al 2010). Findings within this theme were not homogenous; some indicated that nurses use non-pharmacological interventions regularly (Manias 2012; Sauaia et al 2005) whilst others found little use at all (Brown and McCormack 2006).

Category two: Organisational factors

Nurses in the acute hospital setting work as part of a multi-disciplinary team; the effectiveness of communication between team members may impact upon the care given to the older patient (Iyer 2011; Coker et al 2010; Brown and McCormack 2006). Nurses identified communication with medical staff as a barrier to pain management (Coker et al 2010; Brown and McCormack 2006) and their reliance on prescriptions from doctors sometimes limited what they could administer (Iyer 2011).

The culture of the acute care setting may be defined as “a sense of what is valued and how things should be done” (Scott-Findlay and Estabrooks 2006, pp.499). Nursing practice within the acute hospital setting is often regimented and task-orientated which may contribute to a lack of in-depth assessment and individualised care (Manias 2012; Brown and McCormack 2006). Findings also indicated a culture of reluctance amongst nurses and physicians to give strong analgesia to older patients (Manias 2012).

Observational findings suggested that the ability of nurses to deliver adequate patient care was influenced by staffing levels and availability (Manias 2012; Coker et al 2010; Brown and McCormack 2006). It was also found that disorganised and fragmented nursing practice contributed to the under-management of pain (Coker et al 2010; Brown and McCormack 2006). Tasks such as double checking medications (Coker et al 2010), and frequent interruptions when performing tasks, interfered with pain management and were deemed to be the result of workforce planning (Brown and McCormack 2006).

Category three: Knowledge and education

Three studies found that a lack of education may be a barrier, and the promotion of education a facilitator to improving pain management (Manias et al 2011; Jackson 2010; Titler et al 2009). Education provided to nurses covered evidence-based material relevant to pain management of the older patient, as well as the importance of documentation; this resulted in improved nursing practice, and better pain control for patients (Manias et al 2011; Jackson 2010; Titler et al 2009).

Nurses’ knowledge and experience can influence how they manage pain; some nurses were found to have inadequate knowledge of analgesics (Gregory and Haigh 2008), and in situations where pain was poorly controlled in older patients, nurses appeared to have little confidence and management strategies (Brown and McCormack 2006). Conversely, Herr et al. (2004) concluded that nurses may be aware of best practice principles, but not necessarily implement these in practice.

Multiple co-morbidities added complexity to the process of pain assessment and management for older people (Manias 2012; Coker et al 2010). The presence of confusion in older patients was found to be challenging for nurses, and a significant barrier to pain management (Manias 2012; Coker et al 2010). Coker et al (2010) found that nurses with less experience were more likely to identify this as a barrier than senior nurses.

The older patients' level of knowledge may influence pain management, as they often received little education and/or involvement in decision making (Brown and McCormack 2006). Findings suggested that they may hold misconceptions such as fear of addiction or side effects, which can lead to anxiety and reluctance to take analgesia (Manias 2012; Coker et al 2010; Brown and McCormack 2006; Sauaia et al 2005).

Category four: Power balance

In a therapeutic relationship, when the patient puts their trust in a nurse, the resultant influence should enable patients to be empowered, rather than controlled (Stein-Parbury 2013). This concept emerged as two themes; patient's perceptions and expectations, and nursing authority.

Patient perceptions of nurses and expectations of care, may contribute to their pain being poorly controlled. Findings indicated a paradoxical relationship between pain severity and satisfaction with pain management; older patients appeared to have an expectation of severe pain (Sauaia et al. 2005). Under-reporting of pain was also identified; contributing factors included a fear of bothering busy nursing staff, being viewed as a nuisance, and a perception that nurses can only give analgesia at set times (Coker et al 2010; Coker et al 2008; Brown and McCormack 2006; Sauaia et al 2005).

Findings indicated that nurses may misuse the authority they have over the patient when making decisions, which can impact upon pain management (Manias 2012; Brown and McCormack 2006). Nurses were observed using dismissive, scolding language with older patients (Brown and McCormack 2006), excluding patients from decision making, and adopting a policing role when administering analgesia, aiming to give as little as possible (Manias 2012).

DISCUSSION

Nursing practice

This review identified that attitudes and perceptions of nurses towards older patients can impact upon pain management. When health professionals are regularly exposed to people in pain, responsiveness can decrease (Rupp and Delaney 2004); this may explain the observed lack of engagement. However, the needs of older people are often given lower priority than younger patients; such attitudes develop unconsciously over time from social and cultural influences (Higgins et al 2007). To address this, health professionals should maintain an awareness of their own personal beliefs and biases, and examine how these may influence their practice (Dunwoody et al 2008).

A lack of comprehensive and individualised pain assessment has been identified as a barrier to pain management. Older adults commonly experience sensory and cognitive deficits, may need more time to answer questions, and may use different language to describe pain (Butler-Maher et al 2012). Nurses should therefore consider using synonyms for pain and take an in-depth approach, which encompasses self-reported data and observations of pain-related behaviour (Hadjistavropoulos et al 2007).

The prescribing of PRN analgesia is common practice in acute settings; nurse's knowledge and utilisation of this can be sub-optimal, a finding supported by other research (Gordon et al 2008; McCaffery et al 2007). Whilst PRN analgesia allows flexibility in meeting individual requirements, fixed -dose prescribing may improve analgesic administration rates (Eid and Bucknall 2008). Older patients experience more adverse effects than younger patients, and may have lower opioid requirements, therefore a multi-modal approach is recommended whereby a combination of medications are used at a reduced dose, to maximise analgesia and minimise side effects (Halaszynski 2013; MacIntyre and Schug 2007).

The use of non-pharmacological strategies may potentially improve pain management. The findings here were not homogenous; however it is recommended that non-pharmacological strategies, including cognitive-behavioural as well as tactile methods, be part of the treatment plan for pain in older adults (Butler-Maher et al 2012). Documentation of pain assessment may also facilitate better pain control (Iyer 2011); unfortunately this was found to be sub-optimal in nursing practice; a finding supported by other research (Eid and Bucknall 2008; Niruban et al 2010).

Organisational factors

A culture of reluctance to give strong analgesia to older patients was identified; this may be reflective of societal fears and attitudes around opioids (Rupp and Delaney 2004). Whilst older patients are more susceptible to the adverse effects of opioids, the chances of addiction and misuse are usually low (American Geriatric Society 2009). Hence such misconceptions and knowledge deficits held by some health professionals need to be addressed for optimal pain relief to be achieved (Horgas et al 2012).

Findings indicate that nurses may be limited by inadequate prescriptions for analgesia (Coker et al 2010; Brown and McCormack 2006). However Herr and Titler (2009) found that even when opioids were charted, they were often not administered by nurses. More effective collaboration between nursing and medical staff is recommended to ensure timely prescriptions as well as the safe and effective utilisation of analgesia (Herr and Titler 2009).

High nurse workloads, time pressures, staffing issues, distractions and interruptions can all impact upon the nurse's ability to manage pain (Campbell 2013). A potential problem with this is that nurses may be more regimented in their approach and assess patients in a routine manner (Stein-Parbury 2013). Both organisations and individual nurses should promote individualised care rather than ritualistic practice; however when time is short, this can be difficult to achieve (Campbell 2013).

Nurses may feel pressured to complete tasks within a certain time frame; this can moderate their patience and tolerance to older patients (Higgins et al 2007). The institution itself has a responsibility to provide adequate resources (Horgas et al 2012); however it needs to also be highlighted that each individual carries a legal, ethical and professional obligation to provide an adequate standard of care (Jones and Schofield 2011). Whilst time pressures are a barrier to pain management, the vulnerability of older adults may contribute to their needs not being prioritised (Higgins et al 2007).

Knowledge and Education

A nurse's previous experience and knowledge may impact upon how pain is managed in the older patient. To improve practice, nurses must feel supported, confident and competent in their abilities, and have access to resources. The provision of education for nurses may be key in improving these factors. Education provided to nurses has resulted in improved practice, reduced perception of barriers, and better patient outcomes (Jackson 2010; Titler et al 2009).

Poor health literacy amongst older patients was also identified as a barrier; the provision of accessible information to patients can be a significant factor in achieving effective pain relief (MacIntyre and Schug 2007). In older patients particularly, education may be helpful in addressing historical misconceptions and fears around opioids (Brown et al 2013). Whilst not every patient may want to be involved in their care, by giving them access to information, as well as support, nurses can promote both self-efficacy and health literacy.

Power Balance

This review highlighted the power imbalances that can occur in practice. When admitted to hospital, older people are vulnerable; they may be unwell, in pain, experience feelings of isolation and have poor social supports (MacIntyre and Schug 2007). Hadjistavropoulos et al (2007) stated that “the single most important psychological mediator relevant to pain is the individual’s perception of control” (pp32). Nursing practices identified in this review mimic a model of care where the nurse has the authority and the patient is a passive recipient (Stein-Parbury 2013). This model is discouraged in favour of a more holistic approach which promotes patient autonomy, self-determination and participation in decisions (Brown 2010).

Older patients have a tendency to under-report pain; this may be related to multiple factors, including their expectations of pain and stoicism (Jones and Schofield 2011; Dunwoody et al 2008). They may trust that the nurse will do all they can to manage their pain, have a fear of being viewed as a burden (Brown and McCormack 2006), and also fear the meaning of pain which could result in interventions, longer hospital stays, and a loss of independence (Hadjistavropoulos et al 2007). The promotion of self-efficacy is particularly relevant to older patients who may passively wait to be asked about pain. To address this, nurses need to be aware of their influence, and encourage patient participation (Butler-Maher et al 2012).

RECOMMENDATIONS

Findings from this review indicate that nurses need to improve their communication and interactions with older patients, as well as their knowledge of pain assessment and management principles. The implementation of compulsory in-service education on pain management with a specific focus on the older person is recommended. Such education should also cover barriers to pain management, assessment principles, the use of PRN and multi-modal analgesia, and the importance of documentation.

In order to address issues of power imbalance between nurses and older patients, the culture of nursing needs to be addressed. Education must therefore include discussions around the social construct of the older person, and the influence that nurses own attitudes, beliefs and values, as well as the culture of the ward, can have on the care that older patients receive. Nurses need to examine their own beliefs and attitudes; Higgins et al (2007) suggests a critical humanistic approach to education, with the use of case studies, to help nurses be more aware of the way they talk and think about older people.

In order to address the organisational factors that impact upon nurse’s ability to provide individualised care, strategies are needed to optimise resources. A commitment to improve pain management practices is needed at both management and ward levels; patient-centred individualised care, rather than ritualistic practice, needs to be promoted within institutions. Pain management interventions need to be highly prioritised and seen as essential; the development of evidence-based guidelines, pathways and compliance standards, specific to pain management in the older person, may encourage nurses to be more aware of their accountability and improve their practice.

The studies in this review were predominantly focused on nurses’ views and experiences, with only minimal representation of the older patients perspective on pain management in the acute setting. The authors therefore also recommend further research with a focus on the older persons perspective, in order to better identify their specific needs.

LIMITATIONS

It is possible that not all relevant studies were identified as this review was limited to studies printed in the English language. Had other languages been included, the findings of the review may have been strengthened.

CONCLUSION

The assessment and management of pain for the older patient is complex and multi-faceted, and remains a challenge within the acute hospital setting. This review has identified a need to improve multiple aspects of nursing practice. Whilst organisational barriers were noted to impact upon nursing care, pain management for the older patient needs to remain a high priority in the acute setting. Nurses must engage older patients in their care, communicate effectively, complete comprehensive pain assessments, and be aware of their own beliefs and biases that can impact upon practice. Through the identification of barriers and facilitators, this review has identified a need for nursing education, and the promotion of individualised effective pain management within institutions, to overcome these barriers and promote better outcomes for the older population.

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Potential drug–drug interactions in children with acute lymphoblastic leukaemia: a cohort study

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KEYWORDS

drug interaction; polypharmacy; precursor cell lymphoblastic leukaemia-lymphoma; neoplasms; paediatrics.

ABSTRACT

Objective
To evaluate the potential drug interactions in patients with acute lymphoblastic leukaemia in the remission induction period of treatment.

Design
A prospective cohort study.

Setting
A tertiary referral centre.

Subjects
Twenty-two children undergoing treatment for acute lymphoblastic leukaemia. The median age was 4.5 years (minimum of 1 and maximum of 18 years) with male predominance (54.4%).

Main outcome measure
Presence of potential drug interactions in patients undergoing treatment for precursor cell lymphoblastic leukaemia-lymphoma. The potential drug interactions term refers to the ability of a drug to affect the pharmacologic intensity as well as the therapeutic effect of another and cause adverse reactions, as well as the possibility of clinical manifestations.

Results
All participants were exposed to at least one potential drug interaction. About 60% of interactions classified as more severe. Every new drug included in the treatment increased the chance of potential drug-drug interactions by 0.4 times.

Conclusion
These results demonstrated the patients under chemotherapeutic care for lymphoblastic leukaemia-lymphoma have high potential for drug interactions of greater severity.

INTRODUCTION

After accidents, paediatric cancer is the second leading cause of infant mortality. About 1,250 children younger than 15 years old are expected to die from cancer in 2016. The acute lymphoblastic leukaemia accounts for 30% of all malignant neoplasms in children and 75% of all childhood acute leukaemia's (de Lima et al 2016; Jiménez de Samudio et al 2016; Cazé et al 2010).

The treatment period of acute lymphoblastic leukaemia is at least two years and is characterised by long periods of hospitalisation. In the first stage of treatment, named remission induction, patients undergo high-dose chemotherapy aiming for complete clinical remission of the cancer. Due to this treatment regimen, myelosuppression and other related clinical complications occur (Loghavi et al 2015; Pui et al 2015; You et al 2015).

The concomitant use of numerous medications is essential, making the incidence of polypharmacy inevitable. This is characterised by the use of five or more drugs generally used for the purpose of avoiding or reducing undesired effects and complications of treatment (Gillette et al 2015; Secoli 2010). The need to use polypharmacy makes it essential to assess potential drug–drug interactions (PDDI) related to its administration, as most drugs have interactive potential; this subject is not often discussed in the practice of health professionals (de Lima et al 2016; Sharifi et al 2014).

Drug interaction occurs when there is interference with the effect of a drug due to prior or concomitant administration of other drugs or food. Healthcare providers rarely consider potential drug interactions as a factor that may be responsible for ineffective therapy (Dai et al 2016; Miller et al 2015; Payne et al 2015).

Therefore, it is essential for the healthcare team to reflect on PDDI as they are responsible for the prescription and administration of medications, thus playing an important role in identifying potential drug interactions or reducing adverse reactions of these interactions (Dai et al 2016; Miller et al 2015; Payne et al 2015). Therefore, this study aimed to evaluate the potential drug interactions in children with acute lymphoblastic leukaemia in the remission induction period of treatment.

METHOD

This is a prospective cohort study conducted in the cancer centre at the University Hospital of the Federal University of Santa Maria, Santa Maria, Brazil, from April 2013 to April 2014. This is a reference centre in paediatric hemato-oncology for the southern region of Brazil. The study was approved by the Ethics Committee of the Federal University of Santa Maria.

A consecutive sample was composed of all patients with first hospitalisation during the data collection period, with confirmed diagnosis of acute lymphoblastic leukaemia. The choice of patients at first admission is justified by the fact that these patients are hospitalised for at least 30 days.

Data were collected daily by the researcher, using a questionnaire composed by demographics data, patient identification (name, age, and gender), data on hospitalisation (date of admission and length of stay), and information on prescription drugs (name, dose, route, administration times, and drug use time).

The dependent variable is the presence of PDDI. The PDDI term refers to the ability of a drug to affect the pharmacologic intensity as well as the therapeutic effect of another and cause adverse reactions, as well as the possibility of clinical manifestations (Secoli 2001).

Drugs were initially classified according to the Anatomical Therapeutic Chemical (ATC) of the World Health Organization, which allows active substances to be divided into different groups according to the organ or system in which they operate and their therapeutic properties, both pharmacological and chemical. For the identification of PDDI, level 5 of the ATC, which corresponds to the chemical, was used (WHO 2013).

All drugs have been included for analysis of potential drug interactions, using the electronic database (Micromedex® Healthcare Series). This database allows the user to sort the potential drug interactions by second gravity, evidence, and onset of effect. Additionally, no description of the clinical impact of drug interactions is given (Hutchison et al 2003).

Descriptive statistics were used to present potential drug interactions. Linear logistic regression was used to obtain estimates of odds ratios (OR) and confidence intervals, with a significance level of α = 0.05. Data analysis was performed using SPSS software (Version 21.0).

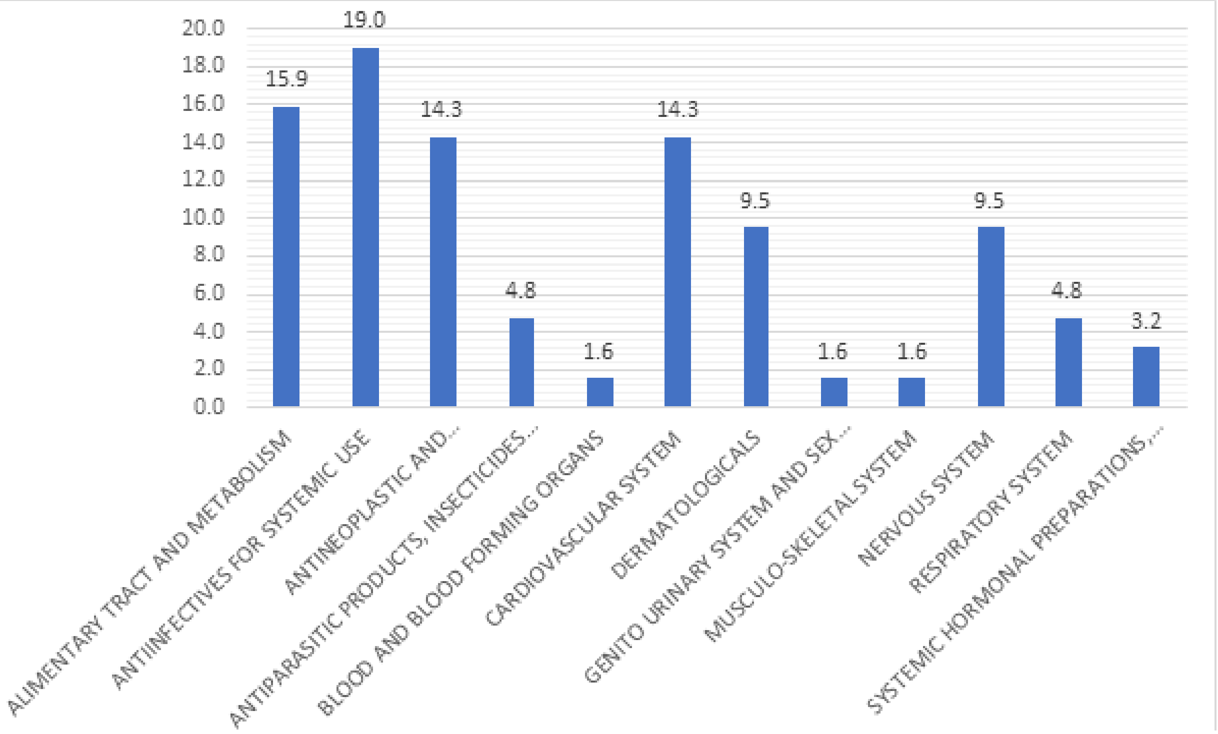
FINDINGS

The study included 22 children undergoing treatment for acute lymphoblastic leukaemia with the median age was 4.5 years (minimum of 1 and maximum of 18 years) with male predominance (54.4%). They were exposed to a median of 19.5 PDDI (minimum of 8 and maximum of 101 PDDI).

The median time of hospitalisation was 36 days (minimum of 30 and maximum of 63 days), during which 869 prescriptions were given and a total of 4,481 doses of medication were administered. The median days of treatment with potential drug interactions was 11 days (minimum of 4 and maximum of 41 days), resulting in a 39.7% prevalence of days with potential drug interactions.

Sixty-six different drugs were identified. According to the ATC, the majority of these (19%) belonged to the class of anti-infective drugs for systemic use (Group J), followed by drugs with action on the digestive system and metabolism (Group A), representing 15.9% and drugs with action on the cardiovascular system (Group C), with 14.3%, as shown in figure 1.

Figure 1: Distribution of the prescription drugs according to the classification Anatomical Therapeutic Chemical Code (ATCC) as level 1. Santa Maria, RS, Brazil, 2014



Medications that had a higher frequency of administration were sulfamethoxazole/trimethoprim (634 administrations), Omeprazole (495 administrations), prednisolone (405 administrations), and Dexamethasone (283 administrations).

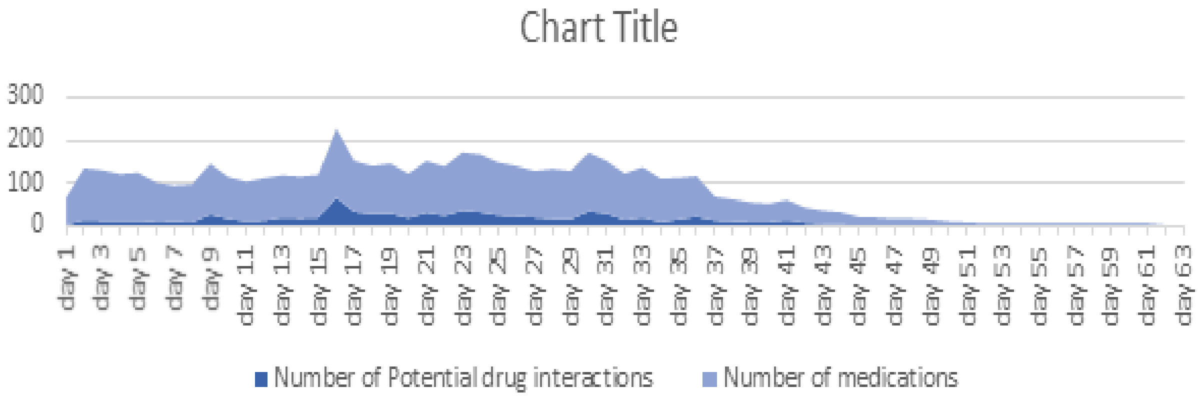
They identified 758 PDDI in the study period. The most frequent potentially interactive combination was asparaginase x Prednisolone (more severe), followed by Fluconazole x sulfamethoxazole/trimethoprim (more severe) and Fluconazole x Omeprazole (moderate severity). Approximately 60% of potential drug interactions were more severe. The main potential drug interactions are described and listed in table 1.

Table 1: Potential drug–drug interactions in children with precursor cell lymphoblastic leukemia-lymphoma. Santa Maria, RS, Brazil, 2014.

Drug 1	Drug 2	Effects *	%
Asparaginase Erwiniachry Santhemi	prednisoLONE	Increased risk of asparaginase toxicity	10,0
Fluconazole	Sulfamethoxazole / Trimethoprim	Increased risk of cardiotoxicity	8,4
Fluconazole	Omeprazole	Increased plasma concentrations of omeprazole	8,4
Fluconazole	predniSONE	Decrease in the metabolic degradation of predniSONE and an increase in predniSONE efficacy	6,5
Dexamethasone	vinCRIStine Sulfate	Decreased vinCRIStine plasma concentrations	6,3
Enalapril Maleate	Sulfamethoxazole / Trimethoprim	Increased risk of hyperkalemia	5,5
Sulfamethoxazole Trimethoprim	Methotrexate Sodium	Increased risk of methotrexate toxicity	4,9
Hydrochlorothiazide	predniSONE	Hypokalemia and subsequent cardiac arrhythmias	4,5
Asparaginase Erwiniachry Santhemi	vinCRIStine Sulfate	Increased risk of toxicity	4,4
Omeprazole	Methotrexate Sodium	Increased concentration of methotrexate and its metabolite and an increased risk of methotrexate toxicity	4,1

A children data receive at least 5 drugs have 2 times more risk of occurrence of PDDI, because each new prescription medication added to the course of treatment grow 0.413 times (OR = 0.402, CI = 0.186 to 0.617) the risk of occurrence of PDDI. It can be verified by figure 2.

Figure 2: Association observed between drug administration and PDDI. Santa Maria, RS, Brazil, 2014



DISCUSSION

Despite evidence of international guidelines that guide the chemotherapy combinations for the treatment of acute lymphoblastic leukemia, addressing the PDDI and adverse events associated with them (Alvarnas et al 2015; Yeoh et al 2013; Cazé et al 2010), all study participants were exposed to at least one PDDI.

In line with other research, the association between polypharmacy and PDDI was confirmed (Sharifi et al 2014; Secoli 2010). Polypharmacy is a risk factor in patients undergoing different types of treatment and is especially related to those individuals who have in their therapeutic regimen, at least one chemotherapeutic drug (Sasaki et al 2013; Hohl et al 2001; Sheppardet al 1974). This may be exacerbated by the administration of more than one drug dose in which the study demonstrated 0.4 times greater risk of presenting PDDI per drug administered.

The addition of each drug increases the risk of adverse events by 10% (LeBlanc et al 2015). However, polypharmacy is a key strategy for the treatment of precursor cell lymphoblastic leukaemia-lymphoma. Initial treatment consists of the use of methotrexate, vincristine, Daunorubicin Hydrochloride, ELSPAR, Etoposide, and Cytarabine. In addition, in cases of opportunistic infections, comorbidity, or palliative character, polypharmacy is mandatory (Dai et al 2016; Alvarnas et al 2015; Wu and Li 2014).

Febrile neutropenia already presents with hemodynamic repercussions and signs of infection and is characterised by an urgent risk of dissemination and septic shock. The infection time frame, sepsis, septic shock, and organ and organ system dysfunction resulting from neutropenia are the main causes of mortality in children with cancer and the main reasons for indicating intensive care (Caniza et al 2015; Alexander 2014; Sasse et al 2005).

In this initial phase of treatment, a dose of chemotherapy will be reduced or delayed as a result of myelosuppression and/or presence of infection, necessitating the use of other medicines to control symptoms and other complications to continue the treatment (Irving 2016; Wu and Li 2014; Cazé et al 2010).

Independent of the time of treatment, 57.3% of PDDI were classified as moderate. As patients in treatment for precursor cell lymphoblastic leukaemia-lymphoma present vulnerability in terms of disease characteristics and also because most are children, this reaction can interfere in important ways in quality of life, leading to negative outcomes. In these cases, one has to consider modifying the therapy, as PDDI may result in increased toxicity, changes in plasma concentration, and changes in the metabolic degradation of drugs, as well as so many other systemic effects that can affect the outcome of therapy and interfere with the prognosis of the patient.

The daily prescriptions included an average of 4.9 medications per day, appearing to be in accordance with the clinical demands that the patients presented in the period due to the proposed therapy. Neutropenia caused by a strong chemotherapy regimen administered in the remission induction phase justifies the class of anti-infective drugs that has been the most frequently prescribed (Buie et al 2015; Schroder et al 2001). Similarly, drugs that act on the digestive system (second-most prescribed drugs) are fundamental in relieving nausea, vomiting, epigastric pain, and other common symptoms of post-chemotherapy.

Sulfamethoxazole/trimethoprim, which is provided in the treatment plan for all patients, was the most used drug and its management is maintained even after hospital discharge, since it is the first option for antimicrobial prophylaxis of infections in immunocompromised patients (Davis et al 2014; Schroder et al 2001). As to the administration of omeprazole, prednisolone, and dexamethasone, they are prescribed regardless of treatment response and potential complications.

Considering that the prescription is the point of origin for the use of the drug, a careful evaluation of the antineoplastic therapy regimen should be carried out to identify and predict potential drug interactions and adverse effects (LeBlanc et al 2015; Payne et al 2015; Sharifi et al 2014). Therefore, prescribers should consider the aspects related to patients to assess the risk-benefit of maintaining or not maintaining the drug combination. Furthermore, conducting biochemical and clinical examinations before and after the introduction of other drugs will certainly help to reduce PDDI.

Although there are contributions and a pioneering study in Brazil, it is important to note the limitations of the research. The evaluation of potential drug interactions was taken from a convenience sample of patients in hospital, an aspect that limits the applicability of the results. Some combinations of drugs identified as potential drug interactions were necessary due to the treatment regimen or unavailability of alternatives with less interactive potential.

Real outcomes of drug interactions have not been evaluated in this quite difficult aspect because the establishment of cause and effect is complex, especially due to the presence of polypharmacy and potentially interactive features of many antineoplastic agents.

Although the study has not evaluated the adverse drug reactions, the findings although limited, are relevant to patients with precursor cell lymphoblastic leukaemia-lymphoma, especially to present the clinical findings of potential drug interactions. In addition, the therapeutic regimens used in the induction of remission treatment step are similar throughout the world.

CONCLUSION

It was found that every new drug inserted in the treatment of precursor cell lymphoblastic leukaemia-lymphoma increases the chance of risk for the occurrence of potential drug interactions by 0.4 times.

The potential drug interactions identified in this study of moderate and higher severity are events that, in addition to influencing the therapeutic response causing changes in plasma concentrations of drugs, systemic toxicity, cardiotoxicity, and can interfere with the treatment provided in the period induction of remission of precursor cell lymphoblastic leukaemia-lymphoma.

RECOMMENDATIONS

Nursing should interfere in the occurrence of PDDI, since the time of administration and planning drug application ranges are medicated effective in eliminating or reducing the adverse effects of these interactions. The findings of this research can be applied in clinical practice, permitting the identification of potential drug interactions and adverse effects of medication.

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Antipsychotic use for behaviours by persons with dementia in residential aged care: the relatives' perspectives

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KEYWORDS

relatives, dementia, behaviours, antipsychotics, residential aged care

ABSTRACT

Objective

To explore relatives' experience, knowledge and perceptions of challenging behavioural and psychological symptoms of dementia (BPSD) and association with antipsychotic use for persons with dementia in residential aged care.

Design

A qualitative Interpretive Description design using semi-structured interviews was used for understanding the construct and context of perceptions and experiences using a six-step process to analyse themes.

Settings

South Australia, Victoria and Western Australia.

Subjects

Six relatives of a person with dementia in residential aged care.

Main Outcome Measure

Themes describing relatives' experiences, knowledge and perceptions of antipsychotic medication use for the person with dementia in residential aged care.

Results

Three themes were identified: 1) lack of education and information - relatives found it difficult to differentiate between behaviours influenced by disease or antipsychotic medication; 2) need to be included in decision-making - relatives' believed challenging behaviours resulting from BPSD could be prevented with a more person-centred approach; and, 3) influence of aged care culture on attitudes towards use of antipsychotic medication - relatives' identified this could be problematic depending on use of agency staff and time pressures.

Conclusion

Relatives of persons with dementia require support and education about the progression of dementia, BPSD and the risks and benefits that antipsychotic medication may have on BPSD. Most importantly, relatives need to be involved in decision-making regarding the use of antipsychotic medication. Nurses have a role to educate care staff on the use of person centred care in preference to medication for better care of the person with dementia.

INTRODUCTION

Over 50% of residents living in residential aged care (RAC) have dementia (Australian Institute of Health and Welfare (AIHW) 2015). Caring for residents with dementia in RAC who display challenging behaviours resulting from Behavioural and Psychological Symptoms of Dementia (BPSD) is perceived by care staff as the most difficult aspect of managing the daily needs of these residents (Lawrence et al 2016; Ervin et al 2014). Behavioural and psychological symptoms of dementia can escalate in residents with dementia in the residential aged care setting due to neurobiological disease, staff or environmental factors, unmet needs, or chronic ill health, e.g. sensory loss, pain and urinary incontinence (Cohen-Mansfield et al 2015; Kales et al 2015). Brodaty et al (2003) found that up to 90% of residents in RAC will display BPSD based on these factors. To mitigate BPSD, antipsychotic medication may be used despite many recommendations for using non-pharmacological management first (American Psychiatric Association (APA) 2016; Kales et al 2015; Peisah and Skladzien 2014).

The use of non-pharmacological management is preferred as antipsychotic medication may elicit interactions with neuroreceptors that may adversely affect residents' health, e.g. postural hypotension and tardive dyskinesia (Kales et al 2015; Monthly Index of Medical Specialties (MIMS) 2015). For the person with dementia, antipsychotic medication may also increase morbidity and mortality (Park et al 2015; United States Department of Health and Human Services 2015; Kleijer et al 2009; Gill et al 2007) as well as mask non-dementia symptoms such as pain and delirium (APA 2016; Park et al 2015). Therefore, use of antipsychotic medication may not only be ineffective for addressing the cause of BPSD but, may act as a form of chemical restraint that can lead to physical and psychological harm (Peisah and Skladzien 2014).

To minimise the use of chemical restraint for the person with dementia, guidelines for non-pharmacological management have been generated by a number of professional organisations (APA 2016; National Institute for Health Care Excellence (NICE) 2015; World Health Organization (WHO) 2012). These guidelines emphasise the need to consider person-centred care as the initial non-pharmacological approach. Person-centred care considers the unique social context of a person's experience and how that experience may trigger behaviours associated with unmet needs, environmental factors or pain (Cohen-Mansfield 2001; Kitwood 1997).

It has been identified that limited training and education for staff in person-centred care compounded by low staffing levels impacts on the ability to use non-pharmacological management and contributes to antipsychotic medication use (Lawrence et al 2016; Cohen-Mansfield et al 2013; Ervin et al 2014; Productivity Commission 2011). Relatives of people who have dementia and live in a RAC setting have a key role to play in collaboration with care staff about behavioural management; yet, relatives' perspectives on the use of antipsychotic medication for the person with dementia in RAC remains largely unknown. The aim of this study, therefore, was to explore the relatives' perspectives on antipsychotic medication use to control BPSD for the person with dementia living in RAC.

METHOD

Thorne's (2008) Interpretive Description qualitative methodology was used to explore relatives' understanding of the use of antipsychotic medication for managing BPSD in their relative with dementia in the RAC setting. The primary objective of this methodology is creating knowledge and understanding for practice that incorporates societal contexts influencing practice and the person in care (Thorne 2008). Use of this methodology enabled development of a comprehensive understanding of when antipsychotic medications were being used for the person with dementia as well as the context of engagement with relatives in relation to decision-making around their use. For this qualitative methodology, no specific number of participants is required. Rather, data is collected until no new material or information arises from within the context being studied. Guest et al (2006) have indicated a total of six interviews are sufficient to determine themes in qualitative data analysis. For this research six respondents met the inclusion criteria. The four themes identified covered all qualitative data provided by the participants leading to saturation of information such that no new information emerged.

Ethical approval for the study was provided by Flinders University South Australia Social and Behavioural Research Ethics Committee (Project Number 6789).

Recruitment for the study was conducted through and with permission of Alzheimer's Australia (SA) via offline and online newsletters and networks. Relatives expressing an interest to participate were sent a letter of introduction and participant information sheet. Informed consent was given in writing or verbally at the time of interview. To be eligible for the study, relatives needed to be the primary carer or have experience of the person with BPSD and knowledge of the medications used to control those behaviours. The person with dementia needed to have resided in RAC within the past two years at time of interview in 2015.

Audiotaped semi-structured interviews were conducted face-to-face in a mutually agreed location or by telephone for between 30 minutes and two hours. Semi-structured interviews used open-ended questions about dementia, behaviours, antipsychotic medications and person-centred care. Participants were probed to elicit more detail about how knowledge was gained, how this knowledge may have influenced their perspective on antipsychotic medication use or behaviour management and other elements of importance relating to the societal context of antipsychotic medication use. Audio-taped interviews were transcribed and then analysed using Thorne's (2008) Interpretive Descriptive methodology as a framework to develop an understanding of the societal context of relatives' viewpoints on antipsychotic use and how this applied in nursing practice. Further analysis to identify barriers and facilitators for the use of antipsychotic medication instead of person-centred care was undertaken using the six-step process of Braun and Clarke (2006). This six-step process involved: familiarisation with the data; generating initial codes; searching for themes; reviewing themes; defining and naming themes; and producing a report (Braun and Clarke 2006, p87).

Trustworthiness of the data was established through addressing credibility, transferability, dependability and confirmability as defined by Oman et al (2003). Credibility of the data was confirmed by comparing and contrasting the occasions when antipsychotic medication use was described from one participant interview to the next as it developed within the context of RAC management of people with dementia with BPSD. This was then compared with what was known about this phenomenon as described by the literature. Transferability was confirmed through clarification of experiences described by participants with other nursing colleagues working in RAC, who were not part of the investigation. Dependability was assessed through review of the research design and process from colleagues in the residential aged care community and the transcription of data verbatim. Confirmability was ensured by all investigators evaluating the interpretation of the data and themes through the use of the 6-step process of Braun and Clarke (2006). By establishing trustworthiness through credibility, transferability, dependability and confirmability, commonalities arising from within the interviews could be compared with any alternative constructs emerging being tested against relatives' and nursing staff knowledge and experiences of the RAC. Furthermore, all authors cross-checked and reviewed the transcripts, participated in the analysis and agreed on the final themes and sub-themes generated.

FINDINGS

Demographics of Participants

From ten respondents, six relatives from three different Australian states met the inclusion criteria and participated in the study (table 1). All of the relatives were female with ages ranging from 45 to 62 years.

Frequency of visitation to the person with dementia's RAC facility ranged from daily to three or four times a week or once a fortnight. All relatives held healthcare advance directive authority.

Persons with dementia included four mothers, one husband, one father-in-law and one friend. Types of dementia identified included Mixed, Vascular, Lewy Body with Parkinson's disease and Alzheimer's disease. Persons with dementia ranged in age from 54 to 81 years and were in RAC ranging from one to three years at the time of interview. All relatives identified the use of Risperidone, an atypical antipsychotic, as one of the medications given to their relative in RAC. Participants are quoted throughout using pseudonyms to maintain confidentiality.

Table 1 : Demographic information of participants (n=6) and persons with dementia (n=7)

Participants - Relatives					Person with Dementia			
Pseudonym	***Gender***	***Age (years)***	***Relationship***	***Length of time as carer***	***Age (years)***	***Gender***	***Type of Dementia***	***Length in RAC***
P1	F	61	Daughter	3 years	80	F	AD, LBD	<1 year
P2	F	56	Daughter–in-law Friend	3 years 3 years	71 54	M M	LBD VaD	1.5 years 2 years
P3	F	62	Wife	2 years	75	M	FTLD, AD	1 year
P4	F	45	Daughter	8 years	84	F	AD	2 years
P5	F	56	Daughter	3 years	78	F	VaD, AD	3 years
P6	F	50	Daughter	2 years	81	F	AD	1 year

AD = Alzheimer's Disease, LBD = Lewy Body Dementia, VaD = Vascular Dementia, FTLD = Frontotemporal Lobe Dementia

Themes

Three major themes were revealed relating to the societal context of antipsychotic use for the person with dementia in RAC. These themes are:

1. a lack of education and information;
2. the need to be included in decision-making; and
3. the influence of aged care culture on relatives' attitudes towards use of antipsychotic medication.

The description and analysis of these themes are elaborated further below.

Lack of education and information

Relatives' perceived they were lacking knowledge about their relatives' dementia, medication management and behaviour in RAC. The lack of disease knowledge was articulated by Participant 1:

> *I was never prepared for her getting up in the night and not knowing who I was…, for that lack of sleep and…, you know you put something down one day and give her something to eat that she would like… and the next day it would be "what's that"? I had no idea, I don't know how we managed (P1).*

The majority of relatives had little knowledge about antipsychotic medication, indicators for its use or the effects that it might have on behaviour. However, Participant 2 articulated that person-centred care was a better approach to prevent and manage challenging behaviours resulting from BPSD: '*I do know that antipsychotics were used to basically modify behaviour when in fact changing to a person-centred way of caring would have been far more appropriate*' (P2). While Participant 3 understood that medication was preferentially used over person-centred care: '*Too often PRN (provide as necessary) is used instead of patient-centred management*' (P3).

Although relatives' knowledge about dementia, behaviours associated with dementia and antipsychotic medication use differed, they were all able to articulate a sense of knowing what normal behaviour was for their relative, when that normality was upset and why. One participant provided an example from her father-in-law and friend: '*A few times they'd (father and friend) both say - why am I feeling drunk all the time? I'm not drinking any wine - they won't let me'(P2).* While this relative understood that it was the antipsychotic medication making the relative feel differently, Participant 4 was less able to link behaviour to medication use:

> *She was just really placid. Sometimes she would just be like a really frightened child…some of the bizarre behaviour, [I didn't know if] that was just because of the drugs or was that just part of the behaviour, and I wouldn't be able to know that (P4).*

The inability to differentiate behaviours resulting from medication use versus disease progression created discomfort and confusion in the relatives with regard to antipsychotic medication use for the person with dementia:

> *It's also hard to know at each step, is it happening because of the disease or is she medicated? I don't know because she's become incontinent as well, so that's pretty tough on her too [be]cause a couple of times [when] I've been down for the weekend, she's soiled her pants and it really distresses her. I don't know if that's part of the lack of, is it being so relaxed that you haven't got control of your bowels or is it the disease? I don't know. (P6).*

After time, all of the relatives were able to distinguish medication effects from the regular behaviour of their relative after the person with dementia had been in RAC for a while:

> *I used to call it her Campari (Risperidone). Some of the nurses would give it to her before I got there and she would be asleep when it was teatime. And to be asleep at teatime in a nursing home is awful because you're [not] going to [get fed]. Mum is a foodie as well so I know [she's] going to wake up later and [she's] going to be hungry and [she's] not going to get anything to eat until 8 o'clock the next morning, so that would make you pretty cranky (P1).*

Nevertheless, relatives were still puzzled and conflicted about when it was appropriate to use antipsychotic medication for their relative. This was because the use of antipsychotic medication traded-off one behaviour, e.g. calling out in a raised voice and disturbing other residents, for another, e.g. being quieter and less agitated. Although many relatives understood there may be a need for this trade-off, it was not necessarily a comfortable one for relatives to accept.

The need to be included in decision-making

Lack of communication and education by care staff to relatives' about why antipsychotic medication was being used instead of non-pharmacological alternatives left relatives confused, anxious and frustrated as the personality and behaviour of their loved one changed. This did not engender trust in the process or staff as a participant described: '*Nobody volunteered information. In my memory, there wasn't a lot of volunteering, there was no counseling of her care. No, I don't think we ever got what we could expect' (P1).* Participant 1's experience was common although not universal.

Two of the relatives were willing to have care staff take the initiative for antipsychotic medication use, but for four of the relatives, not being communicated with about care management, led them to seek out additional knowledge about dementia, behaviour management and antipsychotic medication use so they could be more actively involved in the decision-making that occurred as described in the following excerpt.

> *Yes, I got a lot of information from their [Alzheimer's Australia] fact sheets and I got [some] from the care package through them so I used them a lot. Plus, I have a friend who is a lecturer's assistant so we both were skilled in dealing with problems from the wrong end and trying to sort back through it. So, Alzheimer's [fact sheet] was quite useful for that, and I would often refer a lot of people to 1800…. [Be]cause now that people knew Mum had it really bad and I'd have people saying can you talk to my Mum? And they'd come and talk to me or bring me to their house and I'd always say ring 1800 … before you have a disaster, before someone gets hurt, before they wander away (P1).*

Not only did relatives gain knowledge from Alzheimer's Australia for when and how antipsychotic medication should be used for the person who has dementia, they also accessed television, support groups, Google, YouTube, the Internet and conferences to inform themselves. Participant 2 described information she received when attending a conference on dementia:

> *Well, if you read the work that Brodaty (an eminent dementia researcher) has been doing with his study, he actually now says that dementia is the one contraindication to prescribing antipsychotics; that they should only be prescribed for people with true mental illness and dementia is not a mental illness (P2).*

As relatives' knowledge about dementia, medication management and behaviours increased, several relatives began initiating ways of caring for their relative to mitigate the effect of the antipsychotic medication. One participant described that she: *'Never 100 per cent succeeded on this, but if she (her mother) had her medicine just before dinner, she could eat some of what I took her and then she could settle down and the medication would take effect' (P1).*

Some relatives, such as Participant 2, became vigilant in making sure antipsychotic medication was not being used without their consent:

> *They'd take him off (the medications) when we complained then the next pharmacy bill would come back in, and we'd find he'd been put back on. Then if we would forget to check or complain he would have just stayed on them (P2).*

Some relatives like Participants 2 and 4 described being frustrated and upset when informed of antipsychotic medication use after it had already taken place. Often this communication came via a bill for pharmaceuticals as described by one participant: '*I thought "oh, what's that" and I got the bill from the chemist and I Googled it but it was never sort of oh, we're giving your mother this' (P4).*

Not all relatives, however, felt the need to participate in medication management with care staff. Participant 6 preferred to be guided by the expertise of the staff:

> *I'm guided by the professionals. They're very good at consulting, but they're also very good at getting their point across. They'll say, this is what we recommend and I'm sure if I said no it would be OK, but what if I said no and it wasn't the right decision? So, I sort of like to go with their opinion. I mean I feel it is a privilege that they are consulting with me really [be]cause they're the ones that are caring for her (P6).*

This illustrated the dilemma that all of the relatives faced – they had relinquished care of the person with dementia to professionals who they thought would know how to manage them better, yet the use of antipsychotic medication often left the relative and their loved one upset and uncomfortable. Managing the tension this caused relatives was dependent on the professionalism of the care staff and the culture of the residential aged care facility.

Influence of aged care culture on relatives' attitudes towards the use of antipsychotic medication

Three of the relatives in this study had previous experience with the aged care system either personally or professionally (P1, P2 and P5) while for the others (P3, P4 and P6) their experience with RAC was new and associated with the entry of their relative to RAC. Participants with more experience, better understood different levels of care and felt more empowered to advocate for their relative as one relative described: '*I've had more ability to properly advocate for him in low care. The staff were more receptive. The staff were more willing to make changes or to be more person-centred' (P2).* This experience was not always able to overcome the administration of antipsychotic medication administration, however, and when relatives described inappropriate use of antipsychotic medication, they often referred to this as 'chemical restraint'.

Relatives describing antipsychotic medication use in this manner felt it was the RAC facility rather than the person with dementia who benefited as one participant described: '*They used to talk at the home quite often that they resisted any physical restraint or chemical restraint but you know, with the moods Mum used to have, sometimes she was chemically sedated or chemically restrained' (P2).* One relative felt the use of antipsychotics was: *'just a way of managing people… I suppose it does save them money so they don't have to have as many staff on if all the residents are just slumped in a chair or a bed' (P4).* Another participant was willing to concede that there might be times when it is beneficial to use antipsychotics: '*But I don't think it should be over-used like [staff thinking] 'we're too busy to deal with him, we'll just sedate him and put him to bed' (P3).* Nevertheless, one participant was able to describe the positive aspects of using antipsychotic medication as chemical restraint: '*She (Mum) was constantly on her feet walking everywhere, and I think that chemical restraint actually probably gave her a bit of a rest which I think was good for her' (P5).* Although some relatives accepted that antipsychotic medication may have had a place in the management of behaviour of their relative, it was more often the culture of the RAC that they emphasised as influencing its use.

According to all of the relatives, inadequate numbers of regular staff led to high rates of agency staff and the number of agency staff was a key indicator of antipsychotic medication use on their relative. If regular staff were present, one participant saw a marked difference in behaviour in her loved ones' when mainly agency staff were present rather than regular staff: '*In the early days, where Dad was, there was just this constant barrage of agency staff. Both Dad and my friend were just happier to see a person they knew. It's just that [they had that] level of being calmer because they knew people' (P2).* To alleviate the dependency of care staff on antipsychotic medication use, relatives offered ideas on alternative therapies and activities for their relative to mitigate BPSD behaviour. However, relatives often did not see these ideas acted upon as a participant explained: *'I gave them about 20 ideas for men, and I haven't seen any implemented. Sometimes I just feel the whole lot lack imagination' (P3).* Overall, not being able to sufficiently influence the care of their loved one, such that antipsychotic medication use could be avoided, left relatives feeling disempowered, ill-informed and dissatisfied with the care their relative received.

DISCUSSION

In this study, most of the participants interviewed struggled to identify whether the behaviour displayed by their relatives with dementia in RAC was representative of disease progression or antipsychotic medication use. However, once relatives learned that the person with dementia was being treated with antipsychotic medication, relatives improved their knowledge, not only about the disease, but also about the applicability of this medication for the person with dementia. Relatives did this to distinguish for themselves the difference between deteriorating behaviour resulting from disease progression or some other factor such as antipsychotic medication use. Bonner et al (2015) indicated that much of the use of antipsychotic medication for the person with dementia was for non-psychotic purposes. Relatives in this study provided evidence of this by describing occasions such as mealtimes when antipsychotic medication was used inappropriately and articulated their concerns about when and how this medication was being applied in relation to the direct need or behaviour of their relative at the time.

The results of a systematic review by Brownie et al (2014) recommended that to make the transition from home to RAC easier for families and the person with dementia, it was important to: facilitate partnership with family members in dementia care; provide access to information and promote communication with residents, families, counsellors and social workers; help residents and their families build coping skills; and continue meaningful activities for engagement and preservation of the social role of the resident. If these guidelines had been followed, trust between relatives and the care staff may have led to shared decision-making such that when BPSD arose, the method of management could be agreed upon without administering antipsychotic medication.

Lee et al (2015) identified that four key factors influence good practice in care of the person with dementia, namely; leadership and management of care, integrating clinical expertise, continuity of care and use of guidelines. Participants in our study identified these factors were missing as indicated by a lack of consultation with the relative, inconsistency in staffing, apparent lack of person-centred care and lack of information to relatives about when antipsychotic medication should be used.

Cornege-Blokland et al (2012, cited in Petriwskyj et al 2013) found less than half of family members consulted about antipsychotic medication use felt adequately informed about potential side-effects before consenting to its use. Relatives in our study who informed themselves about dementia, antipsychotic medication and its side-effects, felt empowered to advocate for better care of their relative. Nurses in RAC who accept and respect such advocacy may enable relatives to become more confident in the professionalism and clinical expertise of the care staff and facility. However, as Cornege-Blokland et al (2012, cited in Petriwskyi et al 2013) discovered, request for antipsychotic medication was most often initiated by nurses. This situation may undermine trust by relatives if antipsychotic medication is seen to be used for the benefit of staff rather than the person who has dementia with BPSD.

In our study, when relatives felt confident to trust that carers had sufficient clinical expertise to integrate the use of medication in the care management of their relative, then they were more accepting of its use at times designated by the nurse or carer for managing BPSD in their relative.

Livingston et al (2005) found that one of the few effective strategies for enhancing care of the person with dementia was education of staff on dementia, changes in staff behaviour, and different forms of BPSD management. When care staff are taught to use guidelines, such as those advocated by the National Prescribing Service (2013) on appropriate use of person-centred care and antipsychotic medication for the person with dementia, then it may be possible that the person with dementia in RAC will have a better chance of living the rest of their life without the burden of additional symptoms that inappropriate use of antipsychotic medication can bring (Park et al 2015). However, a study by Ostaszkiewicz et al (2015) found nurses in RAC indicated that although they knew person-centred care was a preferred method for managing BPSD in residents with dementia, they often felt using this method was better accomplished when the resident was sedated or had some form of restraint. Petriwskyj et al (2013) suggested there is still much to be learned in both research and practice of when and how to use antipsychotic medication and person-centred care for the person with dementia displaying BPSD.

Although participants in our study expressed they would have appreciated more shared decision-making about antipsychotic medication use as well as seeing the adoption of alternative methods of management of BPSD for the person with dementia in RAC, nevertheless, all relatives in this study expressed gratitude for the efforts of most of the care staff they encountered and understood the pressures on care staff of trying to provide person-centred care within the RAC setting.

CONCLUSION

This study identified three themes in relation to the societal context of practice affiliated with antipsychotic medication use for BPSD of people with dementia living in residential aged care (RAC) facilities. These themes were first, a recognition that relatives lacked sufficient knowledge to identify the source of undesirable behaviours occurring within the RAC setting; e.g. medication use or disease progression. To address this lack of knowledge, some relatives educated themselves about these issues to advocate for the person with dementia and prevent them from being subjected to use of antipsychotic medication rather than non-pharmacological care. Although knowledge and advocacy empowered relatives, this advocacy had limited success in decreasing the use of antipsychotic medication as the disease progressed as some relatives and care staff preferred the perceived benefits of the medication despite potential risks. The second theme identified barriers to provision of non-pharmacological management which relatives described as resulting from a lack of shared decision-making between staff and relative. Lack of shared decision-making led to the emergence of the third theme which centred on residential aged care practices influencing use of antipsychotic medication in RAC. Practices in favour of antipsychotic medication use were influenced by staff turnover, limited staff education and limited time to support non-pharmacological care management.

As a result of this study, it is recommended that nurses engage relatives in discussion about strategies for managing BPSD when this arises in the person with dementia in the RAC setting. To engage in such discussions, it is important for nursing staff and carers in RAC facilities to have knowledge about dementia, potential societal, physical, environmental and psychological causes of BPSD and to be prepared to offer non-pharmacological management of behaviour as first line treatment rather than depending on the expediency of antipsychotic medication administration. Discussions with family members should be conducted prior to the administration of the antipsychotic medication and in an informative and sensitive manner to avoid misunderstanding and negatively contributing to what is already an emotionally charged time for relatives and the person with dementia. This, in turn, engenders trust in relatives that staff are doing what is best for their loved one.

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IN THIS ISSUE

RESEARCH PAPERS

SCHOLARLY PAPERS

35:2

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December 2017 - February 2018
Volume 35 Issue 2

CONTENTS

RESEARCH PAPERS

SCHOLARLY PAPERS

AUSTRALIAN JOURNAL OF ADVANCED NURSING REVIEW PANEL: AUSTRALIA

Tod Adams, Masters Nursing (Nurse Practitioner), Grad. Cert Aged Care, Grad. Cert. Coronary Care, Grad. Cert Health Management, Bachelor health Science (Nursing), NSW Health, SESIAHS, Shoalhaven Hospital, New South Wales

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Designing simulation learning experiences to reduce technological burden on nursing academics: a discussion paper

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KEY WORDS

simulation, nursing, satisfaction, medium fidelity, engaged

ABSTRACT

Objective

The literature reports nursing academics avoid manikin-based simulation because they feel intimidated by the technology. With that in mind we sought to design a manikin-based simulation learning experience for nursing students, with low technological burden for those nursing academics expected to work with the technology.

Setting

A multi-campus Australian regional university school of nursing.

Subjects

Nursing academics with little or no experience in manikin-based simulation.

Primary argument

Nursing academics are encouraged to use manikins in their clinical teaching but little has been done to address their fears and concerns around the technology. We argue that taking simple steps to decrease the technological burden will help to encourage nursing academics uptake of manikin-based simulations, as a favoured pedagogy in clinical teaching.

Conclusion

The technological burden around manikin-based simulation was reduced by: (1) choosing medium level fidelity simulations, (2) designing simulations where students operate the equipment, (3) preparing participants for the SLE with a pre-brief video and instruction handouts, (4) offering academics roles as observers, and (5) providing on-site technological support. Nursing academics were encouraged by the process and more inclined to engage with manikin simulations. Designing simulations that address nursing academics' fears and concerns around simulation technology encourages simulation uptake.

INTRODUCTION

Professional bodies and advisors involved in nursing education are placing greater emphasis on incorporating simulation based learning experiences (SLE) throughout nursing curricula (International Nursing Association for Clinical Simulation and Learning [INACSL] 2015; Rudd et al 2010; Benner et al 2009). In Australia and elsewhere, patient safety and limited opportunities for nursing students to have clinical experiences contributes to this demand (Bogossian 2016; Nestel et al 2014; Harder 2010; Rudd et al 2010). As most Australian universities have already invested in manikins for use in simulation, this places added pressure on nursing academics to use the manikins available rather than leave them 'laying idle' (Rudd et al 2010, p3). This may cause stress for those who are unfamiliar and intimidated by the associated pedagogy and technology because internationally, nursing research literature has reported nursing academics do not engage with manikin simulation equipment because they feel incompetent with simulation pedagogy and lack understanding of the manikins' technology (Hollema 2015; Rudd 2013; Blazeck 2011). In particular, nursing academics report they are fearful students will not engage or be satisfied with SLE when technological mishaps occur and they do not feel confident in their capabilities to troubleshoot or solve technological problems (Simes et al 2015; Blazeck 2011). Harder et al (2013) confirmed student satisfaction with manikin simulation learning is significantly impacted when simulation teaching staff lack technological expertise, and are not adequately prepared or supported.

Attempts to address these concerns have been reported. Coleman et al (2011) enlisted skilled SLE champions as support persons and found American nursing academics were more inclined to embrace high fidelity manikins with this support in place. Similarly, in North America, Anderson et al (2012) reported professional development in simulation to be effective when skilled simulation facilitators offer less skilled colleagues active learning with debriefing and feedback. Earlier, King et al (2008) also investigated ways of supporting American nursing academics with simulation. This team recommended one way to overcome barriers around computer manikin-based SLE is to provide increased technological support in the simulation laboratory. This strategy meant nursing staff could spend time focusing on facilitating the SLE, rather than becoming concerned with the technological aspects of the SLE. In the United Kingdom, Berragan (2011) found when nursing teachers were introduced to SLE, using lower fidelity equipment, the technological responsibility and the technological problems they were likely to encounter were reduced. More recently, in Australia, evaluations of a national professional development program, NHET-Sim, found employing simulation experts to facilitate workshops focussing on the equipment, the technology and the pedagogy, improved uptake, integration and quality of simulation into health curricula (Nestel and Bearman 2014). Thus, there is evidence that nursing academics are more likely to engage with manikin -based simulation when their fears and concerns are addressed and support is available.

DISCUSSION

After learning that nursing academics in our own multi-campus university were uncomfortable with the use of manikins for simulation, our research team secured a grant to design and evaluate a SLE aimed at addressing their concerns by providing pedagogical and technological support. Ethical approval for the study was obtained from the university ethics committee. Each member of the research team had undertaken NHET-Sim training and were experienced in scenario writing and other facets of simulation pedagogy. The literature was further perused for guidance on how to design the SLE. The required SLE design components, considerate of the student perspective and recommended by Australian and American simulation training and education institutes, were included such as; students' level of knowledge, needs assessment, setting learning objectives, creating scenarios to meet learning objectives, and debrief (Edlington et al 2014; Howard et al 2013). However, consideration was also given as to how to help nursing academics become more comfortable in manikin SLE. We did this in our study by: (1) choosing medium level fidelity simulations, (2) designing simulations where students operate the equipment, (3) preparing participants for the SLE with a pre-brief video and instruction handouts, (4) offering academics roles as observers, and (5) providing initial on-site technological support.

Choosing medium level fidelity

The degree of fidelity was carefully considered. Fidelity is defined as the extent to which the simulation experience approaches realism and is determined by a number of factors such as environment, simulation equipment and learner engagement (Meakim et al 2013). High fidelity experiences are most desired because they are extremely realistic and provide a high level of interactivity and realism for the learner. One example is the computerized patient simulators or manikin. These manikins are operated with computer software and when manipulated by a human operator are capable of simulating bodily functions such as coughing, crying, bleeding and cardiac rhythms (Meakim et al 2013). Thus, when working with these computerised manikins, nursing academics must be familiar with the technology to enable effective operation and provide participants realistic experiences. Medium fidelity experiences also rely on computer-based systems and human-like manikins, and are capable of some level of realism for participants, but the operating systems and the computerised components are not as sophisticated (Meakim et al 2013). SimPads are an example of a medium level fidelity device. Erlam (2014) suggested SimPadTM are easier to use because the technology resembles smartphones and tablets, and is familiar technology to most people.

Students operate the equipment

The technological burden was further reduced for the nursing academics because the student nurses participating in the SLE were given roles that required them to control the SimPadTM technology. In a study of New Zealand undergraduate nurses participating in manikin simulation for the first time Erlam (2014) designed SLE by relying upon traits of the contemporary millennial learner. Millennial learners make up the majority of numbers in higher education classrooms and they are known to be technologically savvy, unaverred by technological troubleshooting and able to multitask whilst also taking command of technological equipment (Prensky 2013). Prensky (2013) further explained millennial learners learn best by doing, all the while looking for immediate gratification from, and feedback on, their performances. Erlam described nursing students “flocking in droves” to the manikin SLE featuring technology, not dissimilar to their smart phones, and “requesting more” (Erlam 2014, p13). Thus, with this in mind and in addition to findings from the literature review, we designed a medium fidelity SLE using full-size, life-like manikins connected to a Laerdal SimPadTM.

Pre-brief instructional handouts and video

To further reduce the technological burden for academics and students, instructional handouts explaining the scenarios and the equipment, were created and made available online before the SLE, using the university online teaching platform, Moodle. Laminated copies of the handouts were also placed at the bedsides, in the simulation ward, for use during the SLE. The scenarios created for the SLE were designed to be completed by groups of 4-5 nursing students. Each scenario comprised five roles (SimPadTM device operator, nurse, physician, observer and patient’s voice for the manikin) and focused on assessing nursing students’ capabilities in pain assessment, communication, hand washing, medication administration, recognition of deteriorating patients and basic life support. The length of time given to complete the scenario enabled nursing students to experience the scenario from multiple perspectives as they rotated through the roles. This also gave the students time to become familiar with the equipment. Thus, nursing academics’ responsibilities around the technology was minimal.

To further reduce technological concerns and support the nursing academics' understanding of the pedagogy, a 20-minute, real-to-time video was developed to inform the pre-brief stage for both the student cohort and the participating nursing academics. The video portrayed three volunteer nursing students participating in a medium fidelity manikin SLE for the first time. Prior to making the video the students attended a pre-brief session and were orientated to the environment, the equipment and the manikin. The video showed the students utilising the laminated instructional handouts and demonstrating how to operate the equipment, as they completed one scenario. The video captured the nursing students troubleshooting and resolving technological incidents. These incidents were indicative of the typical challenges the students might encounter with the manikin and the hand-held device. The incidents were resolved when the students referred to the laminated instruction guide or followed the prompts on the hand-held devices. This video did not require editing, attesting to the usefulness of the laminated handouts and the pre-brief students had attended. The video was circulated to the participating student cohort and all nursing academics in the school, two weeks prior to the scheduled SLE, in an effort to address any fears or concerns about the equipment or the activity.

Offering observer roles

In the days prior to the SLE taking place, nursing academics, inexperienced in SLE, were invited to participate in the SLE as passive onlookers and asked to report their observations of the SLE to the research team. Four nursing academics accepted. These nursing academics participated in a special workshop style pre-brief, facilitated by the research team members and designed to introduce the pedagogy and address the nursing academics' concerns around equipment technology. During this pre-brief, the nursing academics engaged with the manikin and the SimPadTM as they rotated through the scripted roles in the SLE scenarios. This pre-brief mimicked the pre-brief offered to the volunteer nursing students, with slightly more information around simulation pedagogy.

Initial on-site technological support

On the day of the SLE, the four nursing academics were asked to present to the simulation laboratories one hour before the nursing students arrived, for another pre-brief. During this repeat pre-brief the nursing academics were again invited to interact with the manikin, the SimPadTM device, and the SLE scenarios to address any final concerns or questions arising from the initial pre-brief. When the nursing academics indicated they were satisfied and comfortable to proceed, they were orientated to their roles as passive onlookers.

Nursing academics' first impressions

The research team invited the nursing academics to share their observations of the SLE. Informal conversations took place between the two SLE facilitators and the participating nursing academics to discover their first impressions, experiences and perceptions of the SLE. The nursing academics each verbalised they would be interested in adopting the medium fidelity manikin SLE in their teaching. They reported the introduction to medium fidelity manikin SLE in this way was beneficial. In particular, the support provided by the more experienced simulation facilitators alleviated their fears as they did not feel burdened by the simulation pedagogy or technology. Their observations of nursing students' engagement with the SLE, and also the nursing students' ability to troubleshoot minor problems independently, was a motivating experience for these nursing academics. They found the video especially helpful because it introduced them to the pedagogy in advance of the actual experience, giving them time to reflect and prepare for the actual experience. Thus, the nursing academics who participated in the SLE were encouraged and enthusiastic about engaging with medium fidelity manikin SLE because of all the steps that prepared them for the experience. This anecdotal feedback was later used to plan the focus groups that were conducted in other phases of the project (O'Neill et al 2016; Simes et al 2015).

Looking to the future

The nursing academics' reflections, and the previously reported high student satisfaction with this SLE (Curtis et al 2016), suggest that reducing the technological burden and providing support resulted in a positive experience for both students and nursing academics. The SLE was designed to address academics' fears around technology from the onset. Resources were provided for their preparation and on the day they were freely able to engage with or observe the SLE as recommended by others (Anderson et al 2012; Coleman et al 2011; King et al 2008).

The choice of a medium fidelity simulation also helped to decrease technological burden. Berragan (2011) had suggested using lower fidelity SLE may reduce nurse teachers' technological capabilities required for successful simulation experiences and this was the case in this project. With medium fidelity manikin SLE, like the one used in this study, nursing academics facilitating the simulations are relieved of the burden of high technological expertise associated with computerised manikins. The burden on nursing academics is further relieved when students are given control of the equipment and in this SLE students managed minor troubleshooting of the equipment easily perhaps because it is not unfamiliar to them (Curtis et al 2016; Erlam 2014). Harder et al (2013) cautioned faculty must feel supported and undergo adequate preparation. Without such preparation, including technological support, they may not offer students worthwhile and effective learning experiences. In the SLE presented here, nursing academics received support, with the technology and the pedagogy, prior to and during their initial experiences with medium fidelity manikin SLE.

Subsequent to this study and based on the student evaluations there has been increased interest in using medium fidelity manikin SLE's amongst this university's nursing academics. A new curriculum has been designed featuring high and medium fidelity manikin based SLE's in most clinical courses (CQ University 2015). At this university, the scenarios are banked in a central digital repository to further support the usage of SLE. The digital repository also contains simulation information and resources to encourage and support uptake (O'Neill et al 2016).

CONCLUSION

Nursing academics wanting to prepare and provide engaging and worthwhile manikin SLE for undergraduate nursing students, with a focus on delivering quality teaching, benefit when the technological burden is lessened. This type of support is needed as more and more pressure is put on them to embrace simulation and, in particular, manikin based SLE as a favoured pedagogy for teaching clinical skills in nursing.

RECOMMENDATIONS

Since some nursing academics feel burdened by the technology around manikin-based simulations we recommend steps, like the ones taken in this study, are followed to help alleviate their fears and concerns. We also recommend that there be further research into alternative ways to reduce technological burden when designing manikin based SLE. This would serve to ascertain ongoing increased uptake and nursing academics' impressions of implementing this kind of manikin simulation learning experience. Finally we recommend longitudinal studies to further explain students' learning and academics evaluations of utilising SLE where technological burden has been greatly reduced for the nursing academics.

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Profiling Australian school students' interest in a nursing career: insights for ensuring the future workforce

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KEY WORDS

aspirations, career, school students, nursing, nurses

ABSTRACT

Objective
Given that the current shortage of nurses threatens the quality of health care globally, we urgently need to find new ways to bolster recruitment. This paper aims to understand patterns and predictors of interest in a nursing career among school students in order to inform ways of ensuring a viable future workforce.

Design
A four-year longitudinal mixed methods study undertaken in New South Wales, Australia.

Setting and subjects
Survey data collected annually (2012–2015), involving 6,492 students in Years 3–12 in government schools, were analysed using logistic regression. Focus group data (2013–2015) involving 553 students and open-ended survey responses were analysed to investigate reasons for interest in nursing.

Results
Significant predictors of interest in nursing included being female and having a parent in a nursing occupation. A 'helping orientation' and prior experiences with nurses or nursing were key factors underpinning students' interest in this career. Some students perceived nursing as a 'safe' career choice, balancing practical concerns, such as job security, with their desire to care. Other students expressed ambivalence, with nursing but one of many 'caring' careers to which they were drawn.

Conclusion
Given that early experiences with nursing or nursing-related activities influenced the desire to pursue this career, developing new experiential strategies that engage school student interest are important for ensuring the growth and stability of the Australian nursing workforce.

INTRODUCTION

A viable healthcare system capable of providing optimum population health outcomes relies on a healthy and sustainable nursing profession (Gaynor et al 2008). However, concerns about a global nursing shortage have been repeatedly raised over the last decade (World Health Organization 2011; Price 2009; Oulton 2006). As the nursing workforce deficit adversely impacts health care systems around the world, nursing recruitment and retention are now top priorities for both healthcare services and the nursing profession (McLaughlin et al 2010).

A number of factors influence the choice of nursing as a career, ranging from the tangible (such as pay, workload, convenience, and family responsibilities) to the intangible (such as job satisfaction, status, and psychological rewards) (Eley et al 2010). A decline in the number of applicants to nursing schools has also been identified as influencing the nursing shortage (Drury et al 2009; Oulton 2006). As supply fails to meet demand, the need to understand what motivates people to choose nursing as a career becomes more important than ever (Usher et al 2013).

The question of motivation has been explored internationally in studies involving school students (Neilson and Jones 2012; Neilson and McNally 2010; Cohen et al 2004), student-nurses (Jirwe and Rudman 2012; McLaughlin et al 2010; Mooney et al 2008), and registered nurses (Genders and Brown 2014; Gambino, 2010). These studies found the decision to enter the nursing profession was influenced by gender, culture, experiential knowledge, self-concept and a desire to help others (Price et al 2013). Pre-held beliefs about nursing, an idealistic view of caring, and the influence of others (Price 2009), including a family history of working in health (Eley et al 2010), were also significant incentives.

In Australia, where a shortfall of 85,000 nurses is projected by 2025 and 123,000 nurses by 2030 (Health Workforce Australia 2014), researchers have also sought to understand why individuals enter nursing (Hickey and Harrison 2013; Eley et al 2012; Eley et al 2010). This work, however, has focused almost exclusively on the perspectives of student-nurses and registered nurses. As a result, little is known about the kinds of school students interested in a nursing career. Dockery and Barnes (2005) reported ‘registered nurse’ as the seventh most popular occupation for Year 10 females, and altruism, flexibility, and the influence of a parent in the occupation as factors shaping Year 12 female students’ decision to undertake nursing studies. Another small-scale study explored gender and career aspirations, but provided no insight into why nursing appealed to the two students in their sample who chose nursing (Ford 2011).

Our study contributes to this growing body of research by taking an ‘upstream’ focus to explore the perspectives of primary and high school students. We argue that research on younger students is needed because: (i) nursing aspirations often form early in life (Hoke 2006) and (ii) fewer school leavers, traditionally the core of pre-registration nursing programs, are choosing nursing as a career (Drury et al 2009).

METHODS

The four-year longitudinal mixed methods study aimed to investigate demographic and other characteristics of students interested in specific careers requiring university education, with nursing the focus here. Schools were selected with variance in socio-economic status and geographic location (50% metropolitan, 50% provincial) in order to generate a comprehensive profile of the aspirations of students aged 8 to 18 years. In each school, all students commencing in Years 3, 5, 7, and 9 in 2012 were potential participants, with each cohort followed until 2015. This is the first Australian study to explore aspirations of students across the entire Year 3 to 12 range.

DATA COLLECTION

Student surveys

Participants came from 64 schools in New South Wales, Australia. Surveys were conducted annually during the period 2012–2015. Informed consent from students and parents/carers was obtained, with 6,492 students completing the survey at least once. Survey formats varied for primary and secondary students to account for different levels of education. 5,925 students nominated at least one occupational aspiration.

Focus group interviews

Focus group participants were purposively sampled in order to deepen our understanding of students' career interests. Focus groups with 553 students were conducted between 2013 and 2015, during school hours and lasting 30–60 minutes. Students discussed: their post-school plans, their job thoughts, with whom they discuss their plans, and their thinking about university and/or Technical and Further Education (TAFE). All interviews were digitally recorded and transcribed.

Data analysis

Potential predictors of interest in nursing were grouped into student-related variables (table 1) and school-related variables (table 2), identified as follows:

Table 1: Student background variables

Variable	Source	Measure
Gender	School enrolment form	Categorised as male or female.
Indigenous status	Enrolment form	Categorised as Indigenous or non-Indigenous.
Student cohort	Survey	Year 3 Cohort: Years 3–6 Year 5 Cohort: Years 5–8 Year 7 Cohort: Years 7–10 Year 9 Cohort: Years 9–12 Measures differences between students of different ages.
School location	NSW Department of Education	Determined by school postcode and dichotomised as metropolitan or other.
Language background	Enrolment form	Categorised as English-speaking background or language background other than English (LBOTE).
Socio-economic status	Enrolment form	Calculated by combining the highest parental education and occupation levels for each student into an equally weighted proxy for student SES. Data for all NSW government schools were used to separate scores into quartiles.
Cultural capital	Survey	Calculated by student responses to the question: How often do you do the following activities? (Listen to classical music; talk about music; go to the theatre to see a play, dance or opera performance; go to art galleries or museums; go to the cinema to watch a movie; go to a library; talk about books; play a musical instrument or sing; participate in dancing, gymnastics or yoga; talk about art)
Parental occupation	Survey	Determined by responses to questions: What is your parent's/carer's job? Please describe what your parent/carer does in this job.
Survey year	Survey	Survey participation year. Measures changes in student aspirations over time.
Prior achievement	NSW Department of Education	Calculated from the most recent National Assessment Plan for Literacy and Numeracy (NAPLAN) test scores for each student. Attainment was taken as the equally weighted composite of individual student Reading and Numeracy scores. Data for all NSW government schools used to separate scores into quartiles.

Table 2: School-related variables

Variable	Source	Measure
ICSEA	My School (www.myschool.edu.au)	The Index of Community Socio-Educational Advantage (ICSEA) is a standardised scale measuring school advantage based on summarising student level data. A higher score indicates a relative lack of disadvantage. ICSEA scores were categorised using cut-offs from the state quartile values in each year.
Self-perception of relative academic performance	Survey	Perceived achievement relative to peers was a self-assessment item: How are your marks this year compared with other students? (Well below average, Below average, Average, Above average, or Well above average?)
Access to tutoring	Survey	Determined by response to question: Do you attend any out-of-school tutoring?

Statistical analysis

Univariate logistic regression analysis was undertaken to investigate determinants of career aspirations for nursing. All student-related and school-related variables were included as potential predictors in a regression model, reported as adjusted odds ratios and adjusted p-values. To adjust for the correlation of outcomes within students due to repeated measures, a logistic regression model was fitted within a Generalized Estimating Equation (GEE) framework, a method robust against violations of normality and missing data assumptions. The GEE model was compared to an equivalent random effects Generalized Linear Model employing the same data and variables, both of which produced similar estimates and p-values. Data were analysed using SAS software, version 9.4. Statistical significance was set at 0.05.

Qualitative analysis

To understand the factors underpinning school students' reasons for an interest in nursing, open survey responses and focus group data were subjected to thematic analysis. Data were coded by a team of researchers using inductive and deductive logic (Creswell 2013) and analysed with the assistance of NVivo software version 10. A continuous process of reflection and discussion among coders ensured consistency and group consensus (Harry et al 2005) about emerging themes. Identified themes were included in a codebook as a reference point for use by all members of the research team (Guest et al 2011). Multiple methods were used to increase validity by providing multiple perspectives on the same phenomenon (Yin 2009). Reliability was ensured through a well-established protocol documenting each step of the research process (Yin 2009).

FINDINGS

Nursing was the 15th most popular career interest of all student-identified occupations, with 207 students (9 males, 191 females, 7 not stated) expressing an interest in nursing in at least one survey year (3.19% of all students). During focus group discussions, 14 students (2 males and 12 females, 2.5% of all students) from Years 5 to 11 indicated an interest in nursing. Results are reported in three main sections: (1) predictors of interest in nursing, (2) patterns of interest over time, and (3) reasons for interest. Quantitative and qualitative data are combined in the latter two sections.

Predictors of interest in nursing

The only statistically significant predictors of interest in nursing were sex, age, and a parent in a nursing occupation, as shown in table 3. Females were nearly 25 times more likely to choose nursing than males (OR = 24.70). Students interested in nursing had greater odds of being in the Year 7 (OR = 1.98) or Year 9 (OR = 2.27) cohorts than in the Year 3 cohort, and of completing the survey in either 2014 (OR = 2.49) or 2015 (OR = 2.87) rather than 2012, indicating that nursing becomes a more attractive career option as students mature. Students with a parent who worked as a nurse were more than twice as likely to express an interest in nursing (OR = 2.17) than those with parents in other occupations. Notably, no other variables were significant predictors, including SES, prior achievement, Indigenous status, or location.

Table 3: Results of logistic regression analysis

Characteristic	Nursing career choice No n (%)	 Yes n (%)	Odds ratio
Indigenous status			
Indigenous[a]	643 (97)	18 (3)	
Non-Indigenous	9,103 (98)	227 (2)	
Student cohort			
Year 3[a]	2,884 (99)	42 (1)	
Year 5	2,842 (98)	66 (2)	
Year 7	2,785 (97)	87 (3)	1.98*
Year 9	1,700 (96)	62 (4)	2.27*
Cultural capital quartile			
1[a]	2,444 (98)	51 (2)	
2	2,382 (97)	72 (3)	
3	2,502 (98)	61 (2)	
4	2,414 (98)	61 (2)	
Language			
English[a]	8,753 (97)	235 (3)	
Other	1,078 (99)	15 (1)	
School location			
Metro[a]	5,971 (98)	99 (2)	
Non-metro	4,314 (96)	158 (4)	
Parent in nursing occupation			
No, or unknown[a]	9,844 (98)	231 (2)	
Yes	442 (94)	26 (6)	2.17**
SES quartile			
1[a]	2,178 (97)	63 (3)	
2	2,580 (97)	81 (3)	
3	2,193 (97)	60 (3)	
4	2,472 (99)	29 (1)	
Sex			
Male[a]	5,077 (100)	10 (0)	
Female	4,754 (95)	240 (5)	24.70***
Survey year			
2012[a]	2,541 (99)	31 (1)	
2013	3,916 (98)	80 (2)	
2014	1,843 (97)	65 (3)	2.49***
2015	1,986 (96)	81 (4)	2.87***

ICSEA national quartile		
1[a]	2,505 (97)	73 (3)
2	4,133 (97)	146 (3)
3	1,064 (98)	19 (2)
4	2,584 (99)	19 (1)
NAPLAN quartile		
1[a]	1,943 (98)	43 (2)
2	2,385 (96)	93 (4)
3	2,597 (97)	82 (3)
4	2,685 (99)	21 (1)
Self-rated ability		
Below/Well below average[a]	773 (97)	24 (3)
Average	3,804 (97)	130 (3)
Above average	3,030 (98)	66 (2)
Well above average	1,246 (99)	11 (1)
Tutoring		
Yes[a]	1,685 (98)	31 (2)
No	8,373 (97)	223 (3)

Note. [a] reference category. *p < .05, **p < .01, ***p < .001.

Patterns of interest in nursing

The longitudinal nature of the data enabled analysis of individuals' interest in nursing across the survey years, 2012–2015 (see table 4). Of the 115 students who completed more than one survey and named nursing at least once, more than 74% were moving towards or holding a steady interest in nursing. However, more than 24% of the students disengaged from nursing during the study.

Table 4: Patterns of interest in nursing

Pattern of interest	Description / explanation	%
'Towards'	First expressed interest in a non-nursing job, then interest in nursing in each subsequent survey	49.6
'Steady'	Expressed interest in nursing in every survey	25.2
'Away'	Expressed interest in nursing in one survey but not in subsequent surveys	16.5
'Brief'	First chose a job other than nursing, then chose nursing in a later year, then returned to a non-nursing job in the last survey	7.8
'Returned'	First chose nursing, then jobs other than nursing, but returned to nursing in their last survey	0.9

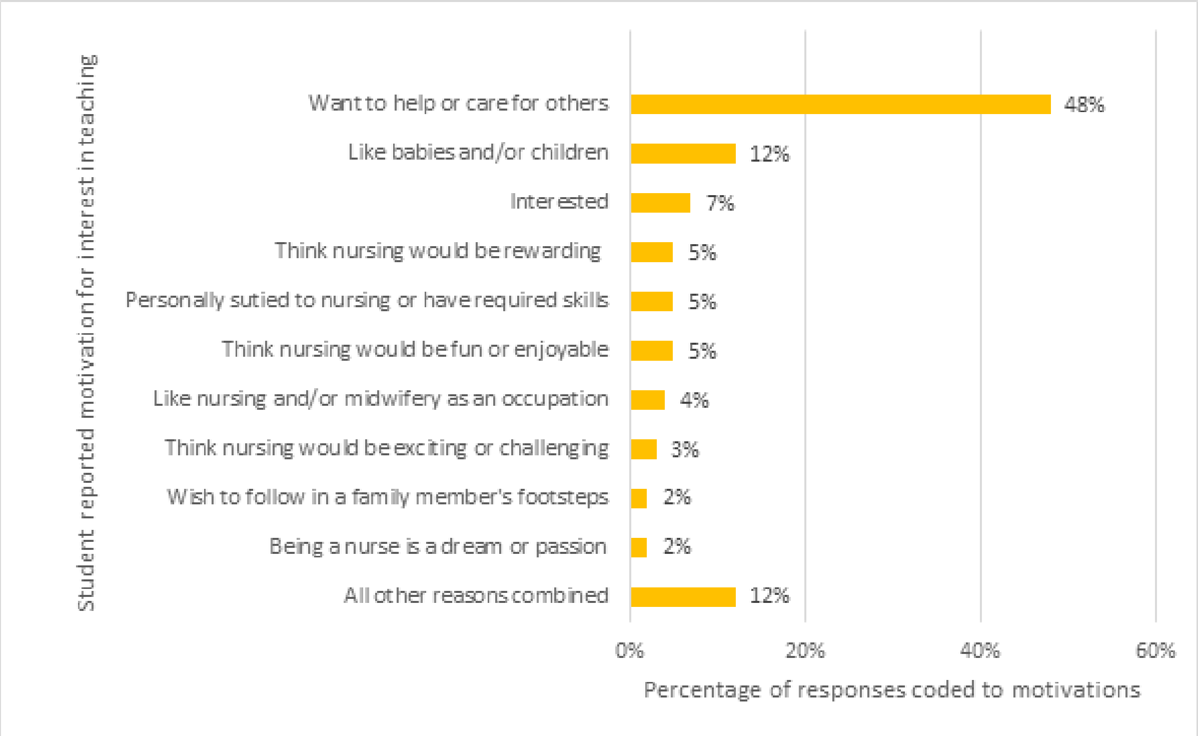
Some indeterminacy about nursing was also apparent in the focus groups. For example, students described nursing as one of several possibilities, including as a 'back-up plan':

> *"I had a lot of different, like, decisions and choices that I've been tossing up between." (Shyanne, Year 11)*
>
> *"[I've been considering nursing since] last year [because] I like helping people and nursing seems like one of the options to do as a career." (Gabriella, Year 9)*
>
> *"They are kind of the same thing [nursing and teaching] because you get to help kids when you're a teacher and you get to help kids when you're a nurse." (Ilyssa, Year 5)*
>
> *"Hopefully a nurse but also a vet or something like that .... But I know that a vet ... there's a lot into it. Hopefully I'll find an easier way but a nurse will do me good." (Neil, Year 9)*

Reasons for interest in nursing

Analysis of the reasons given by students for their interest in nursing (in open survey responses) yielded 11 distinct categories (figure 1). Nearly half of all students who expressed an interest in nursing cited a desire to care for and help others. They wanted to "save lives, help people" (Grace, Year 9), "have a positive influence in their life" (Amber, Year 10).

Figure 1: Students' interest in a nursing career by reason



At the same time, students tended to describe nursing as a 'win-win' career, providing intrinsic reward through helping others as well as providing secure and flexible employment:

> *"I really want to help people and by being a nurse I benefit from making people better."* (Janelle, Year 10)
>
> *"[It's] a stable career. I'd like to help people every day and come home from work knowing I've made a difference." (Louise, Year 10)*
>
> *"[My parents] think it's good because they said I'll always have a job and I can go up into nursing [from Aged Care] if I want to." (Christina, Year 11)*

Favourable perceptions of the profession were also conveyed as students talked about a future in nursing. They believed it required extraordinary qualities, and was a worthwhile career that could provide diversity and freedom from monotony:

> *"[Being a nurse is the] closest thing to a super hero." (Bettina, Year 11)*
>
> *"You've got so many opportunities… you can specialise in a certain ward that you really like because you can… experience them all." (Shyanne, Year 11)*
>
> *"I would wake up every morning not dreading to go to my job."* (Trish, Year 9)
>
> *"[It's] unpredictable which would make every day unique."* (Claire, Year 11)

While only two males discussed nursing as a career during the focus groups, they conveyed positive, if more tentative, perceptions of "probably" wanting to be a nurse:

> *"I wanted to do something in the medical region... a nurse would probably be my place where I want to be." (Neil, Year 9)*

When another boy laughingly mentioned a film where a male nurse is a figure of ridicule, Neil was not deterred: "I wouldn't mind. It would be good". His friend then acknowledged Neil's suitability for nursing, with an appropriate disposition for carrying out caring work:

> *"You've got a very caring nature. As soon as someone is hurt, you are always there and comforting them even if you don't know what happened." (Jaylen, Year 9)*

Students often drew on personal experiences with nursing as they explained their interest in this kind of work. Some students identified with and wanted to emulate other nurses:

> *"I'd love to take after my mum. I have been to work with her plenty of times. I love taking care of people and to think I'd be helping someone who needs my helping hand." (Narelle, Year 9)*
>
> *"My mum's family friend actually just finished her nursing stuff... She gives me questions and I answer it... she's just getting me warmed up for it. ... So I'm really excited to do that." (Georgie, Year 6)*

Students' experiences with illness also brought them into close contact with the world of nursing work and strongly influenced their interest:

> *"Helping people out, like, the kids ... that have cancer and stuff .... I've always wanted to be a nurse since my cousin died of cancer." (Zoey, Year 7)*

Exposure to nursing through work experience and part-time work also shaped interest in nursing:

> *"I did work experience in a hospital and loved it. I currently work in an Aged Care facility and I'm hoping to move up in the nursing industry as an RN." (Wendy, Year unknown)*

DISCUSSION

Results of this study depart from prior research in two main ways. First, although a previous Australian study found that average to below-average academic ability predicted interest in nursing (Dockery and Barnes 2005), prior achievement was not a significant variable in our analysis, indicating that students from across the achievement quartiles, including high-achieving students, were interested in nursing. Second, nursing was neither an unpopular career choice (Neilson and Jones 2012) nor of limited appeal (Dockery and Barnes 2005) to the primary and secondary students in this study. It was considered a worthwhile, rewarding, and stimulating career, requiring exceptional, even 'heroic', qualities.

Nursing remains one of the most persistently feminised workforces in Australia, with nine out of every ten nurses and midwives being women (Australian Institute of Health and Welfare 2013). Our study reinforces the dominant perception of nursing as caring work, with gender continuing to influence intentions to enter the profession (Price et al 2013). As found in previous studies, a "helping orientation" (Miers et al 2007, p.1198), or desire to help and care for others (Jirwe and Rudman 2012; Mooney et al 2008; Hemsley-Brown and Foskett 1999), was the primary driver of interest in a nursing career. On the other hand, it was encouraging that nine male students were among our sample of 207 who expressed interest in nursing. Their positive talk about nursing runs counter to a previous study which found that 15-year-old boys were openly antagonistic towards nursing as "a girl's job" (Hemsley-Brown and Foskett 1999, p.1346).

Prior direct contact with nursing also provided strong motivation for entering the profession. Personal experiences and interpersonal interactions with nurses served to shape students' visions of possible futures in nursing. In particular, a parent working in the field afforded students personal experience of what was likely to be achievable for themselves. Family and friends, work experience, and other interactions with nurses and healthcare settings, gave students a sense of what nursing entails, which in turn strengthened their interest in nursing.

Aspiration in formation: a contested space

Longitudinal research enables a comprehensive analysis of how career reasoning develops over time (Howard et al 2015). Students' ambivalence about nursing as a career choice, exemplified through shifts toward and away from nursing over the course of the study, is noteworthy.

Students explore, and are open to a variety of career options, especially during their middle school years (Cohen et al 2004). Gottfredson (2002) proposed that children develop an awareness of occupational roles and reject occupations they perceive as more suited to the opposite sex, as low status, or too difficult for them to attain. Others suggest that, over time, children 'learn their place' and align their aspirations with classed, gendered, or racialised paths that effectively fit family-class backgrounds (Archer et al 2014). Similarly, our study showed that as students advanced through schooling, they aligned altruism with the practical realities of careers.

Implications for building the nursing workforce

Our study underscores the importance of engaging future nurses early in their career decision-making process. If we are to enhance recruitment and retention within the profession, we need to understand that competition exists from related 'caring' careers, such as teaching and veterinary science. Although there was a stronger trend towards rather than away from nursing during our study, nearly 25% of once-interested students disengaged from this career choice. While nursing remains unique amongst health professions in its capacity to foster early commitment to the profession, it is no longer the only career option for students with a helping orientation. Graduate programmes in non-medical health professions including physiotherapy, occupational therapy, radiotherapy, and diagnostic imaging, are emerging as strong competitors for nursing recruits (Miers et al 2007). Thus, school students' inclination for and interest in nursing needs to be nurtured if their caring predisposition is to translate into nursing enrolments.

Student aspirations are often set well before Year 10 (Gore et al 2015). By late primary school, many young people have rejected certain jobs, including nursing, on the basis of perceptions. Our study indicates that experiential activities that give young people a sense of what the world of nursing work involves, are instrumental in increasing nursing's appeal beyond the 'traditional' aspirant. Innovative strategies overseas have involved: partnerships within industry; prime-time television advertisements; video and print recruitment materials; fund-raising for student scholarships; and grants to expand capacity in nursing schools to (Buerhaus et al 2005) as well as a 'Nursing Exploration Summer Camp' whereby participants gained hands-on experiences of what a nursing career will involve (Matutina 2008).

Our findings also signal an important role for Australian universities in actively promoting nursing as a career choice (Stanley et al 2016). As student work experience in nursing becomes increasingly challenging for public teaching hospitals to resource, there are new opportunities for cross-sector collaboration between universities, schools, and hospitals. Strategies that showcase the world of nursing work to school students have clear potential to engage their interest in and broaden their understanding of nursing.

This paper offers new understandings of predictors of nursing student recruitment, with its unique sample of primary and secondary school students. While childhood aspirations do not necessarily predict future outcomes and participation, they can indicate the types of careers young people are likely to pursue later in life (Archer et al 2013). By better understanding the motivations of school students drawn to a nursing career, we can develop more targeted approaches to recruitment. This study, however, also highlights key challenges in recruiting the next generation of Australian nurses. It is critical to appreciate that nursing is not the only career that will appeal to students with a strong helping orientation and that other 'caring' careers are strong rivals for nursing recruits. Innovative strategies that promote and nurture school students' interest in nursing are essential if we wish to ensure growth and stability in the profession.

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Improving diabetes control in the community: a nurse managed intervention model in a multidisciplinary clinic

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KEYWORDS

Nurse, chronic disease care interventions, disease manager, diabetes, primary care, multidisciplinary clinic

ABSTRACT

Objective
To assess diabetes management and control measures in a central multidisciplinary primary care clinic, conducted by a nurse.

Design
A cross sectional study.

Setting
Central, multidisciplinary, primary care clinic.

Subjects
Randomly selected 100 people with diabetes.

Interventions
People with diabetes with suspected non-optimal glucose control (HbA1c > 7%), were invited to the clinic nurse to discuss optimal personal diabetes control, treatment and follow up. All were provided the necessary referrals to consultants and were called in for follow up visits, and received telephone reminders. All interventions were made according to the current American Diabetes Association Standards of Medical Practice recommendations.

Main outcome measures
Retrospective data were collected. Data included demographics and diabetes control measures (e.g. HbA1c, LDL, blood pressure, ophthalmologic examination etc.). Data was collected for three x 6 months periods: 1) six months before the nurse visit; 2) six months following the first nurse visit (the intervention); and 3) for patients who were followed up for at least one year after the intervention, the last six months of follow-up.

Results
With a median follow up of 25 months, HbA1c, LDL and systolic blood pressure levels dropped significantly from before starting the clinic through the intervention and remained low in the last half year of follow up. GP, Ophthalmologist and Dietician visits increased significantly during the study. Non-significant trends were observed with total and diabetes-related hospitalisations decreased, foot examination rates increased and mild weight loss.

Conclusion
Multidisciplinary intervention managed by a nurse, improve diabetes management and control measures. Observed changes persisted after the intervention period.

INTRODUCTION

The treatment of chronic disease such as Diabetes Mellitus (DM) is not a simple task for the staff in the Primary Care clinic. A number of models have been created to improve quality of care and counseling chronic patients utilising either physicians only, or in a physician-nurse combination. Bodenheimer et al (2002) surveyed the results of research that studied intervention based on a model of treatment of chronic disease in people with diabetes. Most (32 out of 39 studies) found a positive effect on the process or in at least one result in people with diabetes. In addition, 18 of 27 studies that examined treatment cost in three chronic diseases (diabetes, hypertension, and heart disease) found a drop in costs or health services usage. Studies that compared nurse care manager to primary care physicians showed equivalent or even better results in diabetes control (Watts and Lucatorto 2014).

Many studies have attempted to identify and characterise the management of chronic diseases, and the role of case managers as certified educators in such a program (e.g. baseline assessment, economic analyses, guidelines implementation, educational interventions and outcomes assessment) (Watts and Sood 2016; Jones 2015; Aliha et al 2013; Huston 2001). These studies have also shown that telephone follow-up by a nurse leads to metabolic parameters improvement and better adherence to treatment recommendations in people with diabetes. Changes in the management of chronic diseases have opened up the opportunity for significant professional development for nurses working with chronic patients (Brown et al 2016; Chamberlain-Webber 2004). In evaluating the nurse's contribution to the management of chronic diseases, it was found that nurses have the ability to develop professionally in the field of managing care in the health system; work with other professionals including the primary care physicians; to implement and maintain the process in a multidisciplinary team (Kim 2016; Forbes and While 2009; Watts et al 2009; Witter 2005) and partnership with the patient's close family circle with home assessment, education and support and facilitate access to community resources (Aliotta et al 2008).

It was found that nurses have a major effect when counseling patients on self-management of their disease, particularly when combined with the proactive care management model (Watts and Sood 2016; Aliha et al 2013; Washburn and Hornberger 2008; Hainsworth 2005) and decision-making support. The effect was both on diabetes control (glucose and HbA1c) and on patient adherence to disease management (visits, self-monitoring, and adherence to treatment).

Berra et al (2011) have shown that nurses' structured personal supervision, based on guidelines, can significantly contribute to lowering cardiovascular morbidity and mortality. Other studies have shown that care management delivered by a nurse or team of nurses' increases use of health services for people with diabetes and improved short-term quality of care measurements. However, long-term effects on DM control have not been studied (Wilson et al 2005; Loveman et al 2003). Comparison of care provided by a physician alone and care provided by a physician – nurse combined, showed a greater contribution with combined team work in chronic illnesses (Litaker et al 2003), in treatment of Type 2 Diabetes patients (Luzio et al 2007; Stevenson et al 2001) and in patients with hypertension and Type 2 Diabetes (Gross et al 2009; Hendrix and Wojciechowski 2005). Furthermore, an organised systemic plan utilising a multi-disciplinary team was shown to lower the number of hospitalisations and improve follow up rates and balance of blood glucose, HbA1c and blood pressure results (Domurat 1999). However, the overall results from research of disease management by nurses' have not been published (Watts et al 2009) except for long term HbA1c (Watts and Sood 2016).

Maccabi Healthcare Services is the second largest health maintenance organization (HMO) in Israel, insuring about 2,000,000 patients. All medical follow up and care are performed through a common computerised medical file used by all the Maccabi health care staff.

In Maccabi Healthcare Services, some clinics function with a multidisciplinary team including primary care physician, nurse, social worker, pharmacist, physical exercise consultant and other medical specialists. These clinics care for chronic disease patients and can perform specific interventions for predefined populations. The clinic nurse leads the intervention process and manages the care according to the model of chronic disease management, which combines patient education and follow-ups of both medical (direct disease measures and medications) and process (self-monitoring, staff visits and scheduling). Over the last years, an emphasis has been put on care and control of DM, watching specific parameters that enable follow up and evaluation of patient disease control. This study allows us to examine the efficacy of diabetes care management by a nurse in a multidisciplinary clinic.

METHOD

The purpose of this study was to assess diabetes management and overall control measures in a central primary care clinic, conducted by a nurse. The study used a retrospective, cross sectional design.

In Maccabi Health Services, Sharon District, a multidisciplinary team clinic has been active since November 2008. The clinic cares for about 10,000 patients, 800 of whom have diabetes. People with diabetes receive specific interventions according to a predetermined protocol and the clinic nurse performs the treatment management. All medical data regarding patients (clinic visits, medications, lab results, etc.) are in the medical file, and the research was carried out by systematic data retrieval from the central medical database. The intervention procedure consisted on identifying people with diabetes with non-optimal control (HbA1c > 7% or personal goal as set by the physician), inviting them to come and see the clinic nurse (who has specialty training in diabetes), either by direct summoning by the nurse or by referral from the patient's physician. Patients received personal guidance regarding the disease, the importance of treatment and control, avoiding complications, explanations on self-management and empowerment, correct use of blood glucose meter and home sphygmomanometers, and were provided referrals to consultants and the necessary providers for continued care and follow up (ophthalmologist, dietician, social worker, physical exercise counselor etc.). During the intervention, the patients were called in for follow up visits, and received telephone reminders and counseling to monitor themselves according to the accepted recommendations. All interventions (management, follow ups and goals) were made according to the current American Diabetes Association Standards of Medical Practice recommendations and were personalised by the diabetes consultant. The multidisciplinary process was conducted and managed by the clinic nurse.

The sample was a convenience sample. In accordance with the research protocol, the first 100 eligible patients to visit the clinic during the study period, who had been diagnosed at least one year before the intervention were selected.

We collected, directly from the medical records, demographics and diabetes control measurements (cholesterol and HbA1c levels, urinalysis for microalbumin/creatinine ratio, blood pressure and weight measurements taken by the trained study nurse, eye and feet exams and the clinic staff follow-up) at three points in time at 6 month intervals each (figure 1).

"Time 0", the initial start of the study, was defined individually per patient according to the patient's first nurse visit (the beginning of the intervention). The time periods were defined as (figure 1):

1. The six-month interval starting one year before the intervention until six months before the intervention. This baseline period was selected to establish the patient's baseline rather than the immediate pre-intervention status that might be argued as affecting the recent patient compliance (the actual summoning for the study, for example).

2. The six-month interval after the initial clinic nurse visit (the intervention period).

3. We also collected data from the last six-month period as follow-up, where available, for patients whose intervention period started over one year before gathering the data. For each time period, the last measurement was recorded for each variable.

In addition, we collected data from the last blood tests before the intervention period (pre-visit 1). In order to create uniformity, the measurement taken was the last performed in each time period.

The research was approved by the institutional research committee and by the institutional review board (IRB).

We used descriptive statistics to evaluate the different variables, and compared the results of the baseline, intervention and follow up by a paired student T test for continuous variables and chi square for the categorical variables. The data was collected and analysed anonymously using SPSS version 16.

FINDINGS

Our research collected data on 100 people with diabetes who were randomly selected from all the people with diabetes in the clinic. Fifty-two percent were male. The average age was 63.1 (±11.92) years, with a median age of 63 years. For every patient medical data was collected for each of the three defined periods as well as an additional pre-visit. Median follow up (for period 3) was 25 months. Patient data during the study periods is presented in table 1. For the various measurements, comparisons were made between baseline period and the pre-intervention visit, and the measurements in intervention and follow-up periods. HbA1c averages before the intervention were 8.31%±1.86 mg%, during the intervention were 7.19±1.11, and in the final six months of follow up 7.22%±1.41 (p<0.01). LDL levels were 105.45±3.88, 90.99±29.16, and 90.74±25.85 respectively (p<0.05). Systolic Blood pressure levels also dropped from 140.06±18.85 to 134.33±16.08 and 134.8±19.15 respectively (p<0.01). A weight loss was also observed.

Table 1: baseline and follow-up

	period 1 ***-(1 - ½) yr*** ***n=82***		**pre-visit 1** ***n=100***		**period 2** ***(0 - ½)yr*** ***n=97***		**period 3 #** ***last ½yr*** ***n=94***	
	average	***median***	***average***	***median***	***average***	***median***	***average***	***median***
LDL-Cholesterol**	98.33 ± 33.52	92	105.45 ± 36.88	99	90.99 ± 29.16	89	90.74 ± 25.85	84.5
HbA1c*	7.74 ± 1.66	7.25	8.31 ± 1.86	7.7	7.19 ± 1.11	6.95	7.22 ± 1.41	6.9
microalbumin/ albumin ratio (U)	40.91 ± 68.26	10			45.19 ± 82.13	10	45.68 ± 82.74	12
systolic Blood pressure**	147.51 ± 24.18	142	140.06 ± 18.85	135	134.33 ± 16.08	130	134.9 ± 19.15	129
weight	87.48 ± 18.99	84.3	86.07 ± 14.35	84.5	85.89 ± 15.04	83	84.6 ± 13.6	83.8
BMI	33.11 ± 6.71	31.74	31.56 ± 4.9	31.05	31.52 ± 5.16	31.02	31.5 ± 4.9	31.01
foot examination**	26%				94%		66%	
phone reminders/ visits (n)	<0.1				1.69 ± 2.53	1	1.06 ± 1.87	0
nurse visits (n)	none				2.7 ± 1.91	2	0.85 ± 1.54	0
dietician visits (n)	0.26 ± 0.76	0			1.17 ± 1.29	1	0.35 ± 0.91	0
physician visits (n)**	5.57 ± 4.58	5			8.78 ± 4.98	7	7.68 ± 5.11	7
ophthalmologist visits**	48%				92%			
hospitalisations (DM related)	0.04 ± 0.24	0			0.01 ± 0.1	0	0.01 ± 0.01	0
hospitalisations (all cause)	0.06 ± 0.28	0			0.03 ± 0.17	0	0.07 ± 0.36	0

* p<0.05
** p<0.01
\# median follow up (period 3) 25 months

The rate of preventive foot examinations increased from 26% to 94% during the intervention and increased to 66% in the final follow up period ($p<0.01$).

The number of dietician visits increased during the study (N.S.), as did the rate of ophthalmologist ($p<0.01$) and family physician visits ($p<0.01$). Conversely, the rate of both all cause and diabetes related hospitalisations dropped. Approximately half of the patients were referred to a dietician during the Intervention period (53%). Of those who actually consulted a dietician, average HbA1c values dropped from 8.62%±2.08 to 7.28%±1.32 ($p<0.01$).

Of those referred to a dietician, but did not go a similar drop was found, with HbA1c levels dropping from 8.49%±1.74 to 7.26%±0.94 ($p<0.01$). There was not a significant difference found between dietician attendees and non-attendees.

According to accepted clinical guidelines for diabetes, a yearly visit to the ophthalmologist is recommended. Almost half of the patients (48%) fulfilled this recommendation in the year preceding the intervention period. Of these, at the end of intervention and follow up periods, 94.64% and 76.79% respectively visited the ophthalmologist. Patients who were noncompliant with this measure in the past were instructed to see the ophthalmologist, and an appointment was made for them. Of these, at end of intervention and follow up periods, 88.64% and 54.55% respectively visited an ophthalmologist during the year.

Comparably, clinical guidelines for diabetes recommend a yearly foot examination. This examination is done and recorded in the medical records by the nurse, at least once a year, for every person with diabetes who visits the clinic. Twenty six percent of the patients had a recorded foot examination in their medical records during the baseline period. Of these, 84.6% had a recorded foot exam by end of the intervention period, and 73.1% by end of the follow up period. Conversely, of those whose foot examination was not recorded during baseline period, 96% completed the examination during period 2, and 62.2% during period 3.

Some of the intervention patients also participated in a support group workshop for diabetes, in addition to the intervention process. On comparing these two subgroups, no significant difference was found in HbA1c and Blood pressure levels between these groups.

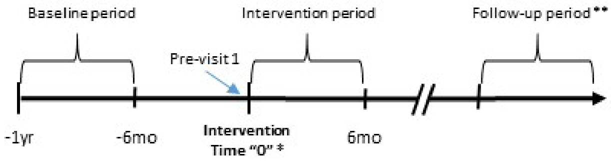
DISCUSSION

The control of diabetes in people with diabetes is one of the significant tasks confronting the health care staff. Cooperation between the staff members can contribute to both the quality of care and result in better diabetes control markers. Various studies have examined the role of the disease care manager (Watts and Sood 2016; Jones 2015; Watts and Lucatorto 2014; Aliha et al 2013). Our study examined the utility of diabetes care management by a nurse in a multidisciplinary urban clinic.

In our study, people with diabetes in the clinic who were either not achieving optimal control markers or who had not been performing the recommended follow up for diabetes were proactively invited to come and see the diabetes disease control nurse. During the intervention, the patients were given personal counseling that included knowledge about the disease and were empowered regarding disease control. The counseling was made according to the patients' needs and optimal disease care and follow up targets, and included clinic visits, counseling sessions and telephone supportive talks. We collected data on 100 randomly selected people with diabetes at three 6 months intervals with a median follow up of 25 months (figure 1).

A significant improvement was observed following the intervention, through the follow up period in LDL cholesterol, HbA1c and systolic blood pressure. We also found a lasting improvement in annual eye exams and annual foot exams as well as a drop in diabetes-related and non-diabetes-related hospitalisations and an increase in dietician visits. The lasting changes we observed in the follow up period represent the maintenance of the control achieved in the intervention period by the patients themselves and show success in patient empowerment. These results are consistent with the literature of chronic disease management by a team manager; however, it also shows the effectiveness of the nurse as the disease manager.

Figure 1:
3 defined study periods



* Defined individually per patient
** Where available

One should note the improvement of systolic blood pressure after the intervention and during follow up to levels of less than 135mmHg (median of 130mmHg during follow up). Although these blood pressure levels are considered well controlled for people with diabetes (especially with a high urine microalbumin/creatinine ratio) it raises a question of future risk to the study population, with a median age of 63 years. We assume the improvement in blood pressure was mainly due to the nurse's intervention and patient empowerment, which may result in better adherence to diet, exercise and medications. Medical systems will need to address this issue.

The nurse intervention averaged 2.7 clinic intervention visits and 1.69 phone calls per patient over the 6 months period. The number of visits with the family physician rose by 37.8% between baseline and follow up periods. Although this large increase in visits may be seen as a burden on the system, we must remember that these are people with poorly controlled diabetes and there is a definite advantage to closer family physician supervision, at least initially, until optimal long-term control is achieved. The overall improvement in these patients health should eventually cut morbidity, costs and finally clinic visits. Furthermore, if we examine the increase in referrals to the dietician, we see a significant increase during the intervention period, which dropped close to baseline levels during the follow-up period. This supports the hypothesis that patients continue the consultants visits "according to need" so the burden to the system caused by a high referral rate is necessary. Further study is needed to examine continued follow up and care of these patients, optimal referral rate and the long-term cost in terms of clinic burden.

About half of the patients were referred to the dietician during the intervention period. However, there was no significant difference in HbA1c levels between those who actually visited the dietician and those who did not. This may imply that basic counseling given by the nurse may be sufficient for a large portion of the patients, although there may be differences in tools for a healthy diet provided to those who consulted the dieticians, which may become evident in longer follow-ups. Further research is needed to investigate if these long-term differences can be elucidated. We found that almost all patients who had not consulted the dietician before intervention, complied with the referral if an appointment was made for them, and some continued with the dietician follow up visits in the follow up period. This implies that disease management and the nurse's influence holds an important role for people with diabetes.

Multidisciplinary support workshop is offered to all people with diabetes at a nominal cost; however, there was no significant change in the control measures. Here too, it may be that the long-term tools for dealing with diabetes provided by this workshop would contribute to the long-term control of the disease.

LIMITATIONS

Our study has several limitations. First, the study is retrospective and the population was composed of people with diabetes from a central urban multidisciplinary clinic, which may not represent rural or peripheral clinics. Further prospective research could be conducted in a wider geographical range. Second, the study was conducted in a multidisciplinary clinic with a nurse specialised in diabetes. The study results show the advantages of the nurse as a disease manager, however, further studies should test if non-diabetes-specialised nurses can also achieve similar results. Third, chronic disease such as diabetes may also be related to other chronic diseases such as depression. We did not test the patients mental status at the baseline, however, following studies may address this issue as well as other clinical lab measures. Fourth, we did not collect any medicines information. Further studies, with far larger sample will be needed to assess medicines education, which is also a core nursing activity. Finally, median follow up in this study was 25 months. More research is needed to further investigate longer lasting effect of the intervention.

CONCLUSIONS AND RECOMMENDATIONS

The results of our study show that intervention by a multidisciplinary team managed proactively by a nurse significantly improves diabetes control in almost all measures examined. These improvements are observed in the post intervention follow up period. As expected, these changes include an immediate improvement in Diabetes control markers, but also in the patients' ability to manage their illness, as exhibited in the continued visits to the multidisciplinary staff. Other than improving clinical outcomes, management of chronic diseases is also an important professional development for community nurses in the field of managing care in the healthcare system. Individualized focus on the patient and personal professional accompaniment by the nurse contribute to this achievement of goals. We suggest policymakers should consider a nurse as the chronic disease manager of diabetes in the community setting.

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Is it time to re-examine the doctor-nurse relationship since the introduction of the independent nurse prescriber?

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KEY WORDS

Non-medical prescribing, power, professional relationship

ABSTRACT

Objective
The aim of this paper is to stimulate a debate and discussion into how the nurse-doctor relationship needs to change.

Setting
The National Health Service, United Kingdom.

Primary argument
The nurse-doctor relationship needs to be re-evaluated in light of the expanding role of nurse`s into areas that traditionally had been considered a doctor`s role. While the medical profession has been willing to relinquish some control to nurses in areas such as wound or incontinence care because these aspects do not threaten their authority, position or power. The issue of non-medical prescribing remains for some in the medical profession a topic of concern. Despite non-medical prescribing being discussed widely in the literature very little has been mentioned about how the introduction of the nurse prescriber has impacted the professional relationship between the nurse and the doctor.

Conclusion
The blurring of the roles between nurses and doctors requires a re-evaluation of this relationship. As nurses take on more responsibility such as prescribing medication the old traditional view of this relationship is no-longer viable, if we are to maximise patient health care in the 21st century.

INTRODUCTION

In order to explore the relationship it's important to understand the context of how this relationship has changed. The Introduction of nurse prescribing has had a profound effect on how a patient can obtain a prescription (Courtenay et al 2011; Jones et al 2011; Watterson et al 2009). This has resulted one might say in the inevitable blurring of the professional boundaries between the medical and nursing professions (Kroezen et al 2014; Kroezen et al 2013; Natan et al 2013; Bowskill et al 2012). What made doctors unique from other health professionals was the authority to prescribe medication and as a result the medical profession opposed granting prescribing rights to non-medical professionals. They had used similar tactics during the introduction of the National Health Service (NHS) to maintain a position of privilege and power. However by the 1990`s the political as well as medical landscape had changed. Politically the UK government faced numerous challenges on the public purse, cutting funding to the NHS would be seen as a vote loser. However making the resources already available to the NHS more accessible was something the public could understand. While secondly acknowledging that health care had become more technical and multifaceted requiring a much more co-ordinated approach. As a result, according to McCartney et al (1999), the UK government shifted its policy to reflect these views. A key component of this new policy was to extend prescribing rights to nurses and then use these nurses to make up the shortfall in doctors within the NHS. The government pushed through these plans despite the objections of the medical profession as a step too far and an attack on their authority (BBC 2005; Day 2005; Horton 2002).

The concept of the nurse prescriber is not unique to the UK but can be found worldwide from America, Australia, Europe and New Zealand. But what is unique is how extensive these rights are in the UK compared to other countries. In the UK a nurse can prescribe medication via two mechanisms. The first is as a supplementary prescriber (SP), under this method a tripartite agreement called a Clinical Management Plan (CMP) is drawn up between the doctor, the supplementary prescriber (a nurse or pharmacist) and the patient. This plan outlines the care and treatments that all parties agreed to with regard to the patients' illness and under what circumstances the SP could adjust or amend a patient's prescription without necessarily seeking the doctors' permission. It also outlined when the SP had to refer back to the doctor if the patient's condition fell outside of the parameters agreed.

Although the mechanism had many advantages (Carey et al 2014; Carey and Courtenay 2008; Morrison and Weston 2006; Hennell 2004), it allowed the SP to prescribe any drug as long as the drug or class of drug was mentioned in the CMP. Its main strength was that it worked well for patients with long standing health issues such as Diabetes, Asthma, Hypertension or COPD under the care of a dedicated doctor (Bissell et al 2008; Cooper et al 2008; Courtenay and Carey 2008; Courtenay et al 2007). However this mechanism had a number of weaknesses, it was cumbersome and time consuming because each patient needed to have a CMP before the SP could prescribe any drugs. If the patient presented with a new health problem not covered in the CMP the SP could not offer any treatment and would have to refer the patient back to the doctor. It was this inflexibility that eventually led to the UK government to introduce the independent non-medical prescriber in 2006. The key advantage of the Nurse Independent Prescriber (NIP) over the SP was the ability to prescribe drugs without the need of a CMP or requiring medical approval first. The success of NIP can be measured in terms of an improvement in the effectiveness of health care delivery, and being more responsive to the patients' needs (Jones et al 2011, Oldknow et al 2010).

As a result of the success of NIP the medical profession has shifted its argument away from the loss of medical authority. Instead they have moved to questioning non-medical prescribing in terms of its safety, its comparability to medical prescribing and even whether it is really necessary (Funnell et al 2014; Carey et al 2009; Watterson et al 2009; Bradley and Nolan 2007; Ladd 2005; Latter et al 2005; Fisher et al 2003; Rodden 2001; Luker et al 1998). While these questions are legitimate concerns, it's surprising that the same arguments have not been used to highlight similar concerns about the prescribing habits of junior medical staff compared to more senior medical staff. Which raises the possibility the medical profession is using non-medical prescribing concerns to re-impose its medical domination. But what has not been debated or discussed to any great depth is the effect of the introduction of non-medical prescribing on the relationship between nurses and doctors. However before we can discuss this relationship we first need to understand the backgrounds of these two professions.

THE ORIGINS OF MEDICAL POWER

Any attempt to analyse how the medical profession became so dominant in health care, must as a starting point understand that this dominance was not achieved overnight. It was in fact a long process. Michel Foucault one of the greatest philosophers and social theorists of the 20th century identified that the origins of medical power began to flourish from the 17th century onwards in what he called the "Disciplines". These disciplines began to develop alongside the developing institutions such as schools, hospitals and military organisations. The introduction of Disciplines not only standardised behaviour (Hardin 2001) but it was through this disciplinary power that one can meticulously control the body and use subtle coercions, to produce a docility-utility (Foucault 1995). This docility-utility is the means by which a person has hold over others so that they operate in a desired manner, with the techniques and efficiency that the person determines (Foucault 1995). This power was clearly identified in the seminal work of Freidson (1970) who argued that the medical profession had achieved this position of dominance by successfully negotiating considerable state sanctioned autonomy and self-regulation. In other words the medical profession over time began to slowly exert itself in areas over health and medicine. This control resulted firstly in dictating who should enter the profession to eventually who could legally treat a sick person. This dominance resulted in occupations such as Nursing and Pharmacist to fall under medical control.

However the very success with which the medical profession now controlled health care delivery, began to come under scrutiny from the government in the face of growing demands for improvements in health care delivery and a more efficient use of resources. This was most clearly indicated by the Wanless Review (Welsh Assembly Government, 2003) that assumed that 20% of work undertaken by medical staff will eventually be carried out by nurses. Some of these roles have been supported by the medical profession such as - wound care specialists, incontinence nurses; and diabetic nurses because they work within a framework of protocols and formularies, developed and approved by the medical profession that restricts and places the nurse in a subordinate position to the medical profession still (Creedon et al 2015). The government however was looking for a more radical solution to improve patients' access to timely treatments. What was highlighted was that patients at times faced delays in treatment, because doctors were not available to prescribe medication the patient needed. While experienced nurses who understood what was needed could not give that care. The government's response was to propose expanding prescribing rights to suitable qualified and experienced nurses, a response not universally supported by the medical profession.

ORIGINS OF THE NON-MEDICAL PRESCRIBER

The attraction for the government of the introduction of the nurse prescribers' role was to make the NHS more responsive to the needs of the patient (NHS Plan 2000). However to implement this plan would require the government to undertake a complex legislative program of drafting new legislation and amending current legislation governing prescribing authority. The government also faced strong opposition from the medical profession to the development of the non-medical prescriber (Keighley 2006; Avery and Pringle 2005; Horton 2002). The medical profession viewed the introduction of the nurse prescribers' role, as a direct challenge to both their authority and power (Elsom et al 2009; Waring 2007; Avery and Pringle 2005; Day 2005). This opposition to nurse prescribers should not be considered as unique to the United Kingdom; similar arguments were put forward in Australia (AMA 2005), New Zealand (Mackay 2003) and America (Hales 2002; Sharp 2000). The medical profession opposition to nurse prescribing in the UK however failed to appreciate that it was not solely about improving patient's access to timely health care. The UK government was in fact seeking ways to improve the efficiency of the NHS, in the face of an aging population with multiple complex health care needs that require multiple agency co-operation. It was an acknowledgement by the UK government that the medical profession could no-longer be the sole provider of health care. The solution to this problem according to the UK government was the nursing workforce. Nursing had become a graduate-entry profession and many nurses have undertaken a Master's degree giving them specialist qualifications. Coupled with the increasing technical skills required to perform many nursing tasks, expanding prescribing rights to suitably qualified and experienced nurses seemed a most logical solution to the UK government.

Having lost the argument the medical profession has seen an extensive legislative program put forward by the UK government. This initially gave prescribing rights to just nurses and pharmacists, but with this success it eventually saw it expand to include chiropodists/ podiatrists, physiotherapists, optometrists and radiographers. The nurse prescriber is now a vital part of delivering health care to-day. As the number of Nurse Prescriber`s have increased 43,000 in 2006 to 72,000 in 2015 (Merrifield 2015) many institutions such as hospitals, walk-in centres and GP practices routinely have nurse prescribers present. Despite the opposition of the medical profession to the concept of nurse prescribing, none of their dire predictions, such as patients coming to harm due to a non-medical prescriber over prescribing medication or inappropriate prescribing, have occurred. What has yet to be determined is how the introduction of the Nurse Prescriber has affected the professional relationship between the two health professionals.

DISCUSSION

> *"A nurse must begin her work with the idea firmly implanted in her mind that she is only the instrument by whom the doctor gets his instructions carried out: she occupies no independent position in the treatment of the sick person" McGregor-Robertson (1902).*

This statement, despite being over 115 years ago, demonstrates quite clearly the dominant position the medical profession had procured for its self with regard to health care delivery. Echoes of this dominance can still be found in the medical professions continued opposition to non-medical prescribing. However in the 115 years since this statement health care has undergone a dramatic change in terms of treatments and technology, but so too has societies views on gender stereotyping. Health care does not live in a vacuum and as society began to change so did health care, women were no-longer held back to being just nurses they were now physicians and surgeons. As a result from the late 1960`s through the 1970`s marked an important turning point in the field of social science research. This research was not solely related to society, health care also came under investigation. The work of Stein (1967) looked at the professional relationship between nurses and doctors in his article called "The doctor-nurse game". This article explored this relationship, starting from the superficial stereotypical idea dramatised in numerous novels and television series, to the game model, that demands participation. The attitudes created cause serious obstacles in the path of meaningful communication between physicians and nonmedical professional groups.

This idea of the nurse-doctor relationship has been further developed by numerous authors such as Freidson (1970), Abbott (1988) and Adamson et al (1995) who suggested that the relationship between the medical and nursing profession display the classical case of a dominant profession (medicine) controlling a subordinate profession (nursing). The drive to maintain a dominant position continues to be the focus point of the nurse-doctor relationship (Apesoa-Varano et al 2011; Fisher 2009; Hirschkorn 2006; Fisher 2005). However despite this continuing need to impose themselves on other health professionals authors such as Copper et al (2008) and Kroezen et al (2013) have suggested that with the introduction of nurse prescribing the professional boundary between the medical and nursing professions need to be reassessed.

Prescribing had been traditionally an indication of the clinical autonomy and professional power of the medical profession within the wider structure of society (Weiss et al 2006). With the introduction of the nurse prescriber the medical profession has attempted to limit the sharing of knowledge with other health professionals, as well as making the medical profession the sole arbiter of health care management. The dichotomy between the perception (of what the medical profession believes is the extent of their power) and the reality (of how this power has been eroded) has become in effect what Fagin and Garelick (2004) described as the on-going conflict around the doctor nurse working relationship. The medical profession has in response to nurse prescribing shifted its self from its prescribing role to one of a diagnostician in an attempt to re- impose its dominance over other health professionals. This action could be interpreted as the medical profession`s failure to accept that it is no-longer in charge (Dent 2006, Willis 2006).

Health care is now viewed as a partnership between health professionals (a doctor or a nurse) and the patient. This change has also seen a shift in the relationship between health professionals. In part this is due to the blurring of roles between doctors and nurses. This has resulted in numerous authors suggesting that doctors should no longer be regarded as top of the health hierarchy nor thought of as indispensable to the delivery of healthcare (Crow and Smith 2003, Rosen and Dewar 2004, Barr and Ross 2006). This change in the professional relationship has also raised a question over power. Does the medical profession retain its power (over other health professionals still) or is this power now shared with the nurse prescriber.

CONCLUSION

Despite overwhelming evidence of the benefits of nurse prescribing, the full potential of the role has yet to be attained. In part this is due to the continuing opposition of the medical profession to the idea of non-medical prescribers. This disparity not only strengthens the idea that medical prescribers are superior, but fosters the idea that the medical profession retain power over all health professionals. This opposition continues to hold back further development of nurse prescribing. Nurses need to take ownership of non-medical prescribing, by addressing the inequalities within the professional relationship. It is only by challenging this behaviour that will see nursing no-longer viewed as subservient to the whims of the medical profession. This will not be an easy task, challenging any behaviour is not easy however as more and more doctors become exposed to the work of non-medical prescribers, the concept of the nurse prescriber will no-longer be seen as an inferior to the medical prescriber and true equal partnership will develop between the two professions.

RECOMMENDATIONS

- That nurse prescribers have the same educational opportunities as there medical counterparts' e.g in-house lectures, presentations from pharmaceutical companies.
- That nurse prescribers are given the opportunity to work with more experienced medical prescribers to develop not only their prescribing skill, but to foster a better understanding between the two professions.

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Nurses plastering and splinting in the emergency department: an integrative review

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KEY WORDS

emergency department, plastering, splinting, nurses practice

ABSTRACT

Objective

Increasing numbers of presentations, high acuity of patients and a decreased access to hospital beds contribute to lengthy waiting times in Emergency Departments (EDs). Implementing models of care to improve patient flow through EDs is imperative. This integrative review was undertaken to evaluate existing evidence regarding the impact of nurses' plastering and splinting in EDs.

Setting

Data included in the review was drawn from five International databases that include publications exploring acute care interventions using PRISMA guidelines. An unbiased search and then application of exclusion criteria by three independent researchers delineated 11 papers for inclusion. Full-text analysis using a predefined framework enabled development of the primary outcomes.

Primary argument

The research question guiding this integrative review is:

> *What is the impact on patient and staff satisfaction, cost, ED length of stay, ED re-presentation rates when ED nurses apply plasters and splints to patients who present to ED with a fractured or sprained limb?*

While no literature focused specifically on outcomes from nurses applying plasters or splints, studies indicated that plastering, as part of a suite of nursing skills, had positive effects on patient outcomes such as reduced waiting times to treatment.

Conclusions

There is insufficient evidence to inform protocols for nurses to perform plastering and splinting. Further research evaluating the impact of nurses using this skill in their practice is required to support evidence-based practice.

BACKGROUND

Emergency Department (ED) health care workers are consistently under pressure due to increasing numbers of presentations, high acuity, complexity of patients and a decreased access to inpatient beds, all of which lead to crowding and lengthy waiting times (AIHW 2015; Sun et al 2013). These issues increase ED crowding in Australia and internationally (Green et al 2014; Perera et al 2014; Geelhoed and de Klerk 2012). In addition to a lower level of patient and staff satisfaction (Tekwani et al 2013; Pines et al 2008), ED crowding has been shown to increase patient morbidity and mortality (Sun et al 2013) and ED staff stress (Johnston et al 2016).

Various policy initiatives have been introduced to help manage ED crowding including the development and implementation of governmental key performance indicators that measure individual institution's performance against designated minimum Australian standards (Hudson and Marshall 2008). The National Emergency Access Target (NEAT) was introduced in Australia in 2012, with the goal that 90% of all patients be discharged or transferred from the ED within four hours (Keijzers 2014). While evidence suggests that NEAT has been beneficial in the generation and implementation of initiatives that address the problem of ED crowding and patient flow (Green et al 2014; Geelhoed and de Klerk 2012), more attention is required to address the specific needs and expectations for timely, quality care of the non-urgent group of patients, that often make up the majority of ED patient load (AIHW 2015; Muntlin et al 2006).

The Clinical Initiatives Nurse (CIN) role has been shown to support non-urgent patients by improving patient flow through the department, decreasing ED length of stay (due to early initiation of pain relief and pathology) and reducing workload for the medical officers (Fry et al 2012; Cant et al 2011; Combs et al 2006). The introduction of another advanced practice nursing role such as the Nurse Practitioner (NP) has also shown positive outcomes including increased patient satisfaction and decreased time to completion of advanced health assessments, investigations and symptom control (Martin-Misener et al 2015; Considine et al 2012a; Considine et al 2012b; Hudson and Marshall 2008). It has been suggested that nurses, working in minor injury and fast track units, be trained in plaster application and aftercare as part of quality delivery of patient services (Combs et al 2006; Rogers et al 2004; Cooke et al 2002).

Thus, the aim of this integrative review is to evaluate existing evidence to support the plastering and splinting application practices performed by ED nurses. The review focused on ED nurses (regardless of roles such as CIN or NP) and the skill of plastering and splinting application for patients who present to ED with a fractured or sprained limb. The research question that guided this review is: What is the impact on patient and staff satisfaction, cost and time-effectiveness of nurses applying plasters and splints, patient's length of stay, ED re-presentation rates and the frequency of patients who did not wait for treatment or who left after treatment commenced?

SEARCH STRATEGIES

This integrative review used the parallel, multi-stage process outlined by Pluye and Hong (2014) and included three assessors to ensure an unbiased application of key search, inclusion/exclusion and quality assessment strategies. This methodology, coupled with Whittemore and Knafl's (2005) framework, allowed for the inclusion of diverse literature which is critical in undertaking a review in which little is published. All studies were considered eligible for review including published, unpublished and grey literature.

The search strategy is represented in figure 1. The search terms used were: ED/EDs, Emergency department/s, Emergency room/s, ER/s OR A&E coupled with (AND) plastering, splinting, plasters, splints, fast track, fracture care, sprain, strain (AND) nurses. Activation of 'smart text' and automatic word variation options during searches ensured that word combination options including USA and UK spelling variations and pleural terms were detected. Reference chaining (snowballing) was undertaken (Ellis 1989). All final searches were conducted in June 2015. The search processes and study selection conformed to PRISMA guidelines (Liberati et al 2009).

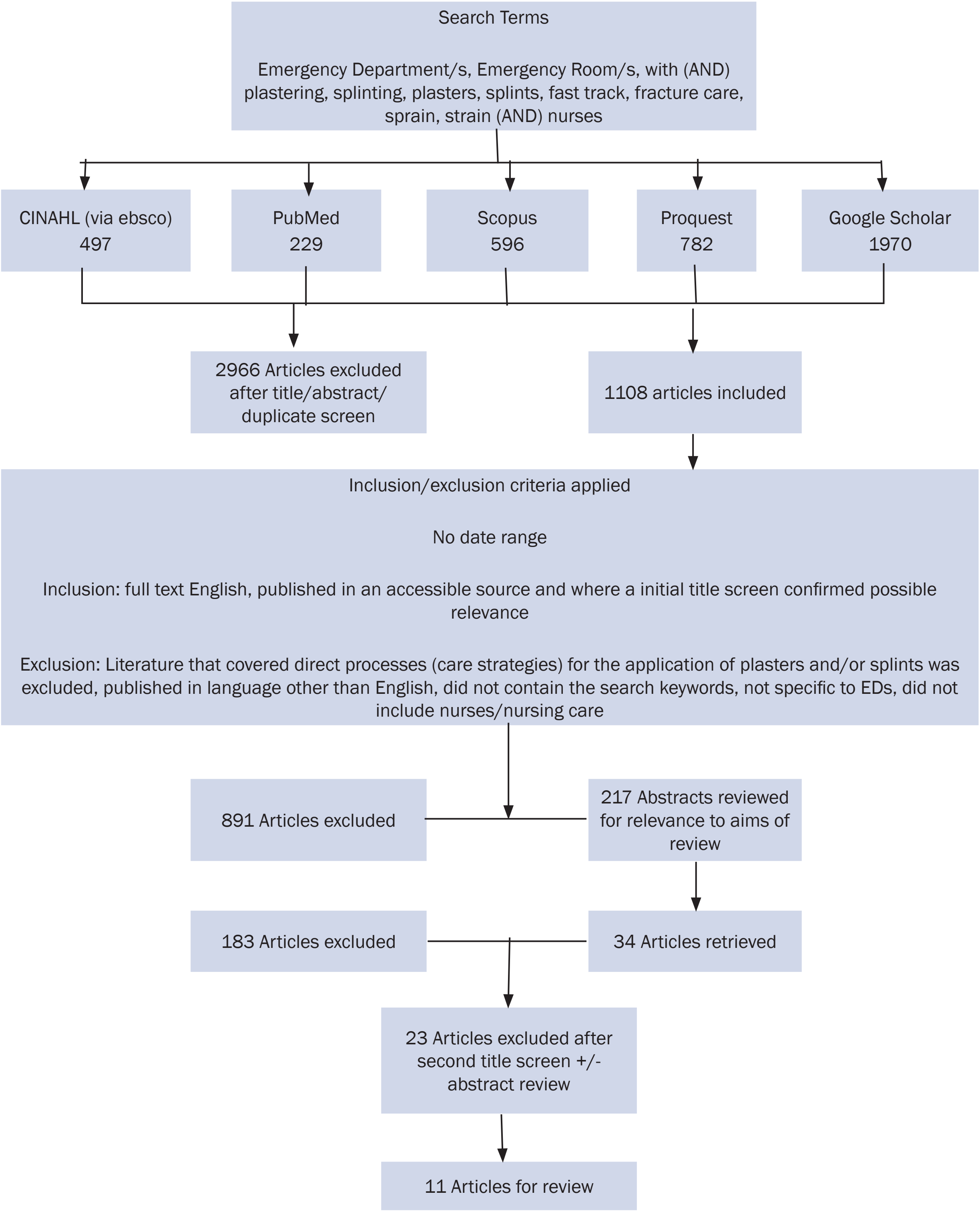

Figure 1: Schematic representation of the literature search strategy

Inclusion/exclusion criteria

Inclusion and exclusion criteria are presented in figure 1. Discussion papers and opinion pieces were included. A date range for inclusion/ exclusion was not applied in order to include any historical basis for nurses' application of plasters.

Two reviewers screened 217 titles and abstracts initially retrieved for potential inclusion using specific criteria. From those, 34 full text articles were retrieved. Review of the full text articles and a final moderation process indicated that 11 articles met the criteria. Library searches were unable to obtain full text for two older studies (<1993) which were excluded. Data were extracted by two authors, summarised and reviewed by a third author to ensure unbiased extraction processes (Whittemore and Knafl 2005). The literature was summarised and is presented in table 1.

Study evaluation

This review used the Mixed Methods Appraisal Tool (MMAT) (Souto et al 2015; Pluye and Hong 2014) to evaluate the quality of evidence. MMAT scores were calculated to determine the level of evidence for each article. There was a 90% match rate in the quality appraisal scores between the three authors who undertook the assessment of included articles. Where differences arose, a consensus resolution approach was used to agree on a final rating.

RESULTS

Eleven articles were included in the review however two articles were published from progressive sections of the same project (see table 1). Five of the articles were general discussion/opinion papers rather than formal research studies (Azbug 2015; Hudson and Marshall 2008; Miles 2004; Smith 1994; Purnell 1991;). These articles were included due to the integrative review approach taken (Whittemore and Knafl 2005).

There were no studies that focused specifically on outcomes resulting from nurses applying plasters or splints. However, some studies (Hudson and Marshall 2008; Combs et al 2006; Miles 2004; Smith 1994) included plastering as part of a suite of advanced nursing skills that showed positive efficiency gains for patients and EDs. These gains included decreased numbers of patients who did not wait for treatment. Two studies showed evidence that suggested nurses who performed plastering in addition to other advanced skills improved the clinical team's performance indicators by reducing waiting times to assessment/treatment as well as the 'Did Not Wait' rates in Fast Track care models (Considine et al 2010; Considine et al 2008; Combs et al 2006; Purnell 1991). The Fast Track models were described as processes whereby patients with low acuity (Australasian Triage Scale 4 and 5; the standardised system for patient priority allocation used in Australian public hospitals) would be seen and treated in a dedicated area by either a nurse or a doctor. There was no focus on the impact of specific individual skill sets like nurses' plastering/splinting in the contribution to the overall efficiency of such models of care (Miles 2004), although a broad economic evaluation study of nurses work in such areas indicated they could potentially be cost effective (Dochterman et al 2001).

While discussion papers explored various advanced practice nursing roles within Australia, with a focus on the CIN role in the ED setting, there were no evaluations of the impact of nurses performing plastering or splinting on patient flow, nurse satisfaction with performing these skills or workload management (Hudson and Marshall 2008; Combs et al 2006; Miles 2004; Smith 1994). Purnell (1991) made reference to emergency nurses applying plasters and splints which improved patient flow, however did not examine the impact of this procedure on staff satisfaction, morale or retention. Another article discussed case presentations used to demonstrate that plasters and splints were often applied incorrectly by all clinician groups (doctors, nurses and technicians), causing adverse events (Azbug 2015). Similar to another discussion paper, a recommendation was to provide adequate training and education in plaster application through a formal certification process (Miles 2004).

Two studies evaluated overall quality of care delivered by an ED Fast Track unit together with patient satisfaction with care delivery in comparison of medical officer and nurse practitioner (Lutze et al 2014; Dinh et al 2012). The studies found high patient satisfaction scores for a Fast Track unit functioning with senior medical and nursing staff in advanced practice roles, with satisfaction scores being slightly higher for care provided by a nurse practitioner than a medical officer. Whilst the studies had some relevance for this review, due to the focus on patient satisfaction with care delivered by an advanced practice nursing role, there was no correlation to plastering and/or splinting. It was acknowledged that there were different skills, training and knowledge held by NPs than other advanced practice nursing roles and therefore the applicability of these results is limited.

Within the applied search parameters, there was only one article found that considered evaluating the cost of nursing interventions, for which plastering and splinting were included (Dochterman et al 2001). There were no papers found that evaluated or discussed the role of nurses in performing plaster aftercare or reviews on patients with unscheduled re-presentations to ED with a plaster or splint related concern. The studies varied widely in quality, from those that did not conform to a research process, including discussion papers such as Hudson and Marshall (2008) and were unable to be rated using MMAT, to studies with an excellent methodological basis such as that by Dinh et al (2012).

DISCUSSION

Despite the number of plasters and splints applied in EDs nationally and internationally, there is limited literature to support development of an evidence-based model for plastering and splinting in EDs, particularly by nurses. Very few studies examined patient and staff satisfaction with plaster/splint application, evaluated the cost and time-effectiveness of nurses applying plasters and splints, or undertook comparative evaluation of the impact of nurses application of plasters and splints on patient’s length of stay, re-presentation rates, the rates of patients who did not wait for treatment or who left after treatment was commenced. Thus our review has identified several gaps in the literature in regards to the application of plasters and splints in ED and specifically the impact of nurses gaining the skills of plastering and splinting to treat patients with simple sprains/fractures in EDs.

There is literature discussing the benefits of nurses developing and using skills such as plastering and suturing in a Fast Track model of care to gain efficiencies in ED patient flow (Considine et al 2010; Combs et al 2006; Purnell 1991). Advanced practice nursing roles that include plastering and splinting are suggested as a way to develop the nurse’s clinical assessment skills and can lead to improved documentation skills (Hudson and Marshall 2008; Smith 1994). Lutz et al (2014) suggested that enhancing ED nurses skill-sets could offer genuine benefit to patient care and satisfaction. Some studies were more focused on the multidisciplinary model of care with a range of potential contributing factors such as seniority of clinician, than on the specific skill sets and any evidence based merit for inclusion in such a model of nursing care. Findings of the studies included in this review can be contextualised within broader literature that discuss advanced practice nurses and medical staff in the care of patients with ‘minor’ injuries (Considine et al 2012a; Considine et al 2010) and with the overall nurse skill set and scope of practice (Gray 2016; Campbell et al 2015; Stauber 2013).

There were several discussion papers that supported advanced practice skill sets for emergency nurses in order to improve assessment, documentation and care delivery (Hudson and Marshall 2008; Smith 1994). However, these were primarily opinion or anecdotally-based pieces that could be strengthened with clinical research on this topic. While speculation and anecdotal reports about the benefits of nurses applying plasters and/or splints, and/or review of patients' plasters are interesting (Kelly et al 1996), evidence is required in order to support nurses who perform these procedures.

Where nursing roles have been extended in EDs, assessing and evaluating outcomes underpin the development of skill sets and further implementation of such roles within clear frameworks (Bryant-Lukosius et al 2016; Gray 2016; Stauber 2013). With increasing ED patient presentations and subsequent ED crowding, it is important that effective patient flow strategies be implemented and evaluated to ensure they support the health service, staff and quality patient care. This includes examination of different types of nursing skills on the efficacy and cost-effectiveness of EDs (Bryant-Lukosius et al 2016; Gray 2016).

LIMITATIONS

This review was limited to articles published in English. Due to the paucity of literature available, this review used an integrative framework that allowed inclusion of discussion/opinion papers that were not evidence-based, highlighting the need for quality research in this area.

CONCLUSION

This integrated review of the literature on the effectiveness of nurses plastering and splinting in EDs found a lack of evidence to support the anecdotal benefits of this practice. However, the perceived benefits that have been reported are potentially significant and warrant further attention. There is limited evidence to guide protocol development for nurses to perform plastering and splinting on patients who present to ED with limb sprains or fractures. Further research is recommended to evaluate the impact of ED nurses plastering and splinting on patient satisfaction, ED length of stay, re-presentation rates, patient flow and health care costs.

RECOMMENDATIONS

Given the ongoing pressures faced by EDs both in Australia and internationally to improve patient throughput, reduce waiting times to treatment, and maintain a high quality of patient care, it is recommended that further research be undertaken to explore the role of nurses applying plasters and splints with a view to developing an evidence based approach to this practice (Bryant-Lukosius et al 2016).

Table 1: Data extraction summary

Author, year country	Aim/s	Sample	Research design/tools/ analysis type‡	Rigor, reliability, validity	Findings	Strengths	Limitations§	Recommendations/ implications	MMAT* %
Abzug 2015 Baltimore, USA	Evaluation of splints applied in community hospital EDs and urgent care centres	275 patients	A discussion paper describing new research from University of Maryland No method or tools mentioned.	N/A	90% of splints were applied incorrectly from all clinicians including doctors, technicians and nurses.	Discussion to stimulate further research	Final study not found in peer-reviewed journal.	Study suggests the need for more training and education on proper splinting techniques.	N/A
Dinh et al 2012 Sydney, Australia	1. Describe overall quality of care delivered by a fast track unit 2. Compare quality of care provided by ED NPs vs Drs	Convenience sample of 320 patients triaged to fast track.	Observational design. Pt satisfaction measured on self-administered satisfaction survey instrument completed prior to discharge.	Descriptive statistics used to summarise overall quality of care. Study group comparisons using inferential statistics.	High patient satisfaction scores for care in the fast track unit. Patient satisfaction scores slightly higher for NP pt group than Dr group. Shorter waiting time to treatment in NP group.	Assessment of patient satisfaction.	Uses NPs not RNs. Doesn't specify impact of skills such as plastering. May have selection bias due to convenience sampling with only 75% response rate.	Useful for comparison of patient satisfaction - could translate to RN vs. Dr/ other plastering and pt satisfaction.	100
Considine et al 2008 Melbourne, Australia	Examine the effect of fast track on emergency department (ED) length of stay (LOS) in a public teaching hospital	ED Fast Track patients (1.1.07-31.3.07) Usual ED patients (controls) (1.7.06 to 15.11.2006 (n = 822 matched pairs).	Pair-matched case–control design.	Power calculations undertaken. Robust design.	ED fast track decreased ED LOS for non-admitted patients who were significantly more likely to be discharged within 2 hours without compromising waiting times and ED LOS for other ED patients.	Case control Quantitative study exploring a legislative requirement (NEAT)	Unmatched data periods, no adjustment for increasing patient numbers. Study conducted immediately after the implementation of fast track. No assessment of service quality.	Implementation of a Fast Track area can help reduce ED crowding and access block.	50

Hudson & Marshall 2008 NSW, Australia	Article discussing the different roles of advanced practice nursing in Australia and examines advantages/ limitations. Discusses the CIN role with brief inclusion of plastering/ splinting as a skill.	Nil specific. Discusses NP role along with CIN role.	Discussion / literature review of advanced nursing roles in ED.	N/A	Clinical Initiative Nurse/ advanced practice nurse role programs that include plastering/ splinting were believed to develop nurses' clinical judgement & assessment skills, improve documentation and referral to ED medical officers.	Quality literature review strategy Good historical perspective	No reference to LOS.	A descriptive study is recommended to provide knowledge on various skills performed and educational preparation involved.	N/A
Coombs et al 2007 Part 2 Perth, Australia	1. Reduce patient delays for receiving treatment; 2. Decrease DNW rate; 3. Reduce the journey time for ED patients. 4. Predict the daily bed requirements for ED patients waiting to be admitted to ward areas.	All patients presenting to an outer-metropolitan ED in WA between 1 Aug 2004- 31 May2005.	Pilot study- 12 month evaluation Patient Flow Collaborative Methodology	Limited data (pilot test)	Steadily decreasing DNW numbers. ED throughput of admitted patients <12 hrs LOS. Initial improvement not sustained. ED patient journey times remained stable. Fast Track length of stay remained stable. Authors state that implementation of Fast Track and enhancement of nursing roles (suturing and plastering) reduced patient waiting times and DNW rate	Quantitative, data exploring.	Despite claiming that enhancing nursing roles through an education program encompassing suturing and plastering led to reduced patient waiting times and DNW rates- there was no data results displayed. No staff satisfaction surveys taken.	Change process is sensitive and requires pre and post monitoring. Dedicated resources are required to ensure process change is well supported – including an executive staff member.	75

Coombs et al 2006 Part 1 Perth, Australia	Discusses the process of identifying the need for Fast Track and the journey undertaken to implement the initiative. (see also Part 2 above)	All patients presenting to an outer-metropolitan ED in WA - No exact sample size given.	Discussion paper.	N/A	Reduction in DNW- no figures provided. Staff identified need for nursing staff to be upskilled in suturing and plastering to ensure patients seen in a timely manner- no further data given. Patients identified as having minor injuries and or illnesses were being seen, treated and discharged within two hours- during pilot study period. Improved staff recruitment and retention rates due to nursing staff being able to advance their skills in plastering and suturing. The authors assert the introduction of fast track led to: increased staff morale and offering better opportunities for nursing staff.	Acknowledge advanced nursing skills part in improving LOS and DNW.	Fast Track was staffed by senior registrars or consultants and a senior nurse with suture and plastering skills- no data to differentiate if advanced nursing skills improved LOS or flow.	Fast-track decreases ED length of stay. Nurses increased their clinical skills by undertaking advanced practice education and training. Increased staff morale.	N/A

Lutze et al 2004 NSW, Australia	Compare patient satisfaction of ED Fast Track care between Dr run and NP run	Convenience sample of 353 pts: 212 in Dr group, 141 in NP group. 4 week period. Multi-centre- 2 x sites.	Observational study This pilot study was the foundation for subsequent study by Dinh et al 2012. Pt satisfaction measured on self-administered satisfaction survey instrument completed prior to discharge.	Univariate analysis to compare study groups based on treatment site.	Most patients were satisfied with ED fast track, irrespective of model of care. Pt satisfaction was greater in NP group.	Quantitative data using patient satisfaction survey.	Uses NPs not RNs. Doesn't specify impact of skills such as plastering. May have selection bias as only 1/3 of pats at one site completed surveys.	Useful mainly for comparison of patient satisfaction tool- could translate to RN vs Dr.	75
Miles 2004 UK	Opinion paper from RN/ Plaster technician on the requirement for adequate education and training of nurses and doctors in applying plasters.	Nil	Opinion paper/ discussion only	N/A	Used multiple case studies to emphasise the potential adverse events of inappropriately applied plasters. Advises the importance of adequate training and education in plaster application- recommends formal certificate training.	Advises the need for adequate training for staff.	Based on opinion and a few case studies. No discussion of impact on LOS or nurse satisfaction.	Appropriate education and training- preferably formal certificate.	N/A
Dochterman et al 2001 Iowa, USA	Determine the costs of nursing service	433 Nursing Intervention Classifications (NIC) were reported. (Actions performed by nurses).	Nursing experts evaluated each intervention in order to assign the time and minimum level of education required to perform each task.	Validated economic models and assessment tools used systematically.	Identifying costs for specific nursing interventions allow for evaluating the cost effectiveness of nursing care.	Broad approach to costing of nurses' work using sophisticated economic modelling.	Study design was unclear. A review of the NICs and to confirm that these NICs were true and accurate.	Economic evaluation of care processes is a key part of evaluation of service delivery	75

Smith 1994 UK	Opinion paper on skill advancement for ED nurses.	Nil	Opinion paper/ discussion	N/A	Opinion that ED nurses gaining specialist knowledge including plastering and suturing can offer 'genuine benefits to patient care, as junior A&E medical staff often lack them'.	Takes a strong nursing advocacy position.	Based on opinion. No data/ studies or reference to support this assertion. No definition of what constitutes benefits to patient care. Doesn't mention LOS or nurse satisfaction.	Increasing nursing skill set can improve morale and self-efficacy.	N/A
Purnell 1991 USA	Examining the characteristics of existing triage systems in 5 mid-Atlantic US States. Including the qualifications and training of tirage nurses and skills performed	185 surveys of nurses from 5 different EDs.	44- item questionnaire	Non-validated survey	The presence of a Fast Track system significantly decreased patient waiting time by 20%. In some facilities- triage nurses applied plaster casts and sutured.	Cross departments providing a broad picture	No focus on the impact of nurses plastering on LOS, pt or staff satisfaction.	Recommended expanded study outside of State.	75

‡Data type (quantitative/qualitative) is identified in the study and/or on the basis of the analysis performed

§ Note: All survey and interview data is subject to potential prevarication bias and response falsification. Additionally, there may be a response bias based on the psychological wellbeing of participants (single point in time survey)

*Mixed methods assessment tool (MMAT) classification system

Abbreviations: DNW, did not wait; N/A, not applicable; NEAT, National Emergency Access Target; pt, patient; LOS, length of stay

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The non-medical surgical assistant in Australia: who should contribute to governance?

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KEY WORDS

surgical assistant; non-medical surgical assistant; governance; Australian Health Practitioner Regulatory Agency; advanced practice nursing

ABSTRACT

Objective
This paper focuses on the role of the Non-Medical Surgical Assistant (NMSA) in Australia. Registered Nurses predominately perform this role. This paper will articulate a position to:

- validate this role as an Advanced Practice Nursing (APN) role in Australia through regulation and governance by the Nursing and Midwifery Board of Australia (NMBA) who sit under the umbrella of the Australian Health Practitioner Regulation Agency (AHPRA);
- lobby AHPRA to recognise, regulate and protect the title of Advanced Practice Nursing (APN) roles other than the Nurse Practitioner (NP) in Australia; and
- as a result of sanctioned regulation, facilitate APN (including NP) to seek appropriate remuneration for undertaking this role in the private sector in Australia.

Setting
The Australian Healthcare system.

Subjects
Clinicians performing the role of the NMSA in Australia.

Primary Argument
The NMSA is well established with clear mechanisms for governance internationally. This role has been practiced in Australia for more than 20 years, and while clinicians function under the guise of advanced practice, the role is not clearly defined, standardised or regulated. This is partially attributed to lack of sanctioned governance from AHPRA.

Conclusion
While the AHPRA via the NMBA are reluctant to formally recognise and regulate this role, the overwhelming majority of clinicians in Australia are nurses. Without regulation it is difficult to quantify the role as APN. Lack of governance excludes NMSA (including the NP) from access to the Medicare Benefits Schedule and private health funds for intraoperative reimbursement thereby rendering a potentially cost-effective role unsustainable to many clinicians.

INTRODUCTION

International Context of the NMSA Role

The international role of the Non-Medical Surgical Assistant (NMSA) is well recognised and has many titles (Hains et al 2017a). Differences in the role, between countries and within a country, can be attributed to content of curriculum, the underlying qualifications of the personnel who perform these roles and support of implementation from key stakeholders and state/national authorities. The literature is teeming with innumerable titles for this role. Arguably the most notable of the international titles for this role reside in the United States of America (USA) in the form of the Physician Assistant (PA) and Nurse Practitioner (NP). In the USA in 2015, 35,000 PAs worked in the surgical environment (American Association of Surgical Physician Assistants 2015) and more than 15,000 NPs worked in the Acute Care setting (American Association of Nurse Practitioners 2015).

The roles of the NP and the PA on first inspection seem similar but are very different. The simplest contrast is that PAs must work under the supervision and delegation of a physician unlike NPs who work independently (Nurse Practitioner Schools 2015). The courses for both roles are currently a minimum of a Master's degree. NPs in the USA seek certification through the American Nurses Credentialing Centre or the American Academy of Nurse Practitioners. PAs are required to pass the Physician Assistant National Certifying Examination available through the National Commission on Certification of Physician Assistants. Both of these roles enjoy title protection, a standardised curriculum and national regulation (Hains et al 2017a). Both roles are required to obtain individual state based licensure (Nurse Practitioner Schools 2015).

Possibly the most fundamental difference in the roles of the NP and PA in the USA is that the NP graduates from a School of Nursing, whereas the PA graduates from a medical school or 'Centre of Medicine'. These institutions focus on very different philosophies with the nursing school concentrating on a patient centred model of care while the medical school applies a disease centred model (Nurse Practitioner Schools 2015).

Regardless of their differences, both of these roles provide cost-effective perioperative care within the USA. Similarly, both of these roles are eligible for certification with the American medical reimbursement systems Medicare and Medicaid. In the USA both of these roles receive favourable reimbursement from commercial (private) healthcare funds (Practicing Clinicians Exchange 2015).

Australian Context of the NMSA Role

In the Australian healthcare system there is one overriding agency for registration, setting national standards, auditing and accrediting training and education of healthcare professionals. (Australian Health Practitioner Regulation Agency 2016) This entity is the Australian Health Practitioner Regulation Agency (AHPRA). Under the umbrella of AHPRA, as outlined in table 1, sit 14 National Boards.

The Medical Board of Australia regulates Australia's medical practitioners. The Nursing and Midwifery Board of Australia (NMBA) regulates the practice of nurses and midwives in Australia. The NMBA recognises the following categories of nurses (Nursing Midwifery Board of Australia 2016):

- Enrolled Nurse
- Registered Nurse
- Midwife
- Nurse Practitioner

Table 1: National Boards of the Australian Health Practitioner Regulation Agency

Aboriginal and Torres Strait Islander Health Practice Board of Australia
Chinese Medicine Board of Australia
Chiropractic Board of Australia
Dental Board of Australia
Medical Board of Australia
Medical Radiation Practice Board of Australia
Nursing and Midwifery Board of Australia
Occupational Therapy Board of Australia
Optometry Board of Australia
Osteopathy Board of Australia
Pharmacy Board of Australia
Physiotherapy Board of Australia
Podiatry Board of Australia
Psychology Board of Australia

In reference to the role of the NMSA in Australia, while the role has been practiced for over 20 years, there is little published and no formal legislation with national governing bodies (Hains et al 2016). Only Registered Nurses (RN) and NPs responded to a recent practice audit on the role of the NMSA in Australia (Hains et al 2016). A 2016 survey of Australian surgeons regarding the role of the NMSA in Australia indicated that the majority of clinicians were RNs or NPs. Some Enrolled Nurses (EN), PAs and Allied Health Professionals were also being utilised by surgeons in the NMSA role (Hains et al 2017b). As outlined in table 2, the notion of clinicians other than RNs and NPs fulfilling the role of the NMSA in Australia was also supported in a recent survey of perioperative staff attending the national Australian College of Operating Room Nurses (ACORN) conference (Hains et al 2017c).

Table 2: Non-medical surgical assistants in the Australian healthcare system: a review of three surveys

Survey Question: Personnel undertaking the role of the NMSA in Australia

	NMSA Practice Audit 2015	NMSA Surgeon Survey 2016	NMSA Perioperative Staff Conference Survey 2016
	n=77(%)	*n=332(%)*	*n=122(%)*
Enrolled Nurse	0(0)	24(7)	19 (15)
Registered Nurse	77(100)	160(48)	118(96)
Nurse Practitioner	11(14)	39(12)	14(11)
Physician Assistant	0(0)	18(5)	6(5)
Allied Health Professional	0(0)	2(1)	10(8)
I have not worked with a NMSA in Australia	-	146(44)	49(40)
Other	-	8(2)	2(2)
I don’t know the qualification of the NMSA	-	6(2)	-

As of December 2015 there were 1,319 NPs in Australia (Nursing Midwifery Board of Australia 2016). NPs are endorsed by AHPRA and this endorsement appears online in a register (Australian Health Practitioner Registration Agency 2013). From the practice audit of NMSAs administered in 2015, of the 83 respondents, 11(14%) were NPs working in the role of the NMSA. The role of NP was well represented from the surgeon survey in 2016, where out of 334 respondents 39(12%) surgeons had worked with an NP in the role of the NMSA in Australia.

The role of the PA is difficult to quantify in Australia as the role is not registered with AHPRA. A recent consultation paper published by the Queensland Government states there are approximately 40 Australian trained PAs. However, not all of these clinicians are working as PAs (Queensland Government 2016). In addition to this there may be PAs who were trained overseas working in the Australian healthcare system. In the 2016 surgeon survey 18(5%) surgeons said they had worked with a PA as a NMSA in Australia. The only PA course in Australia is administered as a Bachelor of Health Science (Physician Assistant) from a medical platform through the College of Medicine and Dentistry at James Cook University (James Cook University 2015). This course is not accredited by an Australian accreditation body (Queensland Government 2016).

Without doubt, the qualification with the greatest representation in the role of the NMSA in all surveys mentioned here is that of the RN. While many of the RNs who responded to the practice audit possessed post-graduate qualifications specific to the role of the NMSA, called the Perioperative Nurse Surgeon's Assistant (PNSA), this data is not formally recorded in Australia nor is it able to be retrieved from AHPRA. Similar to the PA course, the post graduate NMSA course in Australia is not accredited by an Australian accreditation body. These clinicians with specialist qualifications are solely RNs in the eyes of the national regulating body AHPRA.

As noted in table 2 aside from RNs, NPs and PAs, ENs and Allied Health Professionals e.g. Physiotherapists are also fulfilling the role of the NMSA in Australia. This makes the range of qualifications of clinicians performing this role vast. However, the number of clinicians in some categories is quite small.

Similar to the USA, NMSAs in Australia are from either a medical based model or, for the vast majority, a nursing based model. In contrast to NMSAs in the USA, NMSAs in Australia do not receive any intraoperative reimbursement from the Medicare system or private healthcare funds (Australian Government Department of Health 2017).

DISCUSSION

While there are many different clinicians performing this role, which clinicians are appropriate to perform the role of the NMSA in Australia? Similarly, should the national regulatory body AHPRA provide (and impose) governance for this role?

In consideration of the three objectives of this paper:

1. Validate this role as an Advanced Practice Nursing (APN) role in Australia through regulation and governance by the Nursing and Midwifery Board of Australia (NMBA) who sit under the umbrella of the Australian Health Practitioner Regulation Agency (AHPRA).

The Australian Association of Nurse Surgical Assistants (AANSA) recently approached the NMBA requesting endorsement of the specialty/advanced practice nursing role of the NMSA as a means to validate and regulate the role of the nurse as NMSA in Australia. The practice of the NMBA is to only endorse those nursing roles it is required to under national law (Nursing Midwifery Board Australia 2016). The NMBA's rationale for this is that recognition of specialty/advanced (nursing) practice other than that of the NP and eligible midwife does not reduces risk to the public and:

> *"Organisations representing specialty nursing groups in Australia have developed processes for recognising specialty practice" (Nursing Midwifery Board of Australia 2015).*

The points made by the NMBA pose several questions:

- What is the difference between specialty practice nursing and advanced practice nursing?

The difference between specialty and advanced practice outlined in a paper "*Discerning the Differences" is that the differences lie in the depth and complexity of the role which is addressed by varying levels of education of the clinician* (Thoun 2011). The International Council of Nurses states entry level for APN of a Master Degree is essential (International Council of Nurses 2009). It is clearly defined in the recent surveys cited here that the levels of education of the nursing based NMSA vary greatly in Australia.

- What authority do specialty organisations have to enforce their standards?

Specialty organisations do not have any authority to enforce their standards. This is elaborated on under Objective 2.

- Are there factors in addition to patient safety that warrant a role being recognised and regulated as APN?

The results of a recent Australian surgeon survey highlight that when surgeons were asked who should govern the role of the NMSA in Australia, an equivalent number thought that AHPRA either via the Nursing and Midwifery Board of Australia 140(43%) or via the Medical Board of Australia 133(41%) would be applicable (Hains et al 2017b). This split reflects a Surgical Workforce Census Report published by the Royal Australasian College of Surgeons (RACS) where an equal number of surgeons espoused the NP (nursing based model) or the PA (medical based model) as a surgical assistant (Hass 2016). Governance via the NMBA would ensure this role evolves within the domain of nursing. Governance through AHPRA via the NMBA could mandate a Masters level qualification is required to perform this role and commence establishing the role as advanced practice.

2. Lobby AHPRA to recognise, regulate and protect the title of Advanced Practice Nursing (APN) roles other than the Nurse Practitioner (NP) in Australia.

While ACORN has a standard for the role of the NMSA (The Australian College of Operating Room Nurses 2015) and RACS has a position statement (Royal Australasian College of Surgeons 2015) for the surgical assistant, these documents are guidelines. Neither has been adopted by a national regulating body, neither is uniformly adopted by health care facilities, and neither is enforced at a state or national level. As the titles NMSA or PNSA are not protected in Australia, any clinician may use these titles. ACORN's standard states that the PNSA must:

> *"hold current registration as a registered nurse with Australian Health Practitioner Regulation Agency (AHPRA) in Australia" (The Australian College of Operating Room Nurses 2015).*

Clearly this is not the case in practice when 24(7%) surgeons are working with an EN as NMSA. Specialty organisations with the best intentions of regulating the specialty area of practice lack the authority to enforce any of their guidelines. Without legislated title protection any clinician is able to call themselves a NMSA or PNSA.

3. As a result of sanctioned regulation, facilitate APN (including NP) to seek appropriate remuneration for undertaking this role in the private sector in Australia.

A recent Australian paper investigating APN outlines that the extensive size of the nursing workforce, coupled with the flexibility of roles, places nurses to the optimum setting to improve health services (Gardner 2016). It has been shown that the RN/NP NMSA is cost-effective in the intraoperative phase within the Australian healthcare system. (Hains et al 2016; Smith et al 2016). Whether the NMSA is an NP or holds a PNSA Masters degree, lack of formal, national governance by the appropriate entities of roles such as the NMSA excludes the role from uniformly meeting the APN educational benchmark and gaining validation. As a consequence of lack of uniformity gained through regulation, entities such Medicare and the healthcare funds remain resistant to allowing access by the Australian NMSA to intraoperative remuneration. In the recent surgeon survey 188(69%) of respondents were “Very Supportive” or “Supportive to some degree” of the role of the NMSA in the private sector in Australia. Lack of access to Medicare and healthcare funds renders the cost effective NMSA role in the private sector not financially viable to many clinicians (Yang and Hains 2017; Hains et al 2016).

CONCLUSION

While professional bodies such as ACORN and RACS have guidance statements on the role of the NMSA in Australia these provide little weight in relation to whom healthcare facilities will let practice the role on a daily basis.

Though AHPRA via the NMBA is reluctant to formally recognise and regulate this role, the overwhelming majority of clinicians in the role of NMSA in Australia are nurses. As the spread of qualifications varies so greatly within the nursing based NMSA, it is difficult to categorise the role as APN.

The lack of formal regulation of the role of the NMSA in Australia excludes NMSA (including the NP) (Yang and Hains 2017) from access to Medicare and healthcare fund intraoperative reimbursement, thereby rendering a cost-effective role unsustainable to many clinicians.

RECOMMENDATIONS

1. To ensure advanced practice roles such as that of the NMSA evolve within the nursing domain, the NMBA must recognise and regulate APN roles in addition to the role of the NP in Australia.
2. Protect the title of APNs. Title protection in conjunction with regulation would limit the clinicians who are able to gain credentialing as an NMSA within Australian healthcare facilities. This would ensure all clinicians practicing as an NMSA have a minimum education qualification and have met the NMBA criteria for APN.
3. Medicare and therefore the private healthcare funds recognise the role the APN have regarding cost savings to the healthcare system. APNs who meet a set of criteria regulated by the NMBA should have the ability to be remunerated for intra-operative assisting.

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Outbreak management in residential aged care facilities –prevention and response strategies in regional Australia

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KEY WORDS

aged care; disease outbreaks; influenza; gastroenteritis

ABSTRACT

Objective

To identify the outbreak prevention and response preparedness of residential aged care facilities (RACFs) in the Hunter New England area of New South Wales (NSW).

Design

A cross-sectional telephone survey.

Setting

RACFs who provide full time nursing care in regional NSW.

Subjects

Twenty randomly selected RACFs including nine metropolitan and 11 rural facilities within the regional Hunter New England (HNE) district of NSW.

Main outcome measures

Percentage of staff and residents vaccinated against influenza in 2013; availability and use of a surveillance system to detect outbreaks; knowledge of national outbreak resources; and presence of a facility outbreak management plan.

Results

Across the 20 facilities more than 85% of residents were vaccinated against influenza in 2013. Staff influenza vaccination rates varied from less than 50% in six facilities to greater than 80% in nine facilities. Overall, 18/20 (90%) facilities reported having outbreak management plans available; however only 5/20 (25%) facilities reported having an outbreak surveillance system in place.

Conclusion

RACFs in this sample reported varying levels of outbreak prevention and preparedness strategies. Nursing staff working in RACFs need to ensure strategies are in place to prevent and respond to communicable disease outbreaks. In particular all facilities are encouraged to have an outbreak surveillance system in operation, especially during the peak seasons. RACF accreditation should consider including outbreak prevention, preparedness and management outcomes in the review measures to ensure all RACFs have strategies in place to protect vulnerable residents from common communicable disease outbreaks.

INTRODUCTION

Respiratory and gastroenteritis outbreaks within residential aged care facilities (RACFs) cause considerable morbidity and distress, and impact negatively on staff, resources and residents' activities (Kirk et al 2010; McCall et al 2007). Outbreaks within RACFs are frequent, with an estimated 17% of RACFs in Australia experiencing an outbreak of gastroenteritis each year, most of these occurring in Australia's winter (June – August) (Kirk et al 2010). Surveillance conducted in Australia, between 2002 and 2008, identified 3257 reported outbreaks in RACFs affecting 84,769 people; and resulting in 1577 hospitalisations and 209 deaths (Kirk et al 2010). The potential severity of outbreaks is highlighted by an influenza-like-illness outbreak in a RACF in New South Wales (NSW) which affected 26 residents, resulted in 14 hospital admissions and was associated with six deaths (Turahui et al, 2008). The reported number of outbreaks likely under-represents the actual number of outbreaks within facilities (Eastwood et al 2008).

Elderly people living in RACFs are more vulnerable to gastroenteritis and respiratory illness due to physiological reasons (Slotwiner-Nie and Brandt 2001); comorbid medical conditions associated with ageing (Gavazzi and Krause 2002); close living arrangements; and frequent contact with visitors and staff (Strausbaugh et al 2003). Infectious diseases may be introduced into RACFs through staff, visitors from the community, hospital admissions and transfers from other facilities (Strausbaugh et al 2003).

Early recognition of outbreaks by nurses, and implementation of outbreak control measures, is important for reducing the spread of infectious gastrointestinal and respiratory diseases within RACFs. Early recognition by RACF nurses allows the timely implementation of outbreak control measures including: environmental cleaning and disinfection; use of personal protective equipment; infection control signage and education; isolation of ill residents; and cohorting of ill residents and staff (Department of Ageing and Aged Care, 2014). In addition, RACFs can minimise the transmission of infectious enteric and respiratory diseases to staff and residents through outbreak prevention and preparedness strategies, which include: annual influenza vaccination of residents and staff (Communicable Disease Network Australia (CDNA), 2017); discouraging ill visitors and staff attending the facility; and provision of hand washing facilities for residents, staff and visitors (Jefferson et al 2010). Outbreak preparedness can include outbreak management plans, communicable disease surveillance and awareness of outbreak resources (Eastwood et al 2008).

The Hunter New England Local Health District is located in northern NSW and the Public Health Unit (HNE PHU) has worked with RACFs within the district over the past decade to provide advice and to strengthen the capacity of RACFs to respond to communicable disease outbreaks. Support to RACFs by the HNE PHU includes:

- telephone advice from nurse consultants to RACFs following the notification to the PHU of a respiratory or gastroenteritis outbreak;
- promoting national outbreak guidelines and resources including line listing templates on the HNE PHU website;
- RACF site visits if requested by the facility or if indicated by the course of the outbreak;
- dissemination of a monthly RACF-specific report identifying current communicable disease issues and links to outbreak management resources;
- annual RACF teleconference discussing outbreak prevention and preparedness strategies prior to influenza season; and
- periodic review of preparedness. Computer assisted telephone interviews were conducted in 2004, 2005 and 2006 with over 100 RACFs in the HNE region.

In NSW, gastroenteritis outbreaks in institutions and laboratory-confirmed influenza cases are notifiable under the NSW Public Health Act, 2010 (NSW Parliament 2010). During the period 2010-2012, 150 gastroenteritis outbreaks and 12 influenza outbreaks were reported to the HNE PHU.

There are limited published evaluation reports of outbreak preparedness strategies in RACFs in Australia and nurses roles in outbreaks. In this study we explored outbreak prevention and preparedness strategies used by RACFs within a regional area of NSW, Australia.

The project aimed to:

1. review outbreak prevention and response preparedness of RACFs;
2. identify opportunities for the public health unit to work with RACFs to reduce the burden of gastrointestinal and respiratory outbreaks; and
3. compare outbreak prevention and preparedness between regional, metropolitan and rural RACFs.

METHOD

Setting

The Hunter New England Health Local Health District (HNELHD) in northern NSW includes metropolitan, rural and remote areas; covering an area of 130,000km2 it includes the coastal cities of Newcastle and Lake Macquarie, and inland regional centres of Maitland, Tamworth and Armidale. The district has a population of approximately 875,000 people (Health Statistics NSW 2013) and 131 RACFs comprising 58 metropolitan and 73 rural facilities.

Design

A short telephone survey assessing outbreak domains was developed which included questions relating to outbreak prevention and preparedness measures; outbreak surveillance systems; and resident and staff immunisation coverage. The survey was developed using a combination of validated questions from a previous RACF questionnaire used by the HNE PHU in 2005 (Eastwood et al 2008) and additional questions developed by the project team.

RACFs included in this study were defined as nursing homes and hostels located in the Hunter New England area of northern NSW that provide full time nursing care. Twenty RACFs were randomly selected from the 131 RACFs using Excel randomisations in two strata, metropolitan and rural. The sample of 20 was used to fit with the available resources to complete the study and provide a reasonable snapshot of current practice. The same researcher conducted all interviews. Pilot testing of the survey was conducted with two RACFs that were not selected in the randomisation process and these results are not included in the analysis.

Data collection

In June 2013 a letter was sent to all 20 selected RACFs inviting them to participate in the study. A copy of the questionnaire was also included to assist facilities to have appropriate information available for the telephone interview. The person interviewed at each RACF was either the facility manager; facility care manager; or infection control delegate. The phone interviews were conducted over a period of three weeks with each interview taking between 20-30 minutes.

Analysis

All questionnaire responses were recorded in a Microsoft Excel worksheet. Frequencies were generated using SAS software version 9.1.3 for Windows. Relative risks with 95% confidence intervals were calculated in Excel, and compared vaccination coverage, staff vaccination availability and access. To allow meaningful comparison the vaccination coverage was divided into three categories >80%, 50-80% and <50%.

Ethics

The HNE Local Health District Human Research Ethics Committee classified this research project as a quality improvement project.

FINDINGS

The participating facilities included nine metropolitan and 11 rural facilities. Seven were hostel-based facilities, six were nursing home facilities and seven offered both nursing home and hostel-based care; the participating facilities differed in sizes (table 1). The nursing workforce varied according to the size of the facility with 18/20 facilities employing up to 100 nursing care staff. Sixteen of the facilities were owned by private organisations, thirteen of these being not for profit organisations, while the remaining four facilities were run by local government councils (table 1). Half (10/20) of the RACFs reported that over 80% of nursing staff were permanently employed and in the remaining 10 facilities 50 – 80% of nursing staff were permanently employed. Nursing agency use was relatively infrequent with 10 facilities reporting they never used nursing agency staff and six facilities stating they used agency staff less than once per month.

Table 1: Residential Aged Care Facility location, level of care provided, size and attachment to larger organisation, Hunter New England, June 2013

	Metropolitan	Rural	Total
No. of facilities (n = 20)	9	11	20
Level of care provided			
Hostel	3	4	7
Nursing Home	3	3	6
Nursing Home and Hostel	3	4	7
Size of facility			
Small (0-50 residents)	2	8	10
Medium (51 – 100 residents)	5	2	7
Large (more than 100 residents)	2	1	3
Private	3	0	3
Private, Not-for-Profit	6	7	13
Public	0	4	4

Nineteen facilities reported having an influenza vaccination register for residents and 80% (16/20) of facilities reported having an influenza vaccination register for staff that was updated annually. The reported percentage of residents immunised against influenza across all facilities in 2013 was above 85%, with 15 RACFs stating that greater than 95% of residents had been vaccinated during that year (table 2). A higher proportion of metropolitan RACFs reported having vaccination coverage over 95% (RR = 1.4 (95% CI 0.84 – 2.31)) compared to rural RACFs for the 2013 influenza season however the difference was not statistically significant.

Table 2: Influenza vaccination coverage for Hunter New England RACF residents in 2013 by location, June 2013

	Number and percentage of RACFs		
	Metro	*Rural*	*Total*
Percentage of residents who received influenza vaccination in 2013			
Less than 85%	0	0	0/20 (0%)
85 to 95%	1	4	5/20 (25%)
More than 95%	8	7	15/20 (75%)

Reported staff vaccination rates were less than 50% for six RACFs and more than 80% for nine RACFs (table 3). The majority of facilities (15/20) reported they offered influenza vaccine at no cost to staff and made it available at the workplace. Staff vaccination coverage using the three categories is described in table 3. The majority of sites with staff vaccination coverage >80% offered free vaccine to staff however this did not reach statistical significance (RR = 1.17 (CI 0.35 -3.88)).

Table 3: Staff influenza vaccination coverage in 2013 by location and availability of free vaccine on-site, Hunter New England, 2013

Percentage of staff who received influenza vaccination in 2013	Number and location of RACFs		Free vaccine offered on-site		Total
	Metro	*Rural*	*Yes*	*No*	
Less than 50%	1	5	3	3	6/20 (30%)
50 – 80%	4	1	5	0	5/20 (25%)
More than 80%	4	5	7	2	9/20 (45%)

All RACFs reported that alcohol hand gel or hand washing basins were provided at the entrance to the facility for visitor and staff use. The majority of facilities (18/20) reported having signage throughout the year at public entrances requesting ill (symptomatic) visitors not to enter the facility; the remaining two facilities displayed signage only during a facility outbreak. Five facilities reported verbal screening of visitors by staff prior to entry.

Only five facilities (25%) reported having a regularly reviewed and documented surveillance system for detecting an outbreak of gastroenteritis or respiratory illness. Nineteen facilities reported having a nominated infection control coordinator; however, in many of these facilities (12/19) this role was integrated with another nursing position with no set hours dedicated to infection control.

Nineteen facilities were aware of the Department of Health Ageing and Aged Care (DOHAAC) 'Gastro Kit' (DOHAAC 2014) and 18/20 facilities reported being aware of the Department of Health Ageing and Aged Care 'Influ Kit' (DOHAAC 2014). Ten facilities (50%) reported their awareness of the Communicable Diseases Network Australia 'Influenza Guidelines for Residential Aged Care Facilities' (Communicable Diseases Network Australia (CDNA) 2009).

Outbreak management response plans were available in 18/20 (90%) facilities, a similar proportion (106/108) to that identified in an earlier study within the local area (Eastwood et al 2008). Ten facilities reported they had an agreement with a single general practitioner who would coordinate medical services during an outbreak in their facility.

DISCUSSION

This RACF survey provided insight into various aspects of outbreak prevention and preparedness for metropolitan and regional RACFs in the study region of northern NSW. Nurses play an important role in reducing the risks of outbreaks in RACFs through high rates of resident influenza vaccination, awareness of national outbreak management guidelines and use of outbreak management plans. Weaknesses in outbreak prevention included low staff influenza vaccination rates at some facilities and the limited use of surveillance systems to detect communicable disease outbreaks.

Immunisation is regarded as one of the most effective ways to prevent and control seasonal influenza outbreaks (CDNA 2017). The Department of Health, Ageing and Aged Care recommends all residents and staff working in RACFs be provided with influenza vaccination annually (ATAGI 2015; DOHAAC 2014). Local RACFs reported higher resident influenza vaccine coverage than reported in an earlier study (Eastwood et al 2008) although both resident and staff vaccination levels in the study population remained below national RACF influenza vaccination targets and these were not validated by viewing records (CDNA 2017).

Staff influenza vaccination rates varied across the region. Studies have shown nursing and other staff vaccination coverage is associated with various factors including previous vaccination uptake, personal health issues, and concerns about side effects and doubts about vaccine effectiveness (Chalmers 2006; Halliday et al 2003). An internet survey of over 1,000 health care personnel (HCP) in the United States of America in 2014-2015 found that influenza vaccination coverage among health care personnel was 64.3% with the highest coverage amongst HCP working in hospitals (78.7%) and lowest amongst HCP working in long-term care facilities (54.4%) (Black et al 2014). An Australian study in 2000 found that just 28% of RACF nurses and other staff in the Australian Capital Territory received influenza vaccine (Halliday et al 2003), a similar percentage (27%) reported in a NSW RACF during an outbreak of influenza-like illness (Turahui et al 2008). Poor uptake of influenza vaccination amongst RACF nurses and other staff continues to occur despite national recommendations, and is a major gap in the ability to protect vulnerable residents from influenza transmission within their home environment. Strategies for increasing RACF staff influenza vaccination uptake need to be implemented and supported by managerial staff, in addition to addressing concerns about vaccine side effects, and providing targeted education on vaccination as a measure to reduce risk for patients and staff.

Comprehensive resources are available to assist RACFs prepare outbreak response plans but not all facilities reported being familiar with them. Public health units have a role in connecting RACFs to key national resources and encouraging the management of outbreaks within these guidelines.

The use of a surveillance system, which is regularly reviewed and easily identifies clusters of similar illness across the facility, can assist in early outbreak identification and response (Eastwood et al 2008). An effective outbreak surveillance system identifies residents or staff members with respiratory or gastroenteritis symptoms which may precede or indicate early stages of an outbreak. “Facilities should have the capacity to count those with ILI (influenza like illness) each day and identify a potential influenza outbreak (i.e. 3 cases of ILI in a 3-day period)” (CDNA 2017, p12). The current study identified limited use of surveillance systems amongst RACFs. Surveillance in RACFs can be challenging due to high patient to staff ratios, limited numbers of nurses with experience in surveillance, high staff workloads, inability of residents to communicate symptoms and atypical symptoms in the elderly. There is substantial room for improvement in ensuring the development and use of a surveillance tool to identify disease clusters within RACFs.

Since 2014, all RACFs within Australia are subject to accreditation by the Australia Aged Care Quality Agency (AACQA). Facilities are assessed under four standards comprising of 44 outcomes to ensure residents across Australia are provided with optimal and standardised care (Australian Government ComLaw 2014). The accreditation process offers a unique opportunity to directly monitor RACFs outbreak prevention, response and management practices and ensure facilities have strategies in place to prevent and respond to communicable disease outbreaks. Public health agencies could advocate with the AACQA to develop standards within these accreditation outcomes that include outbreak prevention and management strategies. Currently the accreditation standards for RACF infection control are inadequate. The standards must include reportable indicators for staff and resident influenza vaccination alongside effective disease surveillance systems if real change is to occur. Passive interventions such as monthly reports, promotion of resource documents and telephone communications have been used extensively in the HNE district with an inadequate effect and it is evident that more active measures may need to be employed.

There are a number of limitations to this study. Due to small numbers of facilities participating in the study the results may not be representative of all RACFs either in the study area or elsewhere. The majority (17/20) of local RACFs interviewed were small to medium sized facilities with less than 100 residents which may differ with other health regions. Larger facilities may have a higher risk of respiratory and gastrointestinal disease outbreaks due to the difficulty in managing a greater number of patients, but may also have greater resources to prepare response plans. We did not attempt to verify responses through alternative data sources; however, response bias is likely to favour improved performance such as reporting higher vaccination coverage and knowledge of resources.

CONCLUSIONS

RACFs across a regional area of New South Wales demonstrated variable quality of outbreak prevention and preparedness, and some RACFs did not have adequate outbreak preparedness measures in place. Nursing staff working in RACFs play an important role in ensuring facilities are adequately prepared to respond to communicable disease outbreaks through high resident and staff vaccination rates; a robust surveillance system to detect clusters of illness; and implementation of guidance from national outbreak resources. RACF accreditation should include assessment of the RACFs capacity in outbreak prevention, preparedness and management. Robust prevention strategies are critical to protect vulnerable residents from communicable disease outbreaks.

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No one said he was dying: families' experiences of end-of-life care in an acute setting

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KEYWORDS

death and dying, end-of-life care, communication, advance directives, bereavement, rural nursing

ABSTRACT

Objective
To explore the family's experience of end-of-life care for their dying family member during the last few days of life in an acute rural hospital.

Design
Interpretive design using qualitative methods, including 1:1 semi- structured interviews.

Setting
The study was undertaken in a large regional health service in Victoria.

Subjects
Twelve relatives who were next of kin of people who died between 1 January 2012 and 30 June 2013 in an acute ward at the health service agreed to participate in the study.

Main outcome measure
Families' perceptions of end-of-life care for their dying family member.

Results
Data analysis identified five themes that were grouped into two general dimensions – communication (guidance for family member's role in end of life care, the family's preparation for death, the dying experience) and care and support (the hospital care experience, follow-up after death).

Conclusion
A lack of open and candid communication hindered family members' engagement in decision-making and involvement in their loved ones' last days of life. The absence of formal processes for end of life (EOL) care planning resulted in families being unprepared for what they perceived as their family member's 'sudden death'.

INTRODUCTION

Acute hospitals are increasingly being required to provide care for people at the end of their life (Australian Institute of Health and Welfare 2014, World Health Organization 2014). However, the effective management of people who are dying in acute care environments is challenging. The overall focus of acute hospitals is generally on diagnosis and treatment with a view to cure and discharge. In this context, recognition of the fact that a person may be approaching the end of life and in need of conversations about their goals of care, limitations of treatment, a palliative approach to care, or provision of terminal care are often delayed. Communication and care planning with patients and families may be poor and the dying person's preferences may be neglected. The quality of end of life (EOL) care has important implications for the individual patient and also for their family, whose experience of EOL care will live on long after their loved one dies.

Most research on the quality of EOL care has been conducted in palliative settings, as traditionally EOL care is associated with terminal illness, such as cancer (Australian Institute of Health and Welfare 2014). However, a substantial number of people die from life-limiting illnesses, such as chronic obstructive pulmonary disease and congestive cardiac failure (Murray et al 2013). Hospitals provide episodic care over many years for chronic illness exacerbations and during any of these admissions death can occur (Murray et al 2013). It is estimated that on average nearly 40% of people who die in hospital receive life-sustaining measures that are considered unlikely to be of benefit right up until the moment of death (Cardona-Morrell et al 2016). Decisions about whether it is appropriate to escalate life-sustaining measures for people with a chronic, life-limiting illness are often postponed until there is a sudden deterioration. It is then, that families and health care workers are required to make medical decisions without knowing the dying person's preferences (Winzelberg et al 2005). While there is increasing patient-centred research related to EOL in hospital settings, there has been minimal examination of the quality of EOL care in Australian acute care facilities (Kearns et al 2017; Waller et al 2017).

Policy and program developers are placing increasing importance on listening and responding to the views of patients and their families (Australian Commission on Safety and Quality in Health Care 2015). Listening to people who are dying has been a cornerstone of palliative care since Dame Cicely Saunders and John Hinton pioneered the modern hospice movement in the 1960s (Saunders 2003). Previous studies have typically used satisfaction-based surveys that provide a limited understanding of the patient and families' overall experience of care in hospital (Robinson et al 2014). Only a small fraction of EOL care research has been conducted on how patients and their relatives experience care at the end of life in Australian acute healthcare settings (Kearns et al 2017; Robinson et al 2014).

Even less EOL care research has been conducted in regional settings and there is a need for research exploring rural/regional family member/caregiver experiences of EOL care (Robinson et al 2009). In Australia, people living in regional and remote areas experience death rates between 10-70% higher than in major cities (Australian Insitute of Health and Welfare 2008) and also have less access to specialised EOL care services (Wilson et al 2006). That review stated more research is clearly needed to fully understand family caregiver experiences, and what support would be most helpful in these settings.

The aim of this study was to explore the family's experience of EOL care for their relative during the dying process – the care that was provided in the last days and hours of life, in a large regional acute hospital.

METHOD

Design

An interpretive research methodology was used to explore how the participants made sense of the experience of their loved one dying in the acute setting. Interpretive research is a post-positivist approach to research that suggests the researcher is not value free but is affected by social, cultural and political points of view (Schneider et al 2013). A critical aspect of interpretative research is listening and observing, with data collection through the use of interviews. This methodology is also useful when previous research has been limited (Adams 2010). Nursing in particular has found this type of inquiry particularly useful as it moves "beyond established qualitative methodologies in order to generate credible and meaningful disciplinary knowledge" (Thorne et al 2004, p3).

Setting

This research was conducted in a large regional health service, located in a large provincial city of 100,000 people and servicing a 48,000 square kilometre area in regional Victoria, Australia.

Participants and recruitment

Participants were recruited using convenience sampling. Written invitations were sent to all next of kin (NOK) of patients who had an expected death (as established by the Health Service's mortality review) between 1 January 2012 and 30 June 2013 in an acute ward at the health service (n=81). Inclusion criteria included: ≥18 years of age; English-speaking; able to consent to participate; the participant's relative's death was expected i.e. the relative had a life-limiting illness; and the participant's relative was ≥18 years of age. Next of kin who were a government appointed entity, such as a carer, guardian or administrator, were excluded.

Data collection

Semi-structured interviews were conducted one-to-one and face-to-face with the participants. Interviews were conducted between three and 12 months following the death of the participant's relative. Participants were allowed to decide for themselves when to be involved in an interview (Bentley and Connor 2015).

Data analysis

Each interview was audio recorded and transcribed verbatim. Two researchers independently listened to and read the transcripts and then met to agree on identified themes (Rasmussen et al 2012). The themes were then defined with clear descriptions and supported with data from the transcriptions.

Ethics

Ethics approval for the study was obtained from the relevant Health Service Human Research Ethics Committees (Ballarat Health Services and St John of God Hospital Ballarat Human Research Ethics Committee LNR/13/BHSSJOG/50).

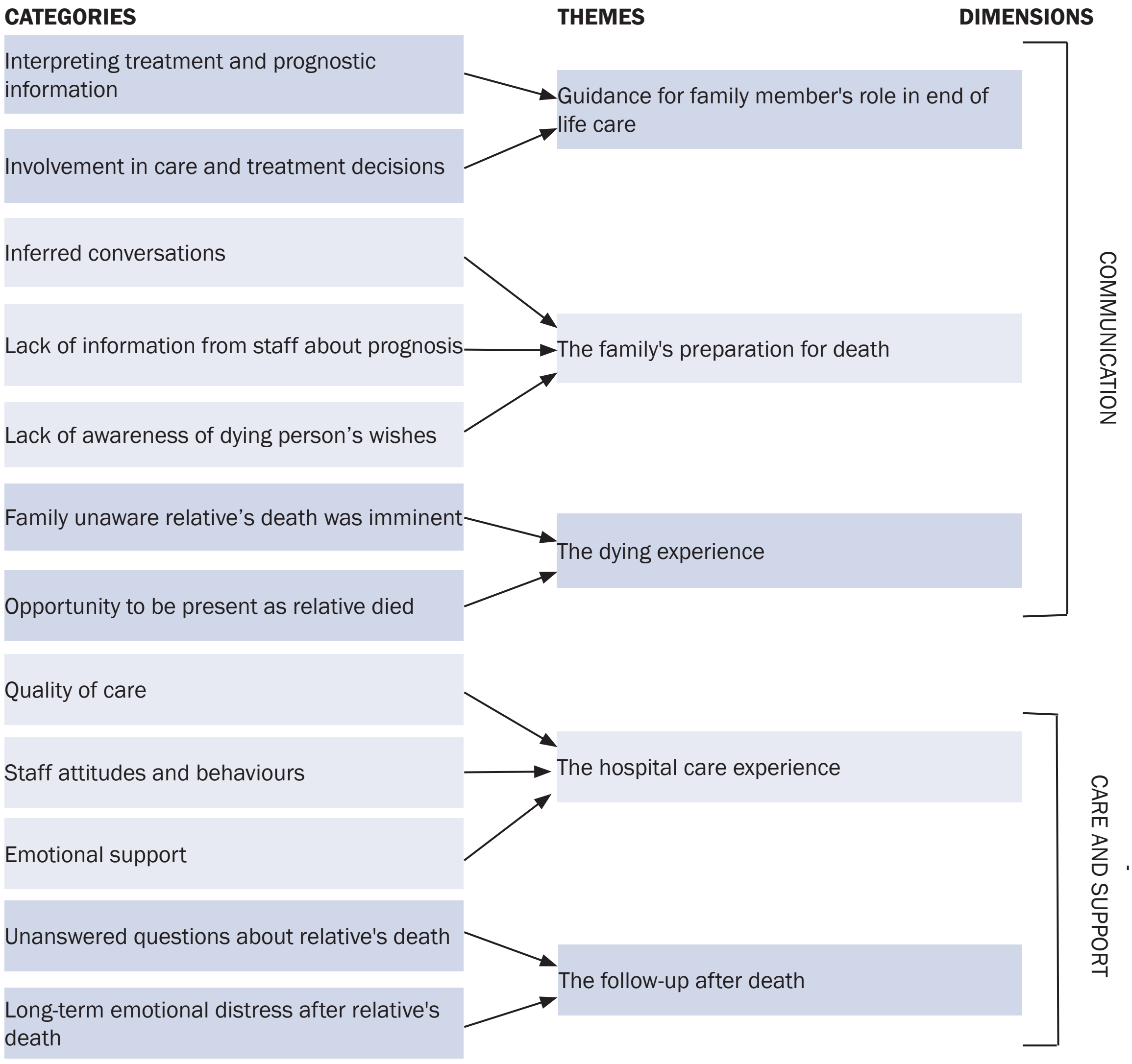
FINDINGS

There were 12 participants (10 females and two males, response rate 14.8%) who agreed to participate in the one-to-one interviews. On average the interviews lasted 35 minutes, with the interview length ranging from 16 minutes to 1.5 hours. Data saturation was achieved. Five themes emerged following analysis of the interview data (table 1): guidance for family member's role in end of life care; the family's preparation for death; the dying experience; the hospital care experience; and follow-up after death. These themes were grouped into two general dimensions (figure 1): Communication; and Care and Support.

Table 1: Definitions of identified themes

Theme	Definition
Guidance for family member's role in end of life care	Health professionals' communication on the current health status and/or prognosis of their relative. This may have included formal family conferences or bedside conversations.
The families' preparation for death	Health professionals' communication about the dying process. This may also include conversations between family members and their loved one.
The dying experience	Health professionals' communication that relative's death was imminent.
The hospital care experience	Family members' perceptions of the care their relative received, including quality, staff attitudes and emotional support.
The follow-up after death	Any contact from the health service after the relative's death.

Figure 1: Categories, themes, and dimensions



Communication

Families' experience of communication with health professionals in the acute hospital setting was a dominant theme in this study. Family members described positive and negative instances of communication style, content and consistency.

Theme 1: Guidance for family member's role in end of life care

Family members asked for guidance in interpreting what doctors say to them, especially in understanding what treatment means and how treatment can be distinguished from prognosis. Pseudonyms have been used in order to maintain confidentiality of the participants.

> *Meg: You need somewhere to go where you can ask, Can you explain what's going on? Why can't they say, "Today the doctor came and this is what happened."*

> *Jane: We had a couple of meetings, two meetings, on that Friday morning with the doctor that was looking after him and the nursing staff and they didn't actually say, "He is going to die." But in a roundabout way, when they said, "He's going to be severely disabled" [my sister] and I both got the impression that they were sort of softening us up like, "We'll keep the machine on for as long as you like but really, you need to just let him go."*

Family members reported a tension between the need for prognostic information about their relative's changing condition and wanting to hear things from doctors that allow hope.

> *Kate: Yeah, so, I don't know. And that's the thing, it's all that I don't know whether people don't want to tell you things or whether they're concerned. I mean you're already in a state of shock and how much, at that stage, would I have been able to cope with? I'm not sure.*

Some family members had clear and open conversations with the health professionals and reported being comfortable with the care decisions made.

> *Dom: He said "Your father's back in hospital because his breathing's not good, and his cough, and he's not coping. I've had a discussion with your father… he wants no more treatment. He said doesn't want anything and he's finished with it." I said, "Okay." … we respected dad's wishes.*

Some family members felt peripheral to important discussions between the doctor and their family member.

> *Meg: A couple of times they made her cry and I felt so awful for her. I know down the track you've got to do this, but sometimes I wish they'd just take the family aside and say to the family, "This is what your mum or your dad might have to do." Let us break the horrible news. They're our parents*

Theme 2: The families' preparation for death

Some family members received very little explicit communication from staff about the dying process. Many family members reported that health professionals used euphemisms – "he'll go tonight" and "her time is near". Family members were forced to make inferences when interventions or services were withdrawn.

> *Julie: … we just guessed…with everything disconnected, like Saturday he was connected to glucose or some clear glucose stuff and he had oxygen and yet when we got there Sunday morning he was connected to nothing.*

In the absence of clear communication, the realisation that their relative's death was imminent was unexpected and upsetting for these family members.

> *Betty: Then the nurse said, "The doctor wants to see you." I thought, "Oh yeah, the doctor's going to tell me 'Lance's really crook'. The doctor just sat there. He didn't say anything. I just said, "He's gone has he?" And he said, "Yes."*

> *Dom: So he said, "Okay, in that case you'll need to come now." And that sort of shocked me. Because dad's been limping along for so long. He said, "You'll need to come, it'll be in a few hours, or, it'll be tonight."*

> *Vera: I'll be honest, no-one ever mentioned that it was getting near. No-one.*

The ability of families to prepare for the death of their relative relied not only on good, timely communication from health care staff, but also on the communication within the family. Some family members reported feeling well prepared for their relative's death and were aware of their wishes.

> *Mary: She didn't want any intervention. Every time she went in there she said, "You're not doing anything to me, if anything happens." She had already signed a form thank God, before she was diagnosed with Alzheimer's, that she didn't want to be resuscitated.*

Other family members felt they did not have a clear idea of their relative's wishes for care at the end of their life.

> *Jill: ... he never actually said, "If I have a massive heart attack I just want to be left to die"... they said, you know, "What do you think he would want?" My sister said "It's really hard to choose for someone else, when you're ending their life"*

Theme 3: The dying experience

Some family members expressed that they knew or had a sense that their family member was dying, however, many were not aware when their relative's death was imminent. Several family members were distressed and disappointed that they were not present at the actual moment of death. Some family members described their relative's death as a sudden event or traumatic death.

> *Julie: So we've just gone in thinking they've either shut it [the curtain] to give him a wash and as I've pulled it back I've just gone, "Oh my God, what's wrong with [husband]?" My daughter said, "Mum, he's gone."*

> *Betty: I had about fifteen minutes with him. I was really cheesed off with the hospital that they didn't ring me and tell me how desperately ill he was,*

Where families were made aware that their relative was close to death, they reported being grateful for the opportunity to make the most of that time with their relative.

> *Dom: ...but that was really his last cognisant evening and we all stayed at the hospital with our partners and we just sort of sat round the bed and he had a lovely time. He chatted, I mean his words were a bit slurred sometimes or he'd forget words.... He just had a lovely time that last night.*

Care and support

Theme 4: The hospital care experience

The care received from members of the health care team varied in quality. Some family members perceived that their relative received "good" care.

> *Dom: The staff were brilliant. They explained things that they were doing for dad. They'd come in and say, "Okay, we're just checking out this or that."*

Other family members perceived the attitudes and behaviours of staff towards their dying relative as demeaning and unacceptable.

> *Meg: A lot of that care was just not right. She even knew that herself. You don't have to be told to "Do it in bed" rather than going to the toilet. She never wanted us to complain. I don't know whether she got afraid that if we complained that they might be nasty to her. I would go to see her every morning and every night and she would say, "Meg, we're old. They don't care about us anymore." I just think to myself, "You guys, you're going to be there yourself one day." When someone doesn't treat you with dignity .... The dignity just isn't there.*

Several family members perceived a lack of emotional care from health professionals, both for themselves and their dying relative.

> *Meg: That woman in ED, I couldn't believe it. She nearly tackled us to the ground. Like we were in a rugby team. We've just been told mum is dying and we're going out to see her and she said, "Two at a time."*

The option of dying at home was discussed with some family members and their dying relative. However, there was often a lack of practical support to make it happen, particularly for people who came from rural and regional areas.

> *Kerrie: I first heard news that the doctor there thought that he would die in hospital within weeks. I said, "Well, I'd like to take my grandfather home." That was completely dismissed by that doctor and in an arrogant way too. He basically said, "I'm not going to talk about that at this point."*

Theme 5: Follow-up after death

In addition to the care experienced while their relative was dying, many family members commented on the need for support following the actual death.

> *Mary: Probably I think, perhaps that follow-up phone call, particularly considering the circumstances around Peter's death. I felt that perhaps that could have been explained to me a little bit better.*

Some of the family members expressed long-term grief issues and emotional distress following the death of their relative.

> *Judy: You've looked after them for years and years and years and then all of a sudden they're gone. It's like someone closing the door and it's bang. There's nothing behind it. You're on your own. I just want to end everything.*

Interviewer: So you are having suicidal thoughts?

> *Judy: Yeah, I did.*

DISCUSSION

As the number of people dying in acute hospitals grow, family members will increasingly participate in decisions for medical procedures and the withdrawal of treatments. The findings of this study describe how next of kin (NOK) experienced the end of life care for a family member who died in a large acute hospital in a rural setting. These experiences provide important information on how families perceived communication from health professionals and their own role in EOL care. Understanding family members' perceptions and involvement in hospitalisation at the end of life is essential to providing quality EOL care in acute hospitals (Swerissen and Duckett 2014).

The lack of open and clear communication from health professionals was a major issue raised by family members. This finding is consistent with previous research, including a review of integrated care pathways for end of life (Neuberger et al 2013), in which failure to communicate was clearly one of the most serious concerns raised by relatives and carers (Swerissen and Duckett 2014). Family members in this study highlighted problems with communication that reflected a lack of recognition of their role in EOL care for their family member. In this study family members clearly expressed their desire for different kinds of information and engagement with EOL care and decision-making. The families' comments suggested they not only wanted the 'facts', but also needed help interpreting those details in order to be able to recognise death was imminent. This finding is similar to that of the study by Russ and Kaufman (2005) involving 26 family members of patients who had died in a California community hospital. That study found that families' feedback indicated they often 'knew' in retrospect, but couldn't 'hear' at the time, suggesting families did not need more information, rather, they needed more interpretation of details and facts. Helping families understand information about prognosis and its implications is important to prepare them for the decision-making that precedes death.

A lack of open and transparent communication made some of the NOK feel marginal to important communication and decision-making related to EOL care for their dying relative. Higher levels of shared decision-making during EOL care have been associated with higher levels of family satisfaction with care (Young et al 2009), and poor communication is a major factor in complaints relating to EOL care (Australian Commission on Safety and Quality in Health Care 2013). Health professionals need high-level communication skills and need to be able to provide guidance to NOK around their responsibilities surrounding their family member's dying.

Many of the NOK felt they were unprepared for their family member's death. Next of kin reported difficulty with changing their mindset from hoping for the best to having to face their family member's imminent death. They also reported feeling unprepared for the decisions demanded of them very near the time of death, such as the withdrawal of treatment or emergency resuscitation. This finding is consistent with previous research related to surrogate decision making, where discordant expectations about prognosis were found to be common between patients' physicians and surrogate decision makers (White et al 2016). Family members in the study by Russ & Kaufman (2005) reported similar experiences. In that study, family members accustomed to interventions and discussions of how to "turn this around" reported experiencing the final decline as a "death without dying" (p. 117).

Several factors may be related to NOK's perception of their family member's 'sudden' death. Firstly, there is often a delay in identifying patients whose imminent death could have been anticipated (Gott et al 2011). Of the people in Australia who died in an acute hospital, 70 per cent received treatment aimed at cure up until the time of death, suggesting that health professionals did not recognise that the person was dying (Hillman 2010). General practitioners and hospital specialists have previously reported difficulties with timely recognition of patients at risk of dying (Gott et al 2011). Tools, such as the Supportive & Palliative Care Indicators Tool (SPICT™) (Highet et al 2013) and the "surprise question" (Moss et al 2008), may prompt identification of patients at risk of deteriorating and dying.

Despite understanding that a person with a life-limiting illness is dying, families often do not recognise when death is imminent (Australian Commission on Safety and Quality in Health Care 2014). Many family members reported that health professionals used euphemisms – "he'll go tonight" and "her time is near". Family members were forced to make inferences when interventions or services were withdrawn. Previous research has shown that health professionals are often uneasy discussing death and dying with patients and their families and do not feel they have the required skills to have difficult conversations (Noble et al 2015). Inadequate role preparation for the provision of high quality EOL care has been identified as a significant problem, particularly in rural settings (Robinson et al 2009). Only a small number of studies have explored rural health professionals' perspectives on providing EOL care and further research is needed to evaluate if specific health care delivery issues exist in these settings. Problems with talking about and planning for death is one of the most significant obstacles to improving the quality of EOL care (Swerissen and Duckett 2014; Australian Commission on Safety and Quality in Health Care 2013).

Finally, some NOK were not clear about their family member's wishes for EOL care and felt unprepared for the decisions they were asked to make close to their family member's death. Very few families were aware of the concepts of advance care planning or had discussed the goals of care approach with the treating doctor. Advance care planning has been shown to be an effective approach for improving communication between patients who are dying, their families and health professionals (Brinkman-Stoppelenburg et al 2014). An advance care plan (ACP) is the plan for future health and personal care whereby a person's values, beliefs and preferences are made known so they can guide clinical decision making at a future time when that person cannot make or communicate their decisions because they no longer have capacity (Detering et al 2010). An ACP can provide clarity for health professionals who provide treatment and services and for family members who may be involved in the decision-making (Brinkman-Stoppelenburg et al 2014).

The quality of the care and support experienced by NOK and their dying family member varied considerably. While some NOK were happy with the care provided, others perceived their family member did not receive basic care and was not treated with respect or dignity. Similar findings in which health professionals stopped engaging with the dying person's clinical needs in acute settings, almost as though these needs were no longer relevant, have been previously reported (Neuberger et al 2013). Most medical and nursing staff are motivated to provide quality care, however, factors such as feeling under-prepared and under-educated strongly influence the cultures and attitudes towards caring for dying patients (Aleksandric and Hanson 2010). Caring for the dying is important and doing it well requires health professionals to have high-level skills in clinical care, compassion and communication.

Family members also expressed the need for support and follow-up after their relative's death. Some family members reported significant grief resulting in negative consequences for their health. The detrimental effects of long-term, unresolved grief are well documented (Fauri et al 2000). In the palliative care setting it is well recognised that care does not end until the family has been supported with their grief responses and those with complicated grief responses have been helped to get care (Street et al 2004). Further work is needed to explore the availability and quality of bereavement services in acute settings, particularly in rural areas.

LIMITATIONS

This study explored the experiences of 12 family members in one hospital in regional Australia. The findings are local and particular to the area, however, may be relevant to similar hospitals in similar rural/regional settings. As the sample size is small it is not clear that findings are representative of the experiences of family members of people who have died in this rural setting. The use of family members as patient proxies, while providing a limited understanding of patient experience, still provides important information on the quality of EOL care in this setting.

IMPLICATIONS FOR CLINICAL PRACTICE

This study identified key actions for nurses and doctors in providing a best practice approach to caring for the dying person. Firstly, allowing families time to prepare for their loved ones death by identifying that the person is dying and family as soon as possible. Families need to be involved in the conversations, and have information, including prognosis, explained to them. Clinicians should be sensitive, use plain language and avoid euphemisms, with follow up to ensure the family understands. Secondly, there is potential for ambiguity and uncertainty at the end of life. Clinicians should explain the prognosis and that the dying process varies between individuals. This must be honestly and openly acknowledged, and discussed with patients, substitute decision-makers, families and carers. Finally, families of people who are dying also need care from the treating team, both during the dying process and following the death. There is a need to ensure there is support for the family with their grief responses and to identify those that are at risk of complicated grief.

In order to address these priorities all members of the interdisciplinary team should receive education and training to prepare them for having conversations about EOL care (Australian Commission on Safety and

Quality in Health Care 2014). Results from this study have informed an EOL framework, providing guidance and direction for staff at a large regional health service, for the delivery of best practice EOL care.

CONCLUSIONS

Families are seeking guidance from health professionals for their role in end of life care for their dying relative. End of life care planning in acute hospitals needs to incorporate strategies, such as health professional communication skills training and advance care planning, to ensure end of life discussions take place. These discussions need to take into account the preferences of both the patient and their family and provide guidance for them through the dying process.

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Pilot study: how Sydney community nurses identified food security, and student nurse focus group perceptions

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KEY WORDS

Food security, food insecurity, community health, community health nurse (CHN)

ABSTRACT

Objectives
This paper aims to discuss and explore food security in the context of community health nursing, to provide insight about how frontline workers may identify whether their client is food secure.

Design
A qualitative descriptive design pilot study, using questionnaire and unstructured interviews.

Setting
Community health services across Sydney.

Subject
How community health nurses identify whether their client is food secure.

Method
Three community health nurses were interviewed and their responses recorded. Two student nurses participated in a focus group during professional work experience in community health.

Findings/Results
Although community health nurses claim they can identify whether their clients are food (in)secure, it remains unclear how they operationalise this claim, and indeed if they do, what the outcome may be for their clients' health determinants.

Primary argument
To raise awareness and stimulate discussion about food security as a social determinant of health, and whether community nurses have a role identifying client food security.

Conclusion
Food (in)security is increasingly recognised as a social determinant of health, with evidence that the prevalence of food insecurity is increasing in Australia. It is acknowledged that community health nurses have established professional relationships with their clients, and that food insecurity may be identified though formal and informal means.

A more open discussion is required about food (in)security and potential ways in which it may be discussed in non-judgemental, sensitive ways. Further investigation is required to interview community health nurses, in the context of their relationships with clients, how they establish whether food security is occurring and being maintained.

INTRODUCTION

Food insecurity, an important Social Determinant of Health associated with poor health outcomes (Wilkinson and Marmot 2006) has been identified as a significant Australian public health issue at national and state levels (Nolan et al 2006; NSW Centre for Public Health Nutrition 2003). It has been shown that food insecurity affects physical, mental and emotional health and well-being of families and individuals (Foodbank 2016). While food insecurity may be perceived to be more prevalent in developing countries, it has been identified as a growing problem in Australia.

Community health nurses, at the forefront of providing health care during each stage of the life cycle, are pivotal in assessing client need and making appropriate referrals across many dimensions. They are in a key position to identify food insecurity with clients, including families with children, following childbirth, the elderly, those with chronic and complex health care needs, and from other vulnerable groups.

This qualitative, descriptive pilot study aimed to discuss and explore current methods used by community health nurses to identify food (in)security in their clients, and the role of nurses. It also aimed to gain insight into how nursing students during work experience on community placements perceive and understand food insecurity.

Student nurses, as beginning nurses are expected to develop skills in critical thinking and evidence-based practice to prepare them for professional practice. They learn within complex policy and education frameworks as well as professional experience programs in order to integrate theory with practice. During community practice experience, nursing students develop knowledge and skills while working under the supervision of an experienced CHN, accompanying them on home visits and working in community clinics.

LITERATURE REVIEW, FINDINGS AND GAPS

A literature search was conducted via UTAS Library using nursing and midwifery databases to search nursing and allied health articles. Key words ‘food security’; ‘food insecurity’; ‘community health’ and ‘Australia’ were used, searching peer reviewed articles in English, in abstract from 2008-2014. Only relevant full texts were selected: eleven articles via CINAHL, and three of twenty articles via Medline PubMed. Articles in English, from Australia, United States of America and United Kingdom were selected, because of similarities between demographics of clients, education of health workers, and studies in food (in)security. The literature searches revealed a body of current literature pertaining to food security in Australia, mainly among lower income groups (Rosier 2011; Innes-Hughes et al 2010; Nolan et al 2006).

The Physical Activity and Nutrition Obesity Research Group (PANORG) (Innes-Hughes et al 2010) discussed the USDA food security tool (Bickel et al 2000) its use in the National Nutrition Survey and NSW Population Health Survey and noted the “absence of measurement of food insecurity for reasons other than financial constraints, such as limited mobility, illness, mental illness or social isolation”. PANORG (Innes-Hughes et al 2010) reported that community level reporting of food insecurity is neither widely discussed nor commonplace in Australia, and suggested further research to collect information about people experiencing food insecurity be conducted to add to the overall knowledge about food security in NSW.

CHNs undertake comprehensive psycho social, physical and functional assessments of clients, using documents based on NSW Health guidelines (Sydney District Nursing Assessment Tool, Community Health Nursing Assessment 2014; NSW Department of Health Supporting Families Early Package 2009) to gather comprehensive information about clients’ lifestyle, health history and personal care needs, upon which care planning and referrals are based. A preliminary review of existing psycho-social and physical assessment tools and documentation currently in use reveals there are no specific inquiries related to food security with regards to whether the client and/or family can afford adequate food to sustain a healthy life, or whether they have enough food. It is unclear from the literature reviewed how CHNs working in community health settings in Sydney determine specifically if their clients are food secure.

Searches for professional CHN organisations undertaken through NSW Nurses and Midwives Association, revealed fewer professional organisations compared with other nurse speciality organisations, which is interesting in a climate of increasing emphasis of community based care (HealthOne, NSW Health 2006; Brookes et al 2004).

Consequently Koch (cited in Brookes 2004) claims that CHNs "have escaped scholarly scrutiny, and their voice has been weak in nursing matters". A fair proportion of research utilised in community health practice is 'applied' research in the context of clinical care and outcomes, and research relevant to CHNs tends to focus on health and well-being in ageing populations (Arbon and Cusack 2011) thereby excluding other vulnerable groups. Brookes (2004) found "there were conflicting role expectations" between health care sectors, and identified "underutilisation and untapped potential of the role of community health nurses".

BACKGROUND

Food security is achieved when all people at all times have physical and economic access to sufficient, safe and nutritious food to meet dietary needs and food preferences for an active and healthy life (Food and Agriculture Organisation 1996). Yet food insecurity may be hidden in our communities (Sydney Food Fairness Alliance 2007).

In the context of this study, "food insecurity'' is defined as not being able to afford enough food or enough of the right food, and can involve clients worrying about food running out, cutting meal sizes, missing meals and experiencing hunger pains (Anglicare 2012). In NSW, 6.2 per cent of households had 'run out of food and could not afford to buy more' in the previous 12 months (NSW Child Health Survey 2001).

Children and older persons are most at risk from poor nutrition, and food insecurity may contribute to poorer health outcomes (Russell et al 2014). Relatively high levels of food insecurity have been identified in pockets of low income among South West Sydney residents (Nolan et al 2006).

The Foodbank Report (2016), based on data analysed by Deloitte Access Economics, stated that one in six Australians reported they had experienced food insecurity at least once over the last twelve months, and that over 644,000 people now receive food relief each month, 33% of whom are children. The report noted an 8% increase in the number of people seeking food relief during 2015.

Food insecurity is of particular relevance to frontline community nurses who interact with vulnerable groups such as young families and the elderly because food insecurity is generally associated with poorer health. Some adverse health outcomes attributed to food insecurity might include risk of poor health, developmental or behavioural problems in children (Ramsey et al 2011) which may affect their academic achievement, poor wound healing in adults (Australian Wound Management Association 2009), while over consumption of energy dense low nutritional foods is known to result in obesity (Innes-Hughes et al 2010).

Community health care sits within a primary health framework, based on the primary health care principles that encompass early intervention, health promotion, illness prevention, health management and client education (Baum 1998). Community health care is provided amid societal and healthcare change by skilled CHNs who work within a broad framework to sustain and improve health in the community (Van Loon 2011).

The Solid Facts (Wilkinson and Marmot 2006) outlines key aspects of people's living, work and lifestyle conditions, the social determinants of health (SDH) which have a powerful influence on health and well-being. The SDH include the social gradient, early life, stress, food and social exclusion.

METHOD

This study is a qualitative study using a descriptive design. Three community health nurses, working at community health centres in south west and south Sydney were interviewed by the author by phone, and their responses recorded. The three CHNs were asked if they use specific questions to inquire whether their clients are food secure. A focus group was held with two University of Tasmania (UTAS) nursing students during professional work experience (PEP) in the community. The students discussed their perceptions of food insecurity, how it is identified by community nurses, and whether they observed CHNs using specific questions to inquire whether their clients are food secure. The interviews were recorded and transcribed.

Ethics approval was received for this project.

RESULTS

It was found that CHNs may use informal processes to identify food insecurity. However, it remains unclear how they specifically identify whether their clients are food insecure in this context, and indeed if they do, what the outcome may be in terms of social determinants.

Two CHNs replied that they do not make a specific inquiry regarding food insecurity. One CHN replied that RNs do not ask specifically about food insecurity, however use the SAFE START psychosocial assessment questions pertaining to major stressors in the last 12 months 'such as financial problems' or 'other serious worries'. CHNs also ask specific questions regarding client's type of diet, recent weight loss, and functional assessments may be undertaken to assess a client's ability to shop and prepare food. An instrument such as the Malnutrition Screening Tool (MST) may be used to assess client's recent weight loss and loss of appetite was rarely used. The student nurses were familiar with the MST through studies at university, however, they did not observe its use by the CHN in the community.

It has been said that CHNs may use 'intuit' or observe whether the availability of food in the fridge (pers. com CHN, 2007). They do this by taking cues from the client's responses to questions, for example, about financial matters, and by observing the availability of food in the client's home, for example the presence of fruit and vegetables. The CHN may take the opportunity to make a cup of tea for the client, and note whether there is fresh milk in the fridge.

The focus group held with two UTAS students discussed their perceptions of food security while working under the supervision of experienced CHN.

The students discussed the importance of good nutrition for general physical and mental well-being, healthy weight and wound healing and identified barriers to food security relevant to the clients they encountered in the community. The students perceived that CHNs readily identified food insecurity but they could not specifically articulate how this was operationalised.

Themes emerged including access to shops, transport, awareness of nutrition and cooking skills, availability of adequate food preparation area and storage, clutter, social isolation, income, and how food needs may be interpreted by others shopping on behalf of the client. The students observed that some clients declined Meals on Wheels or assistance, preferring their own food choices and/or to maintain independence. While many clients lived in comfortable housing and were food secure, they observed some clients in poor living conditions, a lack of fresh fruit and vegetables, some lived on 2 minute noodles, sugary drinks, while others had plenty of food, but the wrong type, for example baklava and tea.

The students did not observe CHNs asking the question "In the last 12 months, were there any times that you or your family ran out of food, and could not afford to buy more?" However, the students observed CHNs asking diet related questions regarding type of diet, recent weight loss, what the client may have for dinner that night, and conducting a functional assessment to assess client ability to shop and prepare food. The students perceived that the CHN observed food availability in clients' homes informally, by observing the availability of food (in fridge and on benches). The students acknowledged there may be stigma associated with not having food in the house, and they felt it may be insensitive to inquire or probe, particularly among some cultures.

The UTAS students perceived that establishing therapeutic relationship between the CHN and client was paramount, and that CHNs possess skills to elicit and observe clients' needs. The students also observed that CHNs have great understanding and knowledge about the needs of their client, with capacity to identify those needs. The students perceived that CHNs use informal means, and skills of intuition to assess the needs of their clients. This may link to 'hidden practice'. However, they suggested that CHN could be provided with further education to enhance skills and assist them to further explore and elicit food insecurity with their clients in the community.

The students discussed ways in which to introduce a more open discussion about food security with clients for example by disclosing that as a student they had 'run out of food and sought help', and relating good nutrition, a balanced diet with family wellness, and improved wound healing.

DISCUSSION

Themes emerged related to social determinants (SDH) such as access, transport, education, isolation, housing, while further sub-themes emerged including therapeutic communication skills, education of nurses, and that CHN use a range of methods to explore client well-being and needs to assist recovery and maintain health.

Generally among those involved in this pilot, the CHN did not make specific inquiries regarding food security, or inquire whether "In the last 12 months, were there any times that you or your family ran out of food, and could not afford to buy more?". It may be that CHN identify food insecurity by using other means including observation, 'hidden practice', 'intuition', indirectly through other formal assessments and eliciting information based on cues.

The student nurses acknowledged that 'food insecurity' is not commonly discussed, and they held reservations that it may be perceived by clients as 'intrusive' to ask directly whether there was sufficient food at home, while acknowledging the CHN should be comfortable to inquire in a respectful way, and make necessary referrals.

A preliminary review of existing psycho-social and physical assessment tools and documentation currently in use reveals there are no specific inquiries related to food security with regards to whether the client and/or family can afford adequate food to sustain a healthy life, or whether they have enough food. It is unclear from the literature reviewed how CHNs working in community health settings in Sydney determine specifically if their clients are food (in)secure.

Searches for professional CHN organisations undertaken through NSW Nurses and Midwives Association, revealed fewer professional organisations compared with other nurse speciality organisations, which is interesting in a climate of increasing emphasis of community based care (HealthOne, NSW Health 2006; Brookes et al 2004).

Consequently Koch (cited in Brookes 2004) claims that CHNs “have escaped scholarly scrutiny, (and) their voice has been weak in nursing matters”. A fair proportion of research utilised in community health practice is ‘applied’ research in the context of clinical care and outcomes, and research relevant to CHN tends to focus on health and well-being in ageing populations (Arbon and Cusack 2011) thereby excluding other vulnerable groups. Brookes (2004) found “there were conflicting role expectations” between health care sectors, and identified “underutilisation and untapped potential of the role of community health nurses”.

CONCLUSION

This project investigated how food security, as a key Social Determinant of Health is explored and identified, and how this process is perceived. Gaining further knowledge and understanding of current assessment processes, and how nursing students perceive this process, and depending on what is revealed, may provide opportunity to influence future education of nurses, CHN and community nursing practices.

The investigations in this study indicate that the subject of food security, how it is identified and explored by community nurses working in Sydney has not been investigated in this context before. Formal identification of food insecurity appears to be in the domain of dieticians in community and public health nutrition, community services, emergency food aid, and on preliminary investigation, appears to be outside the domain of CHN.

Yet CHN are at the forefront of providing complex and diverse care in the community, in an increasingly complex health system (Brookes et al 2004). Whether the skills of CHN’s are under-utilised with regards to identification of food insecurity among their clients in the community is unclear. In the context of this study, it remains unclear who else would formally assess client food insecurity, whether there are conflicting role expectations between health care workers and sectors, and whether there is untapped potential regarding the role of community health nurses.

On preliminary investigation, the question, “In the last 12 months, were there any times that you or your family ran out of food, and couldn’t afford to buy more?” (NSW Health, NSW Population Health Survey 2008; ABS, National Nutrition Survey 1995) is not asked by CHNs. This single item question is very specific to determine basic level of food security, while limited, (Russell et al 2014) may provide baseline information to better assess client/family need, consider appropriate interventions and referrals. Innes Hughes (2010) reported that community level reporting of food insecurity is neither widely discussed nor commonplace, and recommended that further research to collect information about people experiencing food insecurity be conducted to add to the overall knowledge about food security in NSW.

CHNs are in a key position to assess need, identify food insecurity with their clients, including young families, vulnerable groups, and the aged to consider intervention strategies and make appropriate referrals to improve health. It is undisputed that CHNs may identify food insecurity though formal and informal interactions with clients, and make appropriate referrals.

RECOMMENDATIONS

Further inquiries are required to investigate how Food Security as a key Social Determinant of Health is determined by professional CHNs working in Sydney, particularly as food insecurity is increasing. CHNs working at the frontline with young families, vulnerable groups and the aged are in a key position to contribute to this research, and development of strategies to influence practice and improve the health and well-being of their clients.

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Osteoporosis treatment preferences and satisfaction in postmenopausal women: Denosumab compared with oral bisphosphonates

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KEYWORDS

osteoporosis treatment, bisphosphonates, Denosumab, adherence, satisfactions.

ABSTRACT

Aim
This paper aims to investigate whether Denosumab is more effective in promoting adherence and satisfaction than oral bisphosphonates in the treatment of osteoporosis in postmenopausal women.

Methods
Electronic database - MEDLINE, PubMed, CINAHL, Wiley online Library, ProQuest Nursing and Allied Health), free text engines Google Scholar and Findit@Flinders and reference lists of retrieved papers were searched according to the inclusion and exclusion criteria. Twelve studies were ultimately selected.

Primary argument
The author analyses and critically appraises literature comparing two common osteoporotic medications: oral bisphosphonates and subcutaneous Denosumab in view of patients' preferences and satisfaction. Findings from this review could provide suggestions for developing frameworks in clinical practice, identify strategies to improve patient adherence to treatment and develop policies promoting active patient involvement in treatment decision-making.

Results
Following thematic organisation of the studies, four major themes emerged: patient's view on attributes on osteoporotic medications; patient satisfaction and preferences in oral bisphosphonates compared to Denosumab; adherence to treatment with oral bisphosphonates compared to Denosumab; and practice implications.

Conclusion
Findings from reviewed studies favor Denosumab over oral bisphosphonates as the preferred long-term treatment in postmenopausal women. Patients have a greater satisfaction with less frequent dosing, mode of administration and side effects of Denosumab.

INTRODUCTION

Osteoporosis is a severe and chronic condition with significant physical and emotional concerns including increased risks of fragility fractures, hospitalisation and often surgery needs, chronic pain and high mortality rates (Perry and Downey 2011). It causes a tremendous burden on people affected by the disease, their families, as well as the health and social care system (Ebeling et al 2013). Numerous pharmacological agents are designed to slow disease progression and prevent complications with the effectiveness of some reported by many robust clinical trials (Conn et al 2015). However, studies have shown that 50-75% of patients treated with anti-osteoporotic medications have discontinued treatment within one year. This sub-optimal adherence rate and lack of persistence with prescribed treatment leads to a significant decrease (approximately 50%) in the effectiveness of these treatments (Rosen and Drezner 2015; Reynolds et al 2014), and consequently success in achieving therapeutic goals and successful control of osteoporosis (Cairoli et al 2015; Cheng et al 2013; Ziller et al 2012; Imaz et al 2010).

When making decisions regarding treatment options, in order to decrease the likelihood of failure, we must have a better understanding and knowledge of the reasons behind the non-adherence to treatments. Identifying the determinants could assist in clinical decision-making and development of guidelines and policies (Cairoli et al 2015; Laba 2014). According to Rabenda and Reginster (2010), the biggest barriers (most often reported by patients) in relation to discontinuing treatment are: inconvenience, complicated and strict medications dosing regime, and gastrointestinal side effects with oral therapy. However, since osteoporosis treatment is available in various forms, dosages, frequency of administration and regimens, medical practitioners and patients should choose the most appropriate, convenient and personalised treatment (Ward et al 2013; Barbosa et al 2012; Lee et al 2011).

REVIEW OF THE LITERATURE

Methodology

An integrative style of review was chosen as most appropriate to address the research question. An appraisal tool developed by McMaster University 'Critical Review Form for Quantitative Studies' was used to evaluate the retrieved articles (Law et al 1998). The review is organised thematically, allowing important findings from the research to be grouped into themes, followed by further discussion in terms of the topics covered.

Search strategy

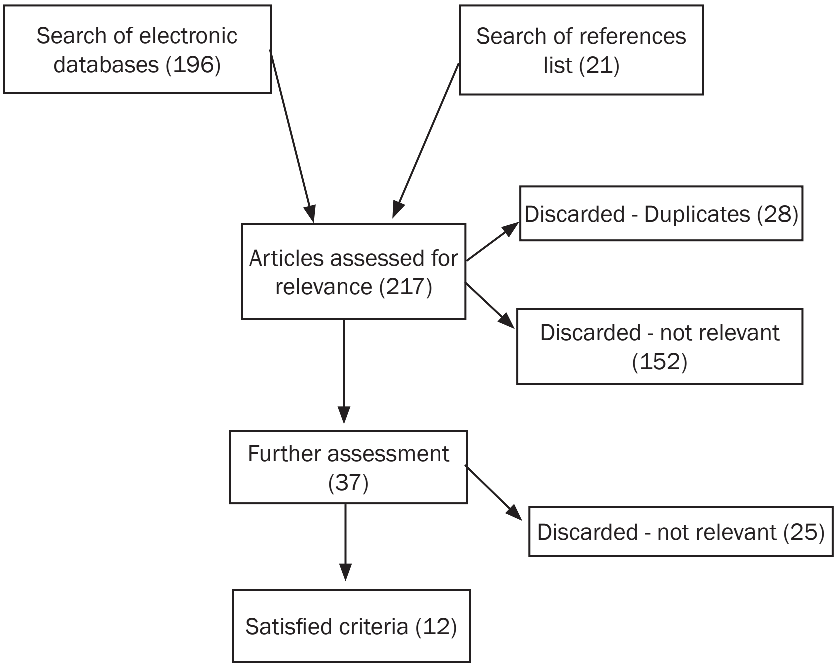
A comprehensive search of electronic databases including MEDLINE, PubMed, CINAHL, Wiley online Library, ProQuest Nursing and Allied Health, identified studies providing answers to the research question. Free text search engines such as Google Scholar and Findit@Flinders were extensively used to search through various sources and related publications. Additionally, reference lists of retrieved papers were scrutinised; primarily focusing on previously published systematic reviews and meta-analyses, which often cite important high quality papers. Both titles and subsequent abstracts were screened for eligibility. Only primary studies published in English, in full text, and between 2010 and 2015 were chosen where the articles' main focus was on comprising and reporting outcomes of adherence, preference and patient satisfaction with oral bisphosphonates as opposed to subcutaneous Denosumab. This review only includes studies with postmenopausal women - the largest osteoporosis prevalence group.

Systematic reviews, meta-analyses and other forms of reviews were excluded. Articles comparing cost effectiveness were also excluded, as this review focuses on patient views and opinions. Studies with participants living in aged care or health institutions were also excluded, as these medications are not self-administered, instead reliance is highly dependent on health care providers.

Search outcome

Twelve articles met the inclusion and exclusion criteria and were selected for evaluation of strengths and weaknesses in view of answering the review question, as well as providing suggestions for possible benefits to clinical practice and improvement of treatment outcomes. All articles have a quantitative design, six are randomised clinical trials and six are cohort studies.

Figure 1: Flow chart of literature search



RESULTS

All of the selected studies clearly indicated the research aim and used appropriate methodology to address the research question. Participant selection was appropriate to study design, which included large samples, carried out in accordance to ethical guidelines. All studies also provided clear statements of findings, research values and clinical practice relevance. Although randomised trials are highly ranked in the hierarchy of evidence (National Health and Medical Council (NHMRC) 2009), the five trials were open-label and not blinded, potentially leading to biased results. The majority of the studies had a clinical trial setting where third-party influence, willingness to participate in study or study design cannot rule-out selection biases. Freemantle et al (2012), Kendler et al (2011) and Kendler et al (2014) used the same sample in their studies therefore as independent studies their findings could provide significant research value, however in the context of this review they were considered as one source of evidence. All studies had short 1-2 years durations, which is potentially an inadequate period to evaluate adherence to treatment or patient's satisfaction for this chronic disease, which requires extended treatment.

Summary of selected articles

A summary of the selected studies is presented in table 1.

Table 1: Summary of reviewed articles

Study	Aim	Sample	Method	Major findings	Strengths and limitations
Barrett-Connor et al (2011).	Association between treatment satisfaction and persistence with postmenopausal osteoporotic treatment.	2,405 postmenopausal women	Assessment of satisfaction using Treatment Satisfaction Questionnaire for Medication (TSQM).	Lower satisfaction with treatment increased risk of discontinuation. Effectiveness, side effects and convenience play important role in adherence to treatment.	Large sample, anonymous questionnaire, data from longitudinal study, primary care setting. Loss to follow up, self-reporting persistence.
Brown et al (2014).	Compare the effect on bone mineral density (BMD) and bone turnover in patients who switched therapy from bisphosphonates to denosumab.	1703 postmenopausal women.	Post-hoc analyses of 2 reviously randomised, open-label, parallel-group studies.	Denosumab more effective in increasing BMD and reducing bone turnover.	Large sample, randomisation. Clinical trial compliance in real-world could be lower. Selection bias - participants willingness to be involved in study. Open-label study.
Freemantle et al (2012).	Provide final results of the DAPS (Denosumab Adherence Preference Satisfaction) 2 years study.	250 postmenopausal women.	Randomized, open-label, multicentre study; Crossover; used Preference & Satisfaction Questionnaire (PSQ).	Preference and satisfaction higher for denosumab than alendronate. 92.4% preferred injections over oral medications as more convenient, better mode and frequency ofadministration.	Randomisations, multicentre, frequent follow ups. Not a real-world setting.
Hadji et al (2015).	Evaluate denosumab-taking behaviour in routine practice.	1500 postmenopausal women from 4 European countries.	Interim analyses of multicenter, prospective, non-interventional study.	87.0-95.3% were persistent and 82.7-89.3% were adherent with treatment. Understanding patients and physicians factors influencing medications taking may improve persistence with treatment.	Large sample, multicentre, 4 health systems. Heterogeneity of clinics, physicians and participants. Participants and physicians willingness to participate in trials.
Hiligsmann et al (2014).	Evaluation of preferences for Medications properties and how patients exchange these properties.	257 postmenopausal women.	Quantitative study Discrete Choice Experiment (DCE) survey: efficacy, side effect, mode, frequency, cost to patient.	Patients prefer higher efficacy lower cost and less frequent dosing regimens. Dislike GI side effects more than skin reaction or flu like symptoms; Willing to pay more and give up on efficacy for treatment mode.	Participants exposed to different types of treatment previously. Possible selection bias. Only common side effects included in questionaries.
Kendler et al (2010).	Compare patient preference and satisfaction between denosumab and alendronate.	1,693 postmenopausal women.	Quantitative, international, randomised, double-blind, DECIDE and STAND; PSQ used.	Higher preference and satisfaction with less frequent treatment.	Large sample, international, randomised, double-blind, double-dummy, phase 3 head-to-head studies- Selection bias-participants willingness to be involve in study. Not real-world setting. Short duration of the study.

Kendler et al (2011).	Assess adherence to treatment with 6 monthly denusemab and weekly alendronate.	250 postmenopausal women from 25 centres.	Randomized, open-label, multicentre, crossover study; follow up at 6, 12, 18 and 24 months; Beliefs about Medications Questionnaire (BMQ).	Denosumab higher adherence, satisfaction and preference in dosing and route of administration routine compared to alendronate.	Randomisations, multicentre, frequent follow ups, equal exposure to 2 treatments, adequate length of study. Not a real-world setting.
Kendler et al (2014).	Analysis how adherence to treatment is influenced by articipants belief in treatment, necessity of treatment, their concerns and preferences.	250 postmenopausal women from 25 centres.	Quantitative study Post-hoc analyses of two randomised, open-label studies; TSQM used with 4 domains: effectiveness, side effects, convenience, and global satisfaction.	Denosumab - greater necessity, preferences and adherences. Greater satisfaction with denosumab as more effective and convenient.	Randomisations, multicentre, frequent follow ups. Not real-world setting. Negative media reports for alendronate and positive for denosumab.
Palacios et al (2015).	Evaluate the treatment satisfaction when switching from bisphosphonates to denosumab.	1703 postmenopausal women.	Randomised, open-label, parallel-group study.	Greater satisfaction may improve adherence to treatment and consequently effectiveness of the therapy.	Randomisation, large sample.Post-hoc analysis, Open-label. Short 1 year study. Potential self-selection bias.
Roux et al. (2014).	Compare efficacy and safety of denosumab and risedronate.	870 postmenopausal women from 82centres.	Questionnaire - efficacy, safety, convenience and direct cost to patient. MaxDiff analysis was used to determine preferences.	Denosumab is more effective and safer option when compared with risedronate.	Randomised, international, multicentre, large sample. Selection bias large numbers of exclusion. Open-label and short 1 year study. Clinical trial only.
Silverman et al (2013).	Assess weighting of osteoporotic medication attributes - safety, efficacy, cost and convenience.	367 postmenopausal women from 4 ethnic groups.	Multicentre, single arm, prospective, observational study. PSQ and BMQ used.	Efficacy and safety have higher attributes than cost and convenience.	Comprehensive questionnaire. Heterogeneity of participants. Not consistent with entering answers.
Silverman et al (2015).	To estimate persistence with donesumab treatment.	935 postmenopausal women.	Interim analyses after 12 months of 24 months study.	81.9% persistent at 12 months. High persistence with treatment have potential in improving treatment.	Prospective observational study, multicentre, real-world setting. Heterogeneity of clinics, physicians.

MAJOR THEMES

Following thematic organisation of selected studies, four major themes emerged: patient's view on attributes of osteoporotic medications; patient's satisfaction and preferences in oral bisphosphonates compared to Denosumab; adherence to treatment in oral bisphosphonates compared to Denosumab; and implications to practice.

Theme 1: Patient's view on attributes on osteoporotic medications

Five of the chosen studies evaluated the importance of osteoporotic medication attributes from the patient's perspective. 'Drug efficacy', 'safety', 'out-of-pocket cost', 'convenience' were key features selected by participants (Palacios et al 2015; Hiligsmann et al 2014; Silverman et al 2013; Barrett-Connor et al 2012; Freemantle et al 2012). Hiligsmann et al (2014), using a Discrete-Choice Experiment (DCE), asked patients to rank two types of medications in relation to these attributes and concluded that 'effectiveness', was the highest attribute and 'cost' was the lowest. A 'longer dosing regimen' was selected as more significant than 'the mode of administration', and 'gastrointestinal side effects' was the most troublesome. Similarly the results of a study by Silverman et al (2013) show that 'drug efficacy' is the most valued feature followed by 'safety', 'cost' and 'convenience' while also observing that medication ranking depended on age, education and income, but not on racial differences.

Barrett-Connor et al (2012) used the Treatment Satisfaction Questionnaire for Medication (TSQM). In their study, 'side effects' were classed as the most important attribute with 'global satisfaction' being the lowest. 'Side effects' were ranked as the highest trigger of discontinuing treatment, followed by 'inconvenience'. Palacios et al (2015) also used the TSQM tool, however their outcome revealed that 'side effects' were not the major contributor in choosing medication, with 'effectiveness' and 'convenience' valued higher. In most of the studies, the 'effectiveness' of medications was valued highest, followed by 'safety'. Other factors such as 'out-of-pocket cost' and 'convenience', which include mode and frequency of administration of medications, were ranked as important but not essential.

Theme 2: Patient's satisfaction and preference in oral bisphosphonates vs Denosumab

Six of the studies from different countries and health care systems acknowledged patient satisfaction and their preferences to treatment as significant determinants when choosing osteoporosis treatment options (Palacios et al 2015; Hiligsmann et al 2014; Kendler et al 2014; Freemantle et al 2012; Kendler et al 2011; Kendler et al 2010). To evaluate patient satisfaction and preference, researchers used the Patients Satisfaction Questionnaire (PSQ), TSQM or the Belief in Medication Questionnaire (BMQ). The 'convenience and life style fit', 'mode of administration', 'dosing frequency' and 'drug related side effects' were revealed as the most influencing factors affecting participant's satisfaction level. Freemantle et al (2012) showed that 91% of participants were satisfied with injections while only 52% preferred oral medication for 'medications administration mode'. Similarly, 94% preferred injection and only 43% chose tablets in view of 'frequency of administrations'. Less frequent treatments were preferred as reported by Kendler et al (2010), revealing that 64% participants preferred bi-annual injections and 16% favoured weekly tablets. Approximately 20% of patients were indifferent to frequency.

Results from a study by Hiligsmann et al (2014) showed that a significant number of participants preferred bi-annual injections to weekly tablets but there were no noteworthy dissimilarities in preferences between bi-annual injections and monthly tablets, proving that less frequent treatment regimens were preferred. Patients often blame lifestyle inconvenience for discontinuing osteoporotic treatments (Kendler et al 2014). In all six studies, a bi-annual Denosumab injection was recognised as more convenient over oral bisphosphonates primarily due to the less frequent treatment requirements. Possibility of side effects related to treatment of osteoporosis were of high concern which were also reported in all selected studies but according to Palacios et al (2015) it was not always crucial. Gastrointestinal side effects, often associated with oral bisphosphonates, were recognised as more troublesome than skin infections and flu-like symptoms sometimes associated with Denosumab (Hiligsmann et al 2014).

Theme 3: Adherence and persistence to treatment in oral bisphosphonates versus Denosumab
Five of the selected papers examined factors influencing patient adherence to treatment (Kendler et al 2014; Barrett-Connor et al 2012; Freemantle et al 2012; Kendler et al 2011; Kendler et al 2010). Barrett-Connor et al (2012) and Kendler et al (2014) concluded that a patient's belief in the necessity of therapy and fear of possible side effects plays a significant role in treatment adherence; a higher degree of necessity with a lower degree of concern leads to better treatment adherence. In two widely recognised studies, DECIDE and STAND (Kendler et al 2010), patients were initiated or switched to therapy with Denosumab from oral bisphosphonates. The authors reported that persistence with treatment was high, above 90% and was very similar in both groups. Those results however could be overestimated, as all patients were closely monitored, possibly motivating them and consequently improving their adherence. Similarly, another study, DAPS, in which participants were randomly divided into two groups 'Alendronate' and 'Denosumab', showed that after the first year, adherence to Denosumab was considerably higher than to Alendronate; 87.3% and 76.6% respectively. Furthermore, after a crossover treatment, adherence to Denosumab increased to 92.5% and Alendronate dropped to 63.5% (Kendler et al 2014; Freemantle et al 2012; Kendler et al 2011).

Generally, high adherence to Denosumab was also confirmed in the study by Hajdi et al (2015) and Silverman et al (2015). The interim result of the non-interventional study in four European countries showed that 82.7-89.3% of women were adherent to being treated with Denosumab, because they received their second injection within the required time (Hajdi et al 2015). Similarly, 82% of postmenopausal women from a study by Silverman et al (2015) (Canada and USA), who were treated with Denosumab as a routine osteoporosis therapy, were persistent with their treatment, and obtained a second dose of the medication within six months. A significant advantage of both of these studies is that they were realistic real-world studies, minimising the likelihood of biases.

Theme 4: Practice Implications
Findings from the reviewed studies highlight the importance of an individual's beliefs, preferences and satisfactions in clinical decision-making regarding treatments to improve osteoporosis care. This 'patient-centred care' or 'preference based care' approach suggested by researchers provides valuable evidence for health care providers and policy makers regarding which treatments and attributes are more respected and preferred, and emphasises that patients and doctors might have different opinions about treatment choices (Palacios et al 2015; Silverman et al 2015; Barrett-Connor et al 2012). A large body of evidence shows that patient preferences in regards to 'frequency regime' and 'mode of administration' must be taken into account to deliver personalised treatment and improve treatment outcome. Less frequent medications administration regime are viewed as more 'convenient' to fit into a patient's lifestyle therefore, bi-annual injections are preferred by many post-menopausal women with osteoporosis (Hadji et al 2015; Palacios et al 2015; Brown et al 2014; Hiligsmann et al 2014; Kendler et al 2014; Roux et al 2014 Silverman et al 2013; Freemantle et al 2012; Kendler et al 2011; Kendler et al 2010).

Injectable medications, like Denosumab, require additional health services but they also provide great opportunities for health care providers to communicate with patients, motivate them with treatment and directly assess treatment adherence (Freemantle et al 2012). Hiligsmann et al (2014) revealed that patients are willing to trade 'efficacy of treatment' and have 'out-of-pocket expenses' for their preferred choice.

Researchers also suggest that for patients who were non-adherent with weekly oral bisphosphonates, switching to monthly regime is not as effective as switching to Denosumab bi-annually (Palacios et al 2015; Brown et al 2014). Understanding the factors influencing patient adherence to treatment at the commencement of their therapy may significantly improve treatment outcomes (Hadji et al 2015; Kendler et al 2014). Consequently, there is a great need for increased research into methods of increasing patient's knowledge and awareness of different options available for them, assessing their preferences and techniques of reducing side effects (Palacios et al 2015; Kendler et al 2014; Barrett-Connor et al 2012).

DISCUSSION

The purpose of this review is to explore available literature examining the effect of patient satisfaction and treatment preferences in relation to treating osteoporosis in postmenopausal women by comparing oral bisphosphonates and Denosumab. The findings support the existence of strong links between patient satisfactions and treatment adherence, also revealing that the main reasons for poor adherence are inconvenience, complicated dosing regime and side effects. The reviewed studies highlight the importance of personalised individual's choices, preferences and satisfactions in clinical decision-making regarding treatment to improve care (Hadji et al 2015; Palacios et al 2015; Silverman et al 2015; Freemantle et al 2012.

When comparing the two reviewed treatments, both have 'pros and cons'; oral bisphosphonates require a strict regime in order to achieve optimal effect and minimise the risk of side effects (Roux et al 2014) while administration of medication via injections often requires frequent visits to a clinic and can also be associated with pain and needle phobia (Kendler et al 2010). Patient safety was considered a significant treatment attribute and a common reason for discontinuing treatment (Cairoli et al 2015; Hiligsmann et al 2014; Barrett-Connor et al 2012). Possible gastrointestinal side effects from oral bisphosphonates are more bothersome than flu-like symptoms or skin infections from Denosumab (Hiligsmann et al 2014; Kendler et al 2014; Barbosa et al 2012).

Hiligsmann et al (2015) suggested that patient beliefs and preferences need to be addressed to improve medication adherence. Patient satisfaction plays a crucial role in treatment adherence; women who reported low satisfaction are 37% more likely to discontinue or switch the treatment than those who have a higher satisfaction (Palacios et al 2015). According to Barret-Connor et al (2012) this number may be even higher, up to 67%. Although those two factors are very important when choosing the best treatment option, other medication attributes such as effectiveness, safety and cost of treatment are also highly recognised by patients and may influence their decision (Cairoli et al 2015; Hiligsmann et al 2014; Kendler et al 2014; Freemantle et al 2012). According to current guidance and recommendations for treatment of osteoporosis in postmenopausal women, oral bisphosphonates are the first option because of their effectiveness, affordability and significant safety data (Rosen and Drezner 2015). However, our findings show that Denosumab, when compared with oral bisphosphonates, has been proven more effective in improving BMD in all routinely measured sites, significant reduction in bone turnover as well as in preventing fractures in numerous rigorous trials (Roux et al 2014; Recknor et al 2013; Sutton and Riche 2012). Although research shows that the cost of Denosumab is slightly higher than oral bisphosphonates, it is more beneficial in long-term practice because bi-annual injections provide better treatment adherence and optimisation (Parthan et al 2013; Barbosa et al 2012; Hiligsmann and Reginster 2011).

Randomisations, large samples, use of widely recognised tools in analyses of findings, and high relevance to practice are the most significant strengths of the reviewed studies. The main limitation discovered throughout the appraisal was diversity in design of studies, which could decrease transferability, or generalisability of the results. The majority of chosen studies were clinical trials potentially resulting in selection bias. Most studies were open-label, participants were willing to be involved, understood the purpose and were aware that their adherence is monitored therefore their adherence to treatment might be higher. Moreover, participants had regular contacts with healthcare providers, which could be a motivational factor enhancing adherence. Additionally, cost of medications, travel expenses to clinics, follow-ups and diagnostic tests were all covered eliminating out-of-pocket expenses. Large diversity within participant's characteristics such as age, education, and socioeconomic status, cultural and ethnical differences, high and low fracture risk can be seen as both strengths and weaknesses.

Another significant limitation was the short duration of trials. All studies occurred over one or two years, therefore participants taking Denosumab bi-annually had only two treatment doses and were subsequently classified as adherent to treatment and treatment satisfaction was evaluated only on those two doses. The studies only focused on frequent but minor side effects, with rare but major adverse reactions omitted.

Further research using a well-designed observational study (prospective or retrospective cohort studies) and longitudinal studies would be beneficial in addressing patient satisfaction and adherence to treatment in real-world settings and potentially minimising bias (Gibson and Glenny 2012).

Despite limitations, the findings from this review may assist healthcare providers in better understanding the reasons for poor treatment adherence for osteoporosis and other chronic diseases. Usually, there is no single reason for discontinuing treatment therefore it would be unrealistic to believe that one intervention may resolve the problem and thus, strategies for improving adherence should be individualised (Rabenda and Reginster 2010). Fung and Spector (2010) emphasised the need for support and education for health practitioners and patients to ensure informed decision-making. They also advocated tailored treatment management to suit the specific patients' needs.

CONCLUSION

Findings from these selected studies favor Denosumab over oral bisphosphonates as the preferred long-term treatment in postmenopausal women. Patients have a greater satisfaction with less frequent dosing as well as the mode of administration of Denosumab. Similarly, because oral bisphosphonates are more likely to cause troublesome side effects, patients were more satisfied with Denomusab than oral bisphosphonates. Thus, Denosumab has a high potential to improve adherence to treatment of osteoporosis in postmenopausal women. However, limited research in this field and insufficient studies in 'real-world' settings reduce the value of these outcomes. Therefore, further research is needed to provide more substantial evidence leading to informed practice recommendations.

However, and more significantly, selected studies highlight the importance of understanding an individual's personal beliefs, preferences and overall satisfaction when making clinical decisions regarding treatment choices. Medication-taking decisions should be rational and informed with good understanding of personal preferences. The single intervention, like prescribing Denosumab instead of oral bisphosphonates, will not alienate problems with low treatment adherence. Therefore, future interventions, guidelines and policies should encourage healthcare providers to customise treatment management to suit the individual patient and co-operate with all parties involved in the development of guidelines and recommendations to improve the effectiveness of treatment for osteoporosis.

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Sporting injuries amongst children in Australia: a review of the literature

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sporting, injuries, children, Australia

ABSTRACT

Objective
Sports and recreation promotes health benefits to the child's wellbeing but can also expose him or her to injury risks. Literature that explores sporting injuries amongst children in Australia with discussions about the paediatric nursing role is reviewed.

Setting
Prevalence of sporting injuries within the Australian paediatric population.

Sample
The search utilized medical search terms of 'Sporting injuries' 'Children' 'Pediatric/paediatric Nurses' in health related databases to locate literature published from 2007 until present. Australian based studies were preferable but not exclusive. Relevant sources through hand selection helped to develop a potential relationship between the frequency of sports injuries occurrences and the types of injuries being treated in hospital.

Primary argument
Of the twenty-five papers chosen, nineteen were related to sports injuries while a further thirteen focussed specifically on children involved in sports and recreation. Data concerning children sustaining sports related injuries, particularly in Australia, is scarce and inconsistent with no literature found relating to the role of paediatric nurses. With a particular focus on spinal injuries sustained through sports and recreation, how the paediatric nurse is involved is identified.

Conclusion
Further analysis on sporting injuries in children in Australia will help to gauge its health burden to the country to better understand this contemporary child safety concern.

INTRODUCTION

Physical activity is essential in the healthy wellbeing of children as it brings a wide range of health benefits to support their growth and development (Richards 2015a). Sports are a popular form of physical activity that children engage in where involvement from a young age teaches them the importance of maintaining fitness that continues well into adulthood (Rossler et al 2014). However, participation in sports has its risks and raises concerns for the safety of the child, as it is a leading cause of injuries within the paediatric population (Richards 2015b). Sporting injuries are a major risk factor that deters families from allowing their children to be involved in certain sports with evidence suggesting that approximately 50% of incidents are preventable (Minuzzo et al 2009). While most injuries are minor, some are so severe they require immediate medical attention and extensive rehabilitation to overcome. Some sporting injuries potentially result in lifelong disabilities or even death. This paper will therefore review relevant literature on sporting injuries as a contemporary safety issue for children and address its impact on the child and family as well as community. The role of the paediatric nurse in caring for patients injured in sports is explored with particular focus on those who have sustained spine injuries.

Participating in sports extends beyond keeping children physically fit, it also helps develop social skills, to work as a team, aids in the regulation of emotions to perform under pressure and enhances self-esteem along with other health benefits (Loprinzi et al 2012). The Australia Bureau of Statistics (2013) states that in 2012, 1.7 million of the 2.8 million children aged 5-14 years old were involved in organised sports outside of school making up 60% of the population for that age range. In addition adolescents aged 15-17 years old are reported to have the highest participation rate in sports and recreation of 74% (Australian Bureau of Statistics 2015). Children participate in a variety of different sporting activities including basketball, rugby, equestrian and road motor sports but the most popular sports are swimming and soccer (Roy Morgan Research 2015). Keeping children active from a young age enables the pursuit of a healthy lifestyle that ultimately produces better health outcomes (Minuzzo et al 2009). Encouraging children to play sports is even a government initiative to help overcome childhood obesity, which is a growing epidemic in Australia (Commonwealth of Australia, 2010). Although children who engage in sporting activities have advantages in relation to their health, the risks involved should not be ignored because it poses a threat to their safety.

Children are potentially at a vulnerable risk of sporting injuries due to their physical and physiological processes of growth and development (Caine et al 2014). For example, in comparison to mature adult bones, children's developing bones are more cartilaginous resulting in injuries unique to their age group such as growth plate fractures and greenstick fractures (Shanmugam and Maffulli 2008). Studies have also highlighted that during the pubescent period, the occurrence of injuries increases (Caine et al 2014). This is because the rate at which certain muscles strengthen is not the same as other muscles leading to imbalance and instability. For example, anterior cruciate ligament tears are often seen in the adolescent female population. Children also participate in sport categorised by chronological age rather than weight divisions thus their structure, function, and performance can differ significantly. As a result, late maturing young athletes are at a disadvantage against their physically larger, yet of the same age, opponents. Furthermore due to their immature and underdeveloped coordination, skill, and perception, children's risk of sporting injuries may also increase (Schwebel and Brezusek 2014).

METHODOLOGY

For the purposes of obtaining relevant literature on the topic Medical Subject Heading (MeSH) terms were employed with CINAHL, Medline, Pubmed & Informit chosen as the preferred databases for this review. Using Boolean search types, literature searches of the databases were conducted in three parts. The initial search conducted utilised the MeSH terms of ‘Sporting injuries’ ‘Children’ ‘Peadiatric Nurses’. Results were then limited to a time frame of 2007 onwards to achieve more contemporary information. Studies from Australia were considered to gain more knowledge on the country’s understanding of sporting injuries amongst the paediatric population. The overall number of journals was poor due to the lack of literature exploring the role of paediatric nurses. As a result, literature used in this review was hand selected based upon relevance to the topic, highlighting potential for links to be made between children involved in sporting injuries and the role of paediatric nurses.

Using MeSH terms ‘sporting injuries’, ‘children’ and ‘pediatric/paediatric nursing’ to locate literature in databases of choice was unsuccessful. Instead the literature used for analysis was not exclusive to sporting injuries in children but had relevance to the topic. Of the twenty-five papers selected and reviewed, nineteen are about sporting injuries, while thirteen focused on children involved in sports and recreation. Through thorough examination of databases, few studies relating to the epidemiology of sporting injuries amongst the paediatric population in Australia exist.

DISCUSSION

Inconsistencies between the published literature makes it difficult to attain definite and clear figures to understand how much of an issue sporting injuries are to the safety of children. While 4.3% of individuals aged 18 years and younger visit the emergency department for sport related injuries in the United States of America each year, Australia does not have similar data to compare (Safe Kids Worldwide 2015). Reported injury rates varied between different studies due to the discrepancies in definition but also in the method of collecting and measuring injuries (Spinks and McClure 2007). It is acknowledged that different mechanisms of injuries usually took precedence over sports being the primary cause, which ultimately alters information ascertained for analysis. One study carried out in 2011 in Victorian hospitals highlights that poor documentation is also a contributing factor where the activity engaged at the time of injury is unspecified in 59% of cases presented to emergency departments (Clapperton 2012), though when it was written down, sports became the most commonly recorded activity. Updated statistics have replaced activity and place of injury with ‘setting’ where 9.3% in injuries are from sport settings. However again, it fails to clearly represent how often the cause of an injury is related to sports because children could have been at school, home or other locations while engaged in some form of sporting activity (Hayman et al 2017). While it is evident that sporting injuries do make up a proportion of presentations to emergency departments, facts and figures remain unclear. In response, determining its prevalence, particularly with children and how this impacts the Australian healthcare costs is difficult (Finch 2014).

Although children under the age of 15 are not included in the survey published by the Australian Institute of Health and Welfare in 2011-2012, it does provide some relevant information to better understand sporting injuries in this country. Based on the report, the number of individuals aged 15-17 years old who required hospitalisation as a result of sporting injuries was 5,770 (Kreisfeld et al 2014). It is found that most injuries sustained are from football of all codes; that is soccer, Aussie rules, rugby and touch football. Rather than suggesting how dangerous this type of sport is, it is a reflection of its popularity amongst the Australian population (Johnson 2014). While the number of those injured in wheeled motor sports was not as significant as football incidents, the proportion of injury to participant was the highest in comparison to the different sports people are involved in with a reported 3,500 hospitalisation for every 100,000 participants. Furthermore, in conjunction with cycling and equestrian sports, wheeled motor sports have higher proportions of severe injuries (Kreisfeld et al 2014. Given the fact that the data collection for this survey is only those children requiring hospitalisation and not including presentations to emergency departments or visits to a general practitioner, the number of sporting injuries occurring is not represented as accurate and is most likely a gross underestimation.

The age of the child should also be taken into consideration when understanding sporting injuries. While sports participation often peaks among children and adolescents, certain injury risks are also associated with different age groups (Pointer 2014). For example, falls from playground equipment and drowning in swimming pools pose significant dangers to younger children whereas falls from skateboards accounted for 15% hospital admissions in children aged 10-14 years. The location, severity and diagnosis of sport injury also differ from age groups (Stracciloni et al 2013). The study found injuries affecting the upper extremities, namely fractures, were common amongst young children aged 5-12 years while older children (13 -17 years) tended to injure their chest, pelvis and spine more with soft tissue damage as a result of overuse as the root of cause.

Examining the incidences of children sustaining injuries from sports through accuracy and consistency in data collection is crucial. It helps to reflect on the effectiveness of current practices in protecting the paediatric population and raises public awareness (Finch and Clapperton 2012). One recent study from Victoria attempted to examine the burden of sporting injuries in children comparing the incidents to road traumas (Finch et al 2014). Findings concluded that within the 2004-2010 period, there was a significant increase in the frequency of children requiring hospital treatment as a result of sports while those involved in road accidents decreased. The health burden is also larger with more direct hospital costs, more admissions as well as longer years lived with disabilities. Similarly there has been a marked increase in the hospitalisation of children for sports related injuries in Canada (Fridman et al 2013). These results demonstrate that the burden of sporting injuries in children is growing in numbers and cost internationally. Nevertheless it also provides incentives to prioritise the need to implement sports injury preventative measures for the paediatric population.

Sporting injuries vary in severity. They can range from scrapes and bruises to head trauma and spinal cord injuries (Dunkin 2016). Common injuries often seen in the emergency departments include fractures and soft tissue injuries (Kreisfeld et al 2014; Fridman et al 2013). For those who require hospitalisation it is imperative that their injuries are managed appropriately to reduce long-term complications. A severe yet rare example is children with spinal cord injuries caused by sporting activities. The spine is central to the skeletal system supporting the head and surrounding the spinal cord which contains millions of nerve fibres used for communication between the brain and the rest of the body (Sansbury and Wilson 2015; Spinal Injuries Australia 2015). As the spinal cord lies within the vertebrae and is well protected, a considerable amount of trauma is required to cause injury. Therefore the mechanisms of injury in sports tend to be from collisions in rugby tackles, or a high fall off a motor cross bike. Trauma to the vertebral column includes fractures, dislocations and subluxations (Hung 2015). Such injuries to the vertebral column prevent correct alignment making the spine unstable. Further unguarded movement on the unstable spine can affect the spinal canal causing compression or overstretching of neural tissue within. This potentially leads to permanent damage to sensory or motor function. As a result suspected spine injuries are to be taken very seriously (Sydney Children's Hospital Network, 2012).

Certain areas of the vertebral column are less stable making them more susceptible to injury from severe flexion and twisting (Sansbury and Wilson 2015). The cervical vertebrae, which is the highest segment of the spine, is fractured most often and injury at this level causes extensive paralysis. The immediate response to spinal cord injury is known as diaschisis or spinal shock (Hung 2015). It is characterised by flaccid paralysis with tendon reflex losses below injury level, absence of somatic and visceral sensation and autonomic dysfunction manifesting in hypotension, abnormal thermoregulation and loss of control over bladder and bowel. For the paediatric patient and family members a spinal cord injury is a life-changing event because in an instant the once full functioning and athletic child has become dependent and relies on mechanical ventilation to breathe. Providing emotional support for the family is detrimental as they may experience a sense of grief or loss during this time. However it is also important to remind families that this is only the initial stage where the extent and severity of damage cannot be established at first and improved function takes weeks or even months to occur when spinal shock resolves (Evans 2015).

THE ROLE OF THE PAEDIATRIC NURSE

Improvement in the management of children with spinal cord injuries is a result of enhanced technology and surgical interventions as well as more extensive research into the complexity of the spinal cord and its neurological components (Sansbury and Wilson 2015). Paediatric nurses play a vital role when caring for a child who has sustained a spinal injury from sports. During the acute phase their primary role is to prevent further insult to the damaged spinal cord (Sydney Children’s Hospital Network, 2012). Spinal precautions where the child requires a rigid neck collar must lie in supine position at all times and log rolled when transferred are essential to immobilise and stabilise the spine for optimal healing. Ensuring airway patency, preventing complications and maintaining function are priorities (Evans 2015). Furthermore, evaluating the extent of neurological damage early to establish a baseline helps to monitor the patient’s neurological status. This entails Glasgow coma scale, assessing limb strength, neurovascular observations, and pupil response. Spinal cord injury has the potential to cause multiple impairments that reduces an individual’s level of activity, participation and quality of life (Withers et al 2014). As nurses, it is therefore important to find a balance between instilling hope and helping the patient and family come to terms with reality when caring and communicating with them. While working within the multidisciplinary team, paediatric nurses liaise closely with different health professionals such as the occupational therapist, physiotherapist, social worker, psychologist and dietician to address the different aspects of the patient’s life during their rehabilitation.

When the degree of damage is confirmed the goals become maximising motor function and minimising disabling effects of the pathological condition (Sansbury and Wilson 2015). The role of the paediatric nurse is to assist and educate family members in caring for their child independently in preparation for discharge back into the home environment. Progress may be slow at first, as the initial weeks require thorough explanation and demonstrations on performing tasks specifically to protect the spine. The following weeks involve supervising the caregiver- namely parents, in looking after their child appropriately. In the cases of adolescents who are deemed cognitively competent, self-care is promoted (Sydney Children’s Hospital Network 2014). Supporting the child and family emotionally is just as crucial where an altered perception of body image as a result of their injury may occur and thus the paediatric nurse should acknowledge their frustration and openly discuss their situation. Eventually the aid of the paediatric nurse will become less over time as the family and the child builds confidence to perform tasks such as transferring, showering and pressure area care in a safe manner. When technique is assessed as correct and no concerns are raised after review from the treating team, the child will return home temporarily beginning with a few hours and gradually upgrading to staying overnight. The purpose of temporary leave from hospital care is to ease the transition back into everyday life with alterations made to the home to accommodate for the disabled child.

CONCLUSION

In conclusion, sports and recreation is recognised to help children maintain a level of physical activity that will benefit their growth and development in a number of different ways. However the risks, namely sporting injuries, compromise the safety of the child and adolescent. Injuries from sporting activities fall onto a spectrum of scrapes and bruises that have little effect on the child to extreme though rare cases of traumatic brain injury and spinal cord injuries, which result in lifelong disabilities or even fatality. Review of relevant literature concerning sporting injuries in children found there is a paucity of data in determining the prevalence of injuries or the impact on the individual, family and community. While injuries are the leading cause of disability and mortality amongst the paediatric population, more academic studies to address this issue are necessary to better understand the mechanism of injury. This will also raise public awareness to seek improvements on a local, state and even national level to keep children safe while participating in sports. Currently, paediatric nurses are treating children who have sustained sporting injuries rather than preventing them. With better surveillance of this safety issue, more can be done to reduce the risks and ease its health burden in Australia.

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IN THIS ISSUE

RESEARCH PAPERS

SCHOLARLY PAPERS

35:4

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Volume 35 Issue 4

CONTENTS

RESEARCH PAPERS

SCHOLARLY PAPERS

AUSTRALIAN JOURNAL OF ADVANCED NURSING REVIEW PANEL: AUSTRALIA

Debra Andrews, Master of Nursing Critical Care (Neonates), Master of Nursing (Nurse Practitioner), RN, RM, NICU certificate, New South Wales

Siglinde Angerer, MA Professional Education and Training, Dip Child and Family Health Nursing, Victoria

Narelle Biedermann, RN, BNSc(Hons), PGCertNSc (Clinical Teaching), MDefStud, PhD, James Cook University, Townsville, Queensland

Judith Dean, RN, RM, BN, MPHlth&TropMed, PhD, University of Queensland, Herston, Queensland

Tess Dellagiacoma, RN, GCClinSup,BA, MA(Nurs), LLB, GDip Legal Practice, GDip Family Dispute Resolution Practice, Lismore, New South Wales

Trisha Dunning, RN, CDE, MEd, PhD, Deakin University and Barwon Health, Bannockburn, Victoria

Andree Gamble, RN, BN, PGDACN (Child Health), GCHPE, PGC PET,GCCS, Dip Bus, Cert IV TAA, MSN, PhD Candidate (Monash)

Julia Gilbert, RN, RM, BHsc, GDip BM, BLaws, GDip Legal Prac, GDipHigher Ed, Federation University, Ballarat, Victoria

Janet Green, RN, MNEd, Mbioeth, MeLearning, PhD, University of Technology, Sydney, New South Wales

Rhonda Griffiths, RN, BEd (Nsg), MSc (Hons), Dr,PH, University of Western Sydney, New South Wales

Ruth Harper, BSc, RN, MA, Melbourne Halth, Victoria

Penny Heidke, BN, GDip Learning and Teaching, MHresearch, CQUniversity, Queensland

Rachel Latta, BN, MPH, Hunter New England Local Health District, New south Wales

Jeanne Madison, RN, BSN, MPH, PhD, Retired, Armidale, New South Wales

Peter Massey, RN, GradCertPublicHlth, DrPH, Hunter New England Health, Wallsend, New South Wales

Joanne Mockler, RM, RN, DPSM, BSc (Hons) Midwifery Studies, Msc Midwifery, ACRP CCRC, DN, Monash Health, Victoria

Maria Murphy, BN, PhD, Grad Dip Critical Care, Grad Cert Tertiary Education, La Trobe University, Victoria

Sally Niemann, BN, BA Hons (Eng Lit), South Australia

Deb Rawlings, RN, Onc Cert, BSc (Hons) Nursing, MPH, Flinders University, Adelaide, South Australia

Colleen Ryan, RN, BHlthSci, GCCE, MHPE, PhD Candidate, CQUniversity, Queensland

Afshin Shorofi, RN, BSc, MSc, PhD, Adjunct Research Fellow Flinders University, South Australia; Assist Professor Mazandaran University of Medical Sciences

Sharon Slack, BN, RN, MN (Urol & Cont), Masters Candidate (Research), MCNA, CQUniversity, Mackay, Queensland

Margaret Yen, BHSc (Nursing), MHM, MHlthSc (Education), PhD (candidate), Charles Sturt University, Bathurst, New South Wales

AUSTRALIAN JOURNAL OF ADVANCED NURSING REVIEW PANEL: INTERNATIONAL

Natasha Hubbard Murdoch, RN, CON(C), BSN, MN(c), Saskatchewan Institute of Applied Science and Technology, Canada

Jennifer Lillibridge, RN, MSN, PhD, Emerita Professor, California State University, Chico, California, USA

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Effect of an evidence based quality improvement framework on patient safety

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ABSTRACT

Key Words
The Productive Ward Program™, patient safety, quality, falls, medication errors

Objectives
To investigate the impact of the introduction of The Productive Ward Program™ on two patient safety indicators; patient falls and medication errors.

Design
Retrospective quantitative study.

Setting
The study was conducted at a major metropolitan acute care hospital in Sydney, Australia.

Subjects
This study was conducted in a medical, surgical and two aged care wards, with a combined total of 120 inpatient beds over a 32 month time period.

Main Outcome Measures
The number of patient falls and medication errors for each of the participating wards.

Results
The implementation of The Productive Ward Program™, did not have an overall significant statistical reduction in the number of falls and medication incidents. Aged Care 1, had a reduction of 13 falls between intervention and post intervention phase, these results were not statistically significant (OR 1.17; 95% CI 0.86, 1.59). For Aged Care 1 ward there was a statistically significant reduction in medication errors from 66 errors pre intervention to 27 medication errors post intervention (OR 2.73;95% CI 1.71, 4.38).

Conclusion
The results of this small study indicate that the implementation of The Productive Ward Program™, did not have an overall significant statistical reduction in the number of falls and medication errors. This paper highlights the need for future research on the impact of the Productive Ward Program on patient safety.

INTRODUCTION

The acute healthcare environment is complex and rapidly changing in part due to increasing patient acuity, staff shortages, decreasing length of hospital stays, and the aging population (El Haddad et al 2013). In light of this, the provision of safe quality care remains an ongoing challenge for clinical staff. Patient safety is important to reduce harm to patients and prevent adverse consequences thus, it is important that ways are found to transform care cultures in an effort to provide safe and effective care. Better patient outcomes and quality of care have been attributed to improvements in hospital work environments and processes, for example staffing, decision making and multidisciplinary relations (White et al 2014; Aitken et al 2012; Lennard 2012). The Productive Ward Program™ (PWP) is one such strategy designed to empower the Multidisciplinary Team (MDT) to make changes towards improving the safety, quality and delivery of care (White et al 2014; Wilson 2009) with the main aim of improving clinical and safety outcomes for patients (Van Bogaert et al 2014)

BACKGROUND

Numerous indicators have been defined to monitor patient safety, however the commonly used indicators included the incident of patient falls and medication errors. (Burston et al 2014; DuPree et al 2014; Heslop and Lu 2014; Burston et al 2011; Dykes et al 2011). The literature is rife with studies relating to strategies to prevent incident of patient falls and medication errors. However, the focus of these studies has been mainly on the development of screening tools, patient self-efficacy, nurse to patient ratios, staffing numbers and the relationship between the care provided, patient outcomes and existing processes. Whilst these studies acknowledged the importance of patient safety indicators and the limitation of current studies they also noted the limitations of existing risk screening tools and challenges with the reporting and prevention of falls and medication errors. In order to draw attention to patient safety, two common key patient safety indicators, namely patient falls and medication errors, have been utilised to measure and determine the appropriateness, effectiveness and quality of care strategies (Burston et al 2011).

Falls

Falls are the most common and often preventable adverse component of acute hospital care. In a recent survey undertaken in England, there were 314,314 patient falls in the National Health Service (NHS) hospitals accounting for 19% of all incidents notified in the NHS reporting system (NHS National Reporting and Learning System, 2015). Similarly, the incidence of falls in the United States of America (USA) hospital system has been reported to be between 700,000 and 1,000,000 per year (Agency for Healthcare Research and Quality, 2013). In Australia, the number of patient falls were 298,709 across both private and public hospitals. (Australian Institute of Health and Welfare, 2014). The number of inpatient falls notified in New South Wales (NSW) public hospitals in 2013 was 27,073.

In New South Wales falls are classified according to the severity assessment code (SAC). SAC is a numerical score applied to an incident based predominantly on its consequence. SAC 1 and SAC 2 incidents are those that resulted in the death or serious injury or harm to the patient (NSW Clinical Excellence Commission, 2008). Of the 27,073 incidents of falls in NSW, 464 were classified as SAC 1 and SAC 2 incidents (NSW Clinical Excellence Commisssion, 2014).

The demographics of patients admitted to acute hospital in Australia is predominantly aged 65 years and older. This combined with the severity of illness and unfamiliar surroundings of hospitals are predisposing factors which add to the increased risk of patient falls and the consequences of falls (Healey et al 2014). Harm to patients from falls include fractures, head injuries, soft tissue injuries, psychological trauma, extended length of stay and cost for the health care services (Dunne et al 2014). A study undertaken with 250 patients aged 60 years and over demonstrated a one-year cumulative mortality was 25.2% among those who have fall related fractures (Coutinho et al 2012).

Medications

Medication errors and intravenous fluid incidents account for the second most reported clinical event in Australian health contexts (Hayes et al 2015) with 10,475 medication errors and intravenous incidents recorded over a six month period between July to December 2010 and 11,132 in 2013 for the same period (Australian Commission on Safety and Quality in Health Care 2009).

Medication errors account for one of the most significant causes of harm to patient safety and are attributed to increased length of stay, readmissions, distress, mortality and, increasing financial costs (Wittich et al 2014; Flynn et al 2012; Evans 2009). Patient safety remains a concern for health care despite continual monitoring of medication errors (Folkmann and Rankin 2010). To decrease the likelihood of medication errors, strategies have been implemented to improve the practice environment. These include participation in decision making for staff, improved teamwork between the MDT, fostering continuity of care and ongoing educational opportunities (Flynn et al 2012). In addition, the introduction of electronic medical records with medication components has been reported to decrease the incidence of medication errors by up to 50% (Geneve et al 2015).

Strategies

Falls and medication errors prevention strategies in acute care are complex (Dykes et al 2011) hence, a number of evidence-based quality improvement frameworks have been implemented to address patient safety. These include ‘Transforming Care at the Bedside (TCAB), and the ‘Studor Group’, both conducted initially in the USA. The TCAB is a nurse led initiative, where staff work in a supportive team and focus on four key areas: care that is safe, reliable and effective; patient-centred, efficient and minimal waste. These initiatives are key to sustainable healthcare in the future (Burston et al 2011).

Results from an observational study in Australia that utilised TCAB, noted an improvement in patient safety indicators with a reduction in the incidence of both medication errors and patient falls. However, the authors acknowledged that further evaluative studies were needed (Burston et al 2011). Comparatively, the Studor Group focused on creating purpose, making a difference and valuing the work undertaken (Braaf et al 2015). Rounding performed by nurses was one approach which had a positive result in improving patient safety by reducing the incidence of falls in a number of USA hospitals.

In Australia, the Essentials of Care Program is another evdience-based quality improvement framework that has been employed to improve patient care and outcomes. The Essentials of Care Program is focused on nine domains which link to clinical standards, including ‘preventing risk and promoting safety’. The program is structured into six phases and is ongoing with a two year evaluation cycle. Research and evidence gained in the clinical context is used by the team to review, change practice and achieve improved patient outcomes (NSW Department of Health 2009).

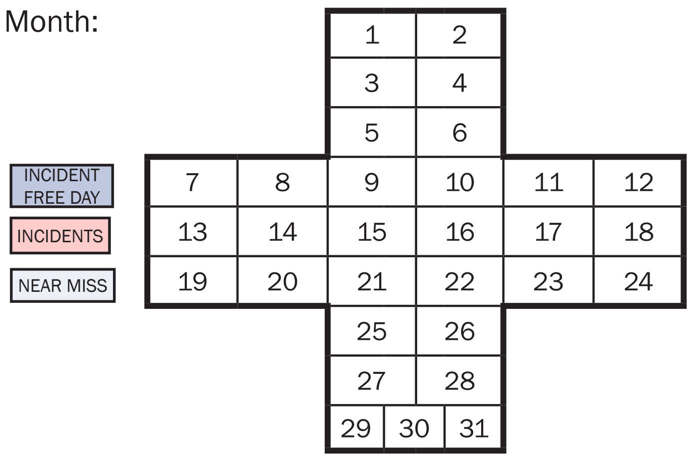
The Productive Ward Program™ (PWP) is another evidence-based quality improvement framework that has been implemented in Australia to improve patient outcomes, particularly in relation to the reduction of patient falls and medication errors. The Productive Ward Program™ is designed to assist wards to streamline work processes, reduce inefficient activities, declutter the work place and release more time to care for patients (Dunne et al 2014; White and Waldron 2014).

The quality improvement project reported in this paper is The Productive Ward Program™ (PWP). The PWP was developed by the United Kingdom’s National Health Service Institute for Innovation and Improvement (NSHI) in

2005; with widespread implementation in 2008 (Wilson 2009). Since then, The PWP has been introduced in numerous countries including Australia, Canada, Denmark, Ireland, New Zealand, The Netherlands, Scotland and the USA (Oregon) (White et al 2014). The program utilises lean thinking methodology (Wilson, 2009) and principles of complexity theory to improve flow, reduce waste and empower staff to review the ward environment and clinical processes, in order to identify areas of improvement and initiate positive change (Dunne et al 2014). Complexity theory highlights the need for change at all levels of healthcare and seeks to explain the relationship between macro-structures and micro-level behaviour (Chandler et al 2016; Lanham et al 2013). The PWP attempts to address this complex relationship by aiming to involve all layers of the health care system in order to increase direct patient care time, enhance the staff and patient experience and, improve safety and efficiency of care (Burston et al 2011). The PWP was implemented at the major metropolitan acute care hospital with the aim of it becoming a long term evidence-based quality improvement framework involving all members of the MDT. For this reason, patient safety indicators involving a multidisciplinary approach to reduce harm have been applied as measures to determine the effects of The PWP.

The PWP is comprised of three foundation modules which are completed in order, followed by ten process modules (White et al 2014). Before beginning implementation, a selection of staff from the ward attend a two-day training program. The training has a strong focus on the processes of the three foundation modules and the basic principles of The PWP. Each module includes a prepare, assess, diagnose, plan, treat and evaluate cycle. The first foundation module required to be completed is ‘Knowing how we are doing (KHWD)’, which involves implementing measurement systems to collect baseline data regarding the ward’s performance. The collection of baseline data informs the decisions that are made by the staff to improve performance (Lennard 2012; Armitage and Higham 2011). As a component of the measurement system, each ward undertakes an ‘activity follow’. The ‘activity follow’ includes the observation of nurses for a 12-hour period as routine work is performed. The percentage of direct patient care time, the number of interruptions, inefficient activities and barriers to provide care are identified during this activity (Wright and McSherry 2013; Armitage and Higham 2011). Additional measurement systems include patient and staff satisfaction surveys and safety crosses. A safety cross (figure 1) is a visual tool representing each day of the month and is used to track the number of days in which a particular incident occurred.

Figure 1: A safety cross



The subsequent foundation module is 'Well Organised Ward (WOW)'. The aim of this module is to review and address environmental issues to streamline the location and holdings of stock and equipment. This is designed to ensure access and standardisation of strategies that will improve functionality and work processes (Armitage and Higham 2011). Data and information collected from KHWD assists ward staff identify the areas to 'WOW', resulting in staff spending less time looking for equipment and stock (Lennard 2012). The final foundation module is 'Patient Status at a Glance (PSAG).' The aim of this module is to ensure information regarding a patient's status and hospital journey is clear and accessible. Thus, as a result, there are less interruptions and time spent looking for patient information (Lennard 2012; Armitage and Higham 2011).

On completion of the three foundation modules, the ward teams identify priorities that inform their decision regarding what process module to commence. The process modules are all fundamental components of clinical care. They include falls, pressure injury prevention, patient observations, admissions and planned discharge, shift handovers, meals, medicines, patient hygiene, nursing procedures and ward rounds. The process modules follow a prepare, assess, diagnose, plan treat and evaluate continuous cycle based on the Plan, Do Study, Act (PDSA) methodology, to identify and eliminate activities that add no value to patient care and safety (Van Bogaert et al 2014).

METHOD

This retrospective study was conducted in a major metropolitan acute care hospital in Sydney, Australia in 2016. The PWP was introduced to the research site in 2013. Four demonstration wards were purposefully selected and included: an aged care ward without a rapid assessment unit (Aged Care 1), an aged care ward with a rapid assessment unit (Aged Care 2), a medical ward and, a surgical ward; with a combined total of 120 inpatient beds.

Aim

The aim of this study was to investigate the impact of The PWP™ on patient safety in regards to two patient safety indicators; patient falls and medication errors.

Inclusion criteria

The wards selected to participate in the study were The PWP start up wards. These wards were selected due to the availability of retrospective data.

Data collection

Data was collected for patient falls and medication errors for each of the participating wards at three time periods: pre implementation (13 months), implementation (6 months) and the post implementation period (13 months) to assess the effects of the PWP on falls and medication errors.

The data was retrieved from the Incident Information Management System (IIMs) which is a system utilised by all NSW Health facilities for recording and reporting healthcare incidents. IIMs was selected as the data collection tool in preference to safety crosses. The rationale for this decision was that the recording of data using safety crosses is solely reliant on staff recording the incidents daily. Because of this potential variability, the number of incidents per day cannot be accurately accounted for. This compares to the integrity of the IIMs data collected which is reflective of the reporting accountabilities of patient incidents. The number of falls per 1,000 occupied bed day (OBD), the falls rates and the total number of medication incidents for the study period were sourced.

Data Analysis

Data was entered into Excel and analysed using SPSS. The researchers were not able to conduct any further checks in data integrity as data was downloaded straight from IIMS. Data relating to patient falls were analysed per 1,000 ODB to ensure standardisation. Frequencies and percentages were used to measure the number of patient falls and medication errors. Differences between pre and post data were measured using t-test. Results were considered to be significant if p=<0.05.

Ethics approval

Approval to conduct this quality project was obtained from the South Eastern Sydney Local Health District Research and Ethics Committee.

Demographics

Twenty-nine staff attended a two-day Productive Ward training program conducted on the research site. The participants included nurses, a physiotherapist and a ward clerk. Data was collected from the four participating wards and all had a profile of 30 beds. See table 1 for the data relating to the number of OBD for each ward during the three time periods.

Table 1: Number of Occupied Bed Days per ward during the three time periods

Ward	Pre intervention No of OBD (13 months)	Intervention period Monthly average of OBD	Post intervention No of OBD (13 months)	Post intervention monthly average of OBD
Surgical	11.130	856	10.892	838
Medical	11.193	861	11.118	855
Aged Care 1	11.725	902	11.608	893
Aged Care 2	9.408	724	11.324	871

FINDINGS

Falls

The combined total of falls incidents in the pre implementation phase was 337 per 1,000 OBD and in the post implementation phase this reduced to 307 falls per 1,000 OBD. However, overall, there was no statistical significant reduction in the incident of falls in any of the participating wards (p= 0.20).

For the surgical ward although there was an increase in the number of falls from 36 per 1,000 OBD to 39 per 1000 OBD, these results were not statistically significant (OR 0.92; 95% CI 0.58, 1.46) (figure 2). The medical ward had a reduction of only 1 fall per 1,000 OBD; 70 falls per 1000 OBD pre intervention to 69 falls per 1,000 OBD post intervention. These results were not statistically significant (OR 1.02; 95% CI 0.72, 1.43) (figure 2). Although Aged Care 1, had a reduction of 13 falls between the intervention and post intervention phase, these results were not statistically significant (OR 1.17; 95% CI 0.86, 1.59) (figure 2). For Aged Care 2 the results were not statistically significant, even though there was a reduction of 20 falls per 1,000 OBD; from 133 falls per 1,000 OBD pre intervention to 113 falls per 1,000 OBD post intervention (OR 1.20; 95% CI 0.92, 1.57) (figure 2).

Medications

For the surgical ward although there was a decrease in the amount of medication errors from 30 incidents to 17 incidents, the decrease was not statisticaly significant (OR 1.83; 95% CI 0.99, 3.37) (figure 3). The medical ward had an increase in medication errors from 24 incidents to 34 incidents, however, this result was not statisticaly significant (OR 0.69; 95% CI 0.40, 1.18) (figure 3). For Aged Care 1 ward there was a statistically significant reduction in medication errors from 66 medication error pre intervention to 27 medication errors post intervention (OR 2.73; 95% CI 1.71, 4.38) (figure 2). Aged Care 2 ward had an increase in medications from 27 errors pre intervention to 34 errors post intervention, these results were not statistically significant (OR 0.78; 95% 0.46, 1.32) (figure 3).

Figure 2: Incident of falls in all wards over the three time periods

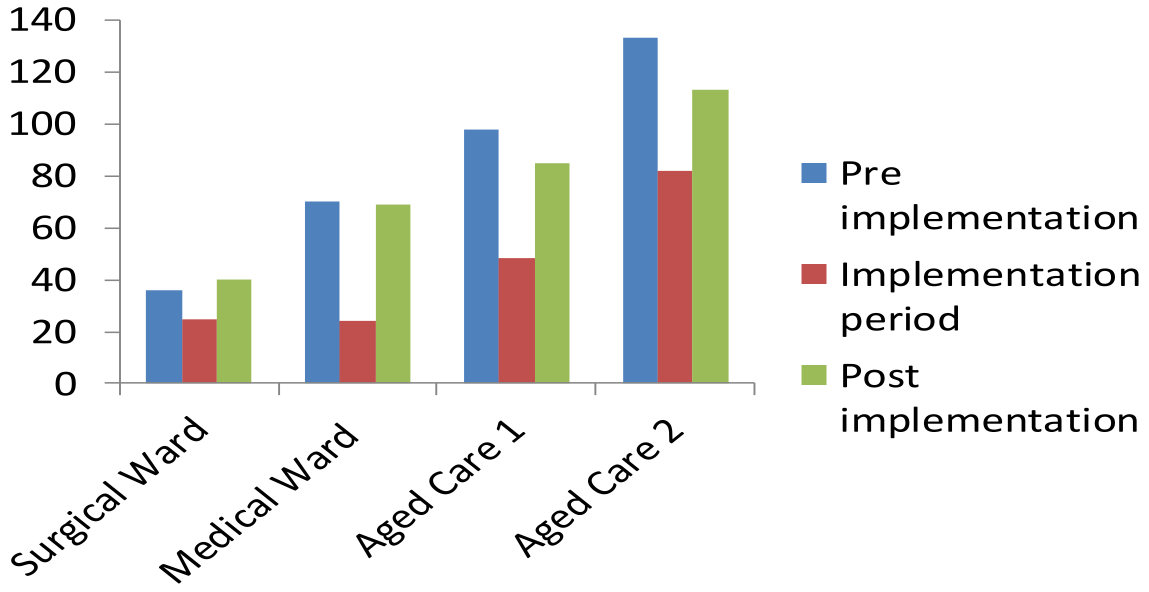
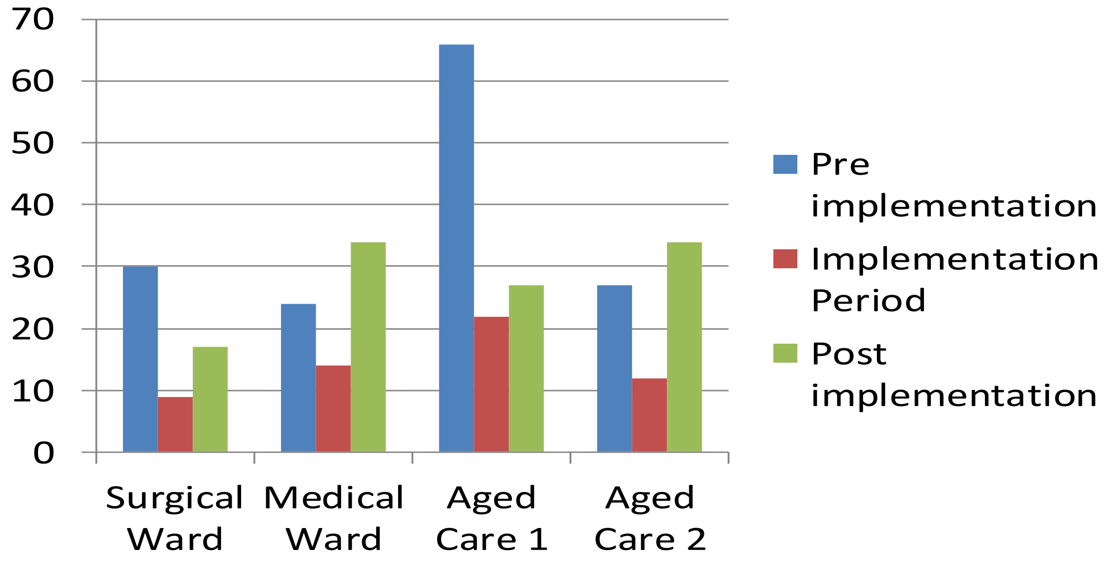


Figure 3: Medication errors in all wards over the three periods



STUDY LIMITATIONS

There were a number of limitations to this study. Only two patient safety indicators were analysed in the study. It would be beneficial to broaden the inclusion of patient safety indicators in further research for example, the inclusion of pressure injury incidence. Data for pressure injury incidence was not available for all wards in the PWP and hence was not included in this study. Another limitation of the study is the IIMS data relies strongly on staff entering the falls and medication incidents, thus, it is unknown if all incidents have been reported. As this research was retrospective, nurses and other staff who completed the IIMs reports were not research participants in this study. In addition, the study was conducted over a short period of time, and may not reflect an accurate trend in data related to the chosen indicators.

DISCUSSION

This study was undertaken to investigate the effect of The PWP™ on two patient safety indicators; patient falls and medication errors. In order to reduce adverse events and improve patient safety, various strategies have been employed at the research site.

There is a strong probability that the number of reported medication incidents increased for two of the participating wards due to increased reporting of incidents. This can be directly attributed to the visual display of the safety crosses and the supportive environment for staff to report incidents (Wilson 2009). Safety crosses are a visual tool used to display and draw attention to key clinical domains which have been identified by staff as priorities to measure and track incidences. The participating wards used safety crosses to measure the number of days on which a fall or medication error occurred. The safety crosses aim to enable positive discussion, review and feedback amongst staff regarding fall and medication incidents.

Overall, the number of reported patient safety incidents has increased at this site. This is consistent with a study by Flowers et al (2016) who noted that the supportive learning environment was a key factor in incident reporting. During the implementation period of The PWP, staff were encouraged to complete IIMs reports on patient falls and medication errors. The reporting behaviour of staff was maintained in the post implementation phase due to open communication and belief that patient safety if shared encourages incident reporting (Moon and Kyoung 2017). The PWP created a ‘no blame’ platform for feedback and joint discussion regarding patient safety incidents (Moon and Kyoung 2017; Hazan 2016; Lennard 2012).

Each ward had the benefit of a designated team leader to facilitate and drive the process of The PWP. As discussed by Dogherty et al (2013), an effective facilitator is vital to ensure success of quality improvement activities. However, as complexity theory argues, implementation of changes cannot be located to a single individual (Chandler et al 2016). A potential reason for the downward trend of some incidents may be contributable to the fact that change was allowed to occur from the micro level and all members of the MDT were encouraged to put forward their ideas for change in the workplace. Complex systems, such as the healthcare environment, are often resistant to ‘top down’ macro level changes but more responsive to small micro level changes that diffuse through the system, resulting in a more substantial change (Chandler et al 2016).

The WOW foundation module most likely contributed to the statistically significant reduction in medication errors for Aged Care 1. The wards as part of the WOW foundation module, streamlined, reorganised, and standardised the placement of equipment and stock. Thus, improving the work environment, reducing interruptions for the MDT and increasing direct patient care time (Lennard, 2012). Research has identified that a functional work environment has a positive impact on many safety, quality, experience and, value measures (Press Ganey Associates 2015). During the WOW module, Aged Care 1, had an emphasis on the redesign of the medication room. The redesigning of the medication room may have attributed to the reduction of medication errors. However, further studies would need to address the impact of the design of medication rooms on the occurrence of medication errors.

The foundation module has likely contributed to the downward trend of the number of patient falls for the two aged care wards. Both Aged Care wards had a reduction in falls in the post implementation period, this may be attributed to the removal of wasteful activities, interruptions and time spent looking for equipment. Both wards had a strong focus on the organisation of stock and the accessibility of observation equipment during the WOW module, thus, releasing time to care and providing closer supervision of patients at high risk of falls. Research has highlighted the success of increased observation in reducing the incidence of falls (Australian Commission on Safety and Quality in Health Care 2009). Another potential contributing factor to the downward trend in falls for both of the Aged Care wards was the implementation of a modified version of Intentional Rounding (Flowers et al 2016) as part of the Ward Round module. The Intentional Rounding involved assessing patients for warmth, pain, hunger and thirst and, the need for toileting every two hours. Studies have reported that Intentional Rounding is effective in reducing the incidence of falls. However, not all studies have reported a statistical significant reduction (Flowers et al 2016).

The medical and surgical wards also had a strong focus on the WOW module and while the surgical ward had a reduction in medication errors, neither ward had a reduction in falls between the pre and post implementation period. This potentially suggests that organising and standardising the placement of equipment is not sufficient enough to reduce the incidence of falls and medication errors. The medical ward had a strong focus on the PSAG foundation module, after the activity follow highlighted numerous interruptions in the morning during handover and medication round. The medical ward had a strong focus on reducing interruptions during the morning medication period, with the aim of reducing adverse outcomes. However, the medical ward had an increase in medication errors between the pre and post implementation period. This suggests that further interventions are needed to reduce medication errors.

A literature review conducted by Raban and Westbrook (2013) found limited evidence that reducing interruptions assists in reducing adverse medication incidents. Raban and Westbrook (2013) argue that some interruptions contribute to patient safety and a greater understanding of the relationship between adverse incidents and interruptions is needed. The surgical ward undertook the observation module first and focused on standardising and streamlining the completion of post-operative vital signs. While this module would have contributed to increased patient safety on the ward, it is unlikely to have resulted in a reduction of medication errors and falls.

Strength

The strength of this paper is the diversity of the participating wards which included medical, surgical and two aged care wards. Additionally, these wards comprised a broad classification of nurses and other MDT members and patients with varying acuity and reasons for admission. Flowers et al (2016), examined the effect of transforming care strategies on nurse-sensitive outcomes on only two medical wards. The 13 month pre and post implementation period was also selected to incorporate a full year, ensuring both the quieter summer months and high acuity winter months were accounted for. Falls and medication errors were graphed as 12 month moving average rates to compensate for any potential seasonal variation of incidents (Danai et al 2007).

CONCLUSION

Overall, this paper found that the implementation of the evidence-based quality improvement framework, The PWP, did not have a statistical significant reduction in the incidence of falls and medication incidents.

RECOMMENDATION

Given the small sample size the findings from this research have highlighted the need for further studies on the effect of The PWP on patient safety indicators in multicentre sites. This study will provide a foundation for future work to review other wards undertaking The PWP within the hospital. One aspect of falls that was not assessed in this paper was the number of falls that resulted in harm. Whilst there was no reduction in falls on the medical and surgical wards there may have been a reduction in the number of patients who sustained an injury post fall. Future research should also investigate the number of SAC 1 and SAC 2 falls related incidences pre and post the implementation of The PWP. Further research must also address the sustainability of the PWP within the complex health system.

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Incorporating an Undergraduate Student in Nursing program into the workforce: a prospective observational study

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KEY WORDS

health workforce; nursing students; paediatric nursing; undergraduate; hospitals, paediatric

ABSTRACT

Objectives

The objective was to describe the organisational perspective of the implementation of the Undergraduate Student in Nursing (USIN) program and to describe the experience of nursing staff working with these Undergraduate Students in Nursing.

Design

Prospective, observation design.

Setting

The study took place at a large tertiary paediatric hospital in Brisbane, Australia over a twelve month period.

Subjects

Participants were registered nurses (n=169) employed in a permanent capacity in the following clinical areas – medical, surgical, rehabilitation, paediatric intensive care unit and perioperative.

Interventions

Pre and post staff questionnaires were distributed to staff based on three domains; anticipated thought; assertion in the workplace and role delineation; and reflective practice.

Results

Prior to implementation of USINs, the primary concerns of staff surrounding the introduction of the role included; impact on patient safety, poor skill mix, decrease in quality of care and patient and family satisfaction, impact on unit/ward operation, and the potential attitudes of the students. At 12 months post-implementation, respondents felt that patient safety had increased, skill mix had not been adversely impacted, workload had improved, overall quality of patient care and satisfaction had increased among children and parents.

Conclusion

This introduction improved important elements within the clinical space such as patient safety and quality of care. Registered nurses perceived their workload was reduced and parent and child satisfaction was increased. The results of this study could be generalised beyond paediatrics to adult facilities. We would recommend other organisations consider this model if faced with similar workforce demands.

INTRODUCTION

Nurses are pivotal to global healthcare systems, making up 40 to 50% of the global healthcare workforce (Gaynor et al 2008). With ongoing attention being given to current nursing shortfalls within Australia, it is imperative for the Australian health care system to consider new strategies to address workforce demands (Franklin 2013).

The paediatric healthcare environment is no exception in the challenge to develop the future workforce that is adaptive and skilled with experienced paediatric nurses. As a strategy to address workforce demand, a large tertiary paediatric hospital in Brisbane Australia, developed a new workforce model which incorporated a 'grow your own' approach to developing the future workforce. A pilot program was developed to introduce an Undergraduate Student in Nursing (USiN) model. The USiN is an undergraduate completing a Bachelor of Nursing or equivalent that entitles them (at completion) to apply for registration with the Australian Health Practitioners Registration Authority as a Registered Nurse. The aim of introducing the USiN role within the paediatric setting involved exposing nursing students to paediatric nursing as a recruitment initiative; decreasing orientation time and costs by improving gaps in transition to practice; creating a pipeline to paediatric nursing and; decreasing casual and agency assistant in nursing usage. In essence, the USiN role offers students the opportunity to work part time in the hospital whilst completing their studies.

This paper will examine the process of implementing and coordinating a USiN pilot program in the paediatric setting. This paper will explore the impact of the USiN pilot program from an organisational perspective as well as identify the benefits and challenges felt by the registered nurses and Nurse Unit Managers working alongside these USiNs.

BACKGROUND

The nursing workforce in Australia is experiencing stressors similar to our international counterparts; there is an overall shortage of graduate positions coupled with an increasingly ageing workforce (Duffield 2008). Interestingly, the specialty of paediatrics is difficult to recruit to and this effect is amplified within paediatric specialties such as critical care and oncology. As a strategy to address workforce demand, new workforce models were considered which incorporated a 'grow your own' approach to develop the future workforce. A pilot program, supported by the Office of the Chief Nursing and Midwifery Officer, Queensland Government was developed to introduce the USiN nursing model at our paediatric tertiary hospital. The USiN is an undergraduate completing a Bachelor of Nursing or equivalent that entitles them (at completion) to apply for registration with the Australian Health Practitioners Registration Authority as a Registered Nurse. Funding for the pilot supported recruitment of 18.6 full time equivalent USiN plus 0.5 full time equivalent Clinical Nurse- Clinical Practice Facilitator to support the introduction of USiN role to the organisation.

The concept of the USiN program was borne out of a need to create a pipeline for paediatric nursing. The organisation's aim was to develop a program that would entice undergraduate students to the hospital with paid, part-time positions during their final year at university. This would provide the student with the opportunity to have increased exposure to paediatrics which traditionally is only briefly covered in general undergraduate programs. The program involved a great deal of preparatory work ensuring the USiN's scope of practice was aligned with their curriculum and that safe practice was paramount. As a risk mitigation strategy, initial USiN practice scope was conservative and well below mapped levels of academic theoretical preparation.

The objective of this study was to describe the organisational perspective of the implementation of the USiN program and to describe the experience of nursing staff working with the USiNs.

METHOD

In this descriptive and observational study an anonymous staff questionnaire was developed based on three domains; anticipated thought; assertion in the workplace and role delineation; and reflective practice. All nursing staff with a permanent position were eligible to participate in the study. Demographic data was limited to position grade and clinical area of employment. The staff pre-implementation survey was distributed on paper to each inpatient clinical area within our hospital in April, 2015 just prior to the start date for the USiN's. The staff post USiN implementation survey was distributed electronically using Survey Monkey™ software 12 months after the USiN commencement date. Each questionnaire comprised of a range of multiple choice questions and free text options.

The questionnaires were each piloted prior to dissemination. Data from each of the questionnaires was exported into Excel for the purposes of analysis. Descriptive statistics were generated. Free text responses were input into Nvivo© and thematically analysed.

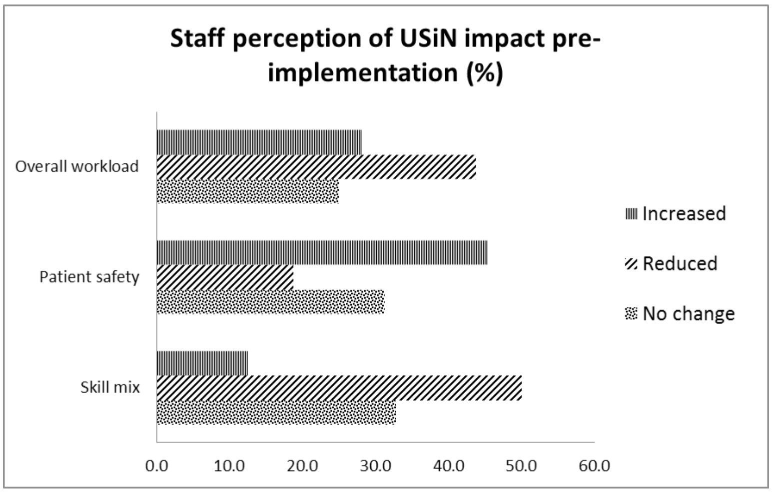
This study was endorsed by the local Human Research Ethics Committee. Each questionnaire contained an opening statement explaining the purpose of the project and giving assurance of confidentiality and stating that participation was voluntary. Return or submission of a completed questionnaire was taken as consent to participate.

RESULTS

The staff pre-implementation and 12 month evaluation surveys were distributed to five clinical areas; medical ward, surgical ward, rehabilitation ward, the paediatric intensive care unit and the operating theatres. Sixty four responses were collated from the pre-implementation survey representing 19.46% of their full time equivalent staff members at that time. Respondents were all nurses ranging from Assistants in Nursing (Grade 1) through to Nurse Unit Managers and Nurse Educators (Grade 7). The majority (62.5%) of respondents were Registered Nurses (Grade 5). The 12 month evaluation survey focused on Registered Nurses from Grade 5 to Grade 7. There were 105 respondents to the 12 month evaluation survey representing 29% of the full time equivalent workforce.

Prior to the implementation of USiN's the principle concern of staff respondents was that patient safety and skill mix of staff could be reduced (45.3% and 50% respectively) (figure 1). The respondents did anticipate their overall workload would be reduced (43%) and most respondents (85%) felt the quality of care provided would remain the same or increase. Staff respondents also felt that child and parent satisfaction would remain the same or increase (85.2%). A clearly defined scope of practice for the USiN was identified early in the project as an essential element for implementation; 70.3% of respondents were confident in their understanding, 17% were unsure and 12.5% did not know the scope of practice.

Figure 1. Pre-implementation responses on overall workload, patient safety & skill mix



Respondents were asked to describe any concerns they had around the introduction of USiN's into their clinical area. The responses were analysed and the dominant themes were; impact on ward unit operations, additional responsibility subsequent to having unlicensed workers in the clinical area and the USiN's attitude in the clinical area. Impact on ward unit operations includes scope of practice, communication and distribution of workload. Scope of practice was the greatest area of concern with staff expressing concern that there was ambiguity around the USiN's scope of practice and their level of responsibility.

> *"May increase work load initially as they will need an increased requirement for supervision. Also need very clear communications around scope of practice." (Intensive care Registered Nurse)*

The additional responsibility associated with having unlicensed workers in the clinical area was a source of concern for many respondents. Many responses highlighted anxiety surrounding working alongside unlicensed health care workers such as accountability, responsibility and supervision.

> *"Registered Nurses will be expected to carry all the responsibility. Our job will be non-stop med checks & administration. No time for thorough assessment or rapport building, yet if something goes wrong it will be on the Registered Nurse's shoulders." (Medical ward Registered Nurse)*

The final dominant theme in the pre-implementation survey of staff focused on the anticipated attitude of the USiN in the clinical area. Respondents expressed concern around USiN's potentially wanting to avoid menial tasks in favour of more advanced level skills which were outside of their scope of practice.

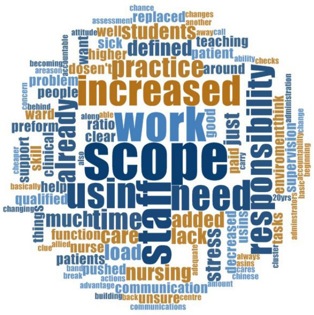


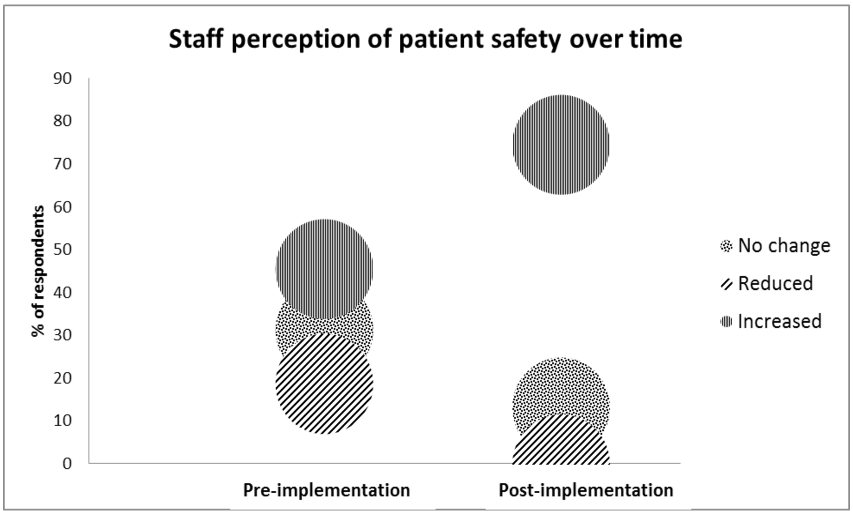
Figure 2: Word map of respondents' descriptive text

In the evaluation survey conducted 12 months after the USiN implementation 86.9% of respondents perceived patient safety had substantially increased (figure 3). Appropriate skill mix in the clinical area had been a source of concern however at 12 months respondents stated there had been a 0% reduction in skill mix. Perceptions of changes in workload initially suggested that USiNs would reduce the burden of workload. At 12 months 85.8% of respondents perceived their workload had improved. Respondents anticipated in the pre implementation survey that child and parent satisfaction would increase with the introduction of USiNs into the clinical area. At the 12 month evaluation, respondents felt child and parent satisfaction had increased, 25.6% more than initially anticipated. Confusion around the scope of practice was a significant concern prior to the USiN implementation, yet at 12 months greater than 90% of respondents' state they were confident in their understanding and knew what resources were available to provide clarity. In the evaluation survey staff were given an opportunity to provide feedback or suggestions on how to improve the utilisation of the USiN role. There was equal proportions of staff that advocated for or against an increase in scope of practice. This increase included skills such as taking blood sugar levels, performing neurovascular observations, removing intravenous cannulas and enteral feeding. At 12 months 85.37% of respondents stated the USiN role had met their expectations and 87.9% of respondents saw the introduction into the clinical area as a positive change.

> *"Having USIN's on the ward allows us as a multilevel team to provide better holistic care to children and families in the sub-acute/ rehab format. Team nursing with USIN's means children are supported therapeutically by staff who have the time to spend the "extras" with them." (Rehabilitation ward Senior Registered Nurse)*

> *"Brilliant program. As a senior Registered Nurse I was completely overwhelmed with our workload and felt unable to provide the support required to my patients and team members. The USiNs have taken over a lot of the time consuming tasks that now free me up to focus on providing excellent care and leadership. I have noticed an enormous improvement." (Intensive Care, Senior Registered Nurse)*

Figure 3: Staff perception of patient safety in the clinical unit pre and post implementation of the USiN program



DISCUSSION

The challenges around securing adequate human resources for health is recognised globally (Berland et al 2016). Workforce shortages are predicted across all sectors of health but the greatest deficit is predicted to affect middle and high income countries leading up to 2020 (Berland et al 2016). Locally, competition between hospitals and health service districts to secure nursing graduates is stiff and retaining your workforce demands executive attention. To pro-actively manage this challenge a range of innovative strategies needed consideration such as the USiN program. Nursing executives at our hospital were emboldened to undertake this initiative which aimed to act as both a recruitment drive and a means to address a workforce shortage.

The scope of practice was developed after extensive consultation with Nursing Management, Nurse Educators and utilising the experiences of The Prince Charles Hospital who had previously run a USiN program. The nursing workforce initially had reservations around unlicensed workers in the clinical area and the scope of practice they would be given. To address this prior to commencement, education occurred in pilot areas around the USiN role and the agreed practice scope as negotiated with nursing leaders, Nurse Educators, clinical teams and the Queensland Nurses Union. Supporting procedures, learning resources and competency based assessment tools were developed to support the practice scope. Pivotal to the success of the USiN implementation was the dedicated Clinical Nurse Facilitator who supported the USiN and addressed issues and any ambiguity around the role with staff in the clinical areas. Some variance to practice scope occurred in the critical care areas context based on staffing ratios and patient stability. Success of this strategy was evidenced by the increased understanding of the scope of practice of the USiN plus the perceived positive addition to the clinical space at 12 months. The evaluation results indicated that a review of the scope of practice may be warranted. Many staff suggested a range of skills that could be added to the scope of practice of the USiN which better aligned with their academic progression. A pilot proposal was made to increase the USiN scope in one clinical area however the proposal was declined due to industrial concerns.

Safe practice for the USiN and patient safety were principle considerations in the implementation of USiNs. Staff were originally concerned that patient safety may be jeopardised by the presence of unlicensed healthcare workers and that skill mix would be reduced. Evaluation illustrates this was not the outcome and clinicians felt safety had substantially increased and skill mix was either unaffected or improved. Original staff scepticism may be attributed to staff concern around changes in workforce structure and professional identity which is an acknowledged barrier (Fowler et al 2006; Hayman et al 2006). For example, the employment of USiNs prompted a shift towards team nursing and some staff felt that this may reduce their holistic approach to nursing care. Team nursing or hybrids of this model have illustrated improvements in safety and quality of care and staff satisfaction (Fernandez et al 2012; Fairbrother et al 2010; Tran et al 2010). Some staff felt that by delegating some of these more simple tasks would negatively impact on their ability to provide complete patient and family centred care. Reluctance to delegate and supervise may also be borne from inexperience (Hall et al 2012).

The introduction of USiNs into the clinical area had an overwhelmingly positive affect for parents and children as perceived by the respondents. The ‘extras’ that USiNs had the time to undertake included rounding, spending time with patients, playing and tidying in patient areas. These simple tasks contribute substantially to the parent and patient experience. By utilising the USiN to undertake these tasks this had the added benefit of allowing the registered nurse time to practice to top of licence.

CONCLUSION

Innovations in the workforce are essential given the global pressures associated with nursing shortages. Paediatric specialties are not immune to this pressure. Our organisation developed a model with a supportive framework to introduce USiN's into the clinical area in a paid part time capacity. With a defined scope of practice this introduction improved important elements within the clinical space such as patient safety and quality of care. Additionally the registered nurses perceived their workload was reduced and that parent and child satisfaction with the hospital experience was increased. The results of this study could be generalised beyond paediatrics to adult facilities. We would recommend other organisations consider this model if faced with similar workforce demands.

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Validity testing of a tool for assessing nurse safety behaviour against blood borne infections

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CONFLICT OF INTEREST

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KEY WORDS

Blood borne pathogens, factor analysis, health behaviour, reliability and validity

ABSTRACT

Objective

This study was conducted to develop and verify a tool for assessing nurse safety behaviour against blood borne infections.

Design

A cross-sectional correlation study design was used.

Setting and Subjects

Items were developed based on reviews of related literature, published guidelines regarding the prevention of blood borne infections, and existing tools designed to assess compliance with blood borne infection control precautions. Face and content validities of the tool was assessed by expert panels. Construct validity and reliability were examined on 320 staff and charge nurses whose duties involved direct contact with patients.

Results

A 12-item, 5-point Likert-type assessment tool of nurse safety behaviour against blood borne infections was devised. Construct validity, which was investigated by exploratory and confirmatory factor analysis, and reliability of the devised tool were well supported. The devised tool has a three-factor structure, 'use of personal protective equipment', 'hygiene', and 'compliance with precautions'. These factors were found to be interrelated, were not independent of each other, and their correlations and loading coefficients indicated good discriminant and convergent validities.

Conclusion

The devised 12-item assessment tool offers a clinically useful means of properly assessing safety related behaviours, and provides specific guidelines for preventive practices that should be followed by healthcare workers.

INTRODUCTION

Global risk of occupational exposure to blood borne pathogens among healthcare workers was reported to be 40% (Wilburn and Eijkemans, 2004). According to An et al (2010), 43% of sick leave taken by healthcare workers in Korea was due to blood borne infections and 75% of them were nurses. In clinical settings, the most frequent causes of blood borne infections are needle stick and sharps injuries (Kang 2011; Ayranci and Kosgeroglu 2004). Gabriel (2009) reported that there were approximately 180 sharps injuries per annum in a general 600-bed hospital in the United Kingdom (UK). Ko et al (2009) estimated an annual incidence rate of 1.3 needle stick and sharps injuries per person among healthcare workers in Taiwan.

The Center for Disease Control and Prevention (CDC) in the United States of America (USA) has issued standard precautions to provide specific guidelines for hand hygiene, the use of personal protective equipment, and the handling and disposal of clinical wastes and medical equipment (Siegel et al 2007). Although CDC standard precautions are most commonly recommended for preventing blood borne infections in healthcare settings, studies have shown low compliance rates among healthcare workers (Jeong et al 2008; Kim et al 2003), due to lack of knowledge, risk perception, time, personnel issues, uncomfortable personal protective equipment, inconvenience, or work stress (Kermode et al 2005).

Our literature review revealed that the majority of previous studies on blood borne infections have focused on epidemiology of blood borne infections, compliance with precautions regarding the prevention of blood borne infection, or the assessment of knowledge related to blood borne infections among healthcare workers (Kang 2011; An et al 2010; Cho and Choi 2010; Gabriel 2009; Ko et al 2009; Jeong et al 2008; Kermode et al 2005; Ayranci and Kosgeroglu 2004; Kim et al 2003). This literature revealed that most of the assessment tools used to evaluate compliance with precautions or preventive behaviours related to blood borne infections have been developed based on CDC general/standard precaution guidelines. Despite the reliability checks performed in previous studies, the processes used to develop and determine the reliabilities and validities of these assessment tools were not completed systematically. In particular, no previously described assessment tool has been subjected to validity testing. Because periodical assessments of adherence to safety precautions and preventive behaviours against blood borne infections should be conducted in clinical settings using adequate assessment tools, we recognised the need for a valid and reliable tool for assessing nurse safety behaviours against blood borne infections.

Therefore, the present study was conducted to develop and verify an assessment tool of nurse safety behaviour against blood borne infections. The specific aims of this study were: 1) to develop qualified items based on a review of; related literature, guidelines previously devised for preventing blood-borne infections, and of existing tools designed to assess compliance with blood borne infection control precautions or preventive behaviours, and 2) to determine the content and construct validities and reliability of the devised assessment tool.

METHODS

Item development

Because CDC standard precautions are considered to be the basis of good infection control practice, initially, we reviewed major principles and components of the CDC standard precautions. CDC standard precautions describe specific safety behaviours regarding: the safe handling and disposal of used needles, medical devices, and blood or body fluid samples; the cleaning and disinfecting of areas contaminated with blood or body fluids; hand hygiene; the use of personal protective equipment, such as, gloves, gowns, facemasks, or goggles; the management of biomedical wastes arising from and devices used for patient care; and rules and procedures regarding action taken after accidental exposure to blood borne pathogens. Those guidelines result in specific tasks for individual healthcare workers (individual-level guidelines) and for institutions with respect to preparation and commitment (organisational-level guidelines). Because the present study aimed at developing a tool for assessing individual nurse safety behaviour against blood borne infections, assessment tool items were developed mainly based on individual-level precautions. A 17-item tool was initially developed, which contained four items on hygiene, seven items on personal protective equipment, and six items on compliance with precautions.

To determine whether additional items were needed, a review was performed of existing tools designed to assess compliance with precautions or preventive behaviours associated with blood borne infections (An et al 2010; Cho and Choi 2010; Choi and Kim 2009; Kermode et al 2005; Kim et al 2003). As a result of adopting this process, two additional items were identified as potentially useful, namely, 'used needles should not be removed from syringes by hand' and 'infectious equipment or waste containers should not be filled more than two-thirds', and these two were included to construct a provisional 19-item tool. Because Likert scales are widely used to measure attitude, belief, and behaviour, 5-point Likert-type response options, that is, always, often, sometimes, seldom, and never, were adopted.

Face and content validity tests on the items primarily included

Face validity of the 19-item provisional tool was assessed by an expert panel comprised of four infection control nurses employed at the two university hospitals in which data was collected. Discussions continued until an acceptable level of agreement was reached. The expert panel concluded most items appeared to be adequate and they were in-line with CDC standard precautions and institutional guidelines for preventing blood borne infections. However, three items were considered ambiguous and in need of modification. In addition, one item deemed to be irrelevant and two overlapping items were deleted. After these modifications and deletions, the assessment tool contained 16 items.

The content validity of the 16 items was assessed by a second expert panel comprised of three infection control nurses, who participated in the face validity testing, and four nursing professors with experience of developing assessment tools. Content validity testing was conducted to evaluate the correspondence between each item and the conceptual definition and attributes of nurse safety behaviours against blood borne infections using a 3-point scale: (1) invalid, (2) valid, and (3) highly valid. Content validity index (CVI) was computed as the number of items that the experts gave a rating of either (2) or (3) divided by the total number of items. In the present study, the CVIs of the 16 items ranged from 0.67-1.00, and the two items with a CVI of ≤0.90 were deleted (table 1).

Pre-test

Pre-testing of the then 14-item assessment tool was conducted using ten nurses to ensure that items were understandable and the time taken to complete the assessment was acceptable. Pre-testing indicated the devised tool was understandable, had no obvious problems, and it required only 1-3 minutes to complete.

Table 1: Exploratory factor analysis (n=120) and reliability testing (n=320)

Items	Factors		
	I	II	III
12. I wear a face shield (or mask) to protect my eyes if splashing of blood or body fluids is likely.	.83	-.01	-.02
11. I wear a gown or vinyl apron if splashing of blood or body fluids is likely.	.82	.09	.10
13. I wear mask to protect my mouth if splashing of blood or blood or body fluids is likely.	.77	.18	.07
14. I always wear gloves if I have a hand wound.	.71	.09	.32
10. I do not remove used needles from disposable syringes by hand.	.43	.37	.40
8. I wash my hands before and after handling blood and body fluids	.06	.80	.07
7. I treat instruments or devices contaminated with blood or body fluids as infectious.	.02	.79	.26
6. I wash my hands after removing gloves.	.06	.74	.24
9. I instantly clean and disinfect the area where blood or body fluids are splashed or spattered.	.34	.60	.13
3. I use special precautions when drawing blood samples from patients with infectious diseases.	.43	.09	.76
1. I do not fill containers of biomedical wastes or contaminated objects/device more than two-thirds full.	-.01	.17	.71
4. I use standard precautions when handling blood or body fluids.	.46	.16	.69
2. I always put potentially infectious objects or device in biohazard containers.	-.26	.35	.57
5. I do not recap used needles.	.23	.27	.42
Cumulated variance (%)	35.0	50.7	60.1
Kaiser-Meyer-Olkin		.81	
Bartlett Sphericity test (Chi-square/p-value)		820.06/<.001	

CONSTRUCT VALIDITY AND RELIABILITY TESTING OF THE DEVISED TOOL

Design

A cross-sectional correlation design was adopted to test construct validity and reliability of the devised 14-item, 5-point Likert-type assessment tool of nurse safety behaviour against blood borne infections.

Settings and participants

The study participants were 320 nurses that worked at two university hospitals located in Incheon and Kyungi province, South Korea. Only staff and charge nurses whose duties involved direct contact with patients were included in the present study.

Exploratory and confirmatory factor analyses were performed to determine the construct validities of the devised assessment tool, and therefore, sample sizes were separately computed for each analysis. Although sample sizes for testing validity of an assessment tool vary widely across studies, a minimum of five subjects per item is recommended in literature (Yu 2015; Tak 2007). Based on this recommendation, we considered 112 subjects were required for exploratory factor analysis (eight subjects per item for 14 items). In addition, a sample size of at least 200 subjects is recommended for stable and reliable statistical estimates of structural equation model analysis with confirmatory factor analysis. Accordingly, a total of 312 subjects appeared to be appropriate. Data was collected from 328 subjects based on expectations of missing or erratic responses. Of the 328 subjects, eight subjects were excluded because more than 20% of data was missing. Finally, 320 subjects were included in the analysis.

Data collection

The study was initiated after receiving an approval from the human research committee of the authors' affiliated university (IRB number: 11-0496) and permission from the two university hospitals involved. Data collection for the construct validity and reliability testing was performed on 320 nurses after the study purposes and procedures had been explained and informed consent obtained. All data collection was conducted by a previously trained research assistant (clinical nurse) in a quiet conference room in the hospitals.

Ethical considerations

It was made clear to all subjects they were free not to participate and could withdraw from the study at any time without prejudice. It was also explained information would be collected anonymously and that data would be presented as mean values (not as individual values). Study purposes and procedures in detail were explained and subjects were then allowed to decide upon participation. Written informed consent was obtained from all that agreed to participate.

Data analysis

Descriptive analyses of subject characteristics, item analysis, reliability testing, and construct validity testing were performed using SPSS ver. 21/PC (IBM, SPSS Korea, Seoul) and Lisrel 9.2 (Scientific Software International Inc., Illinois). Of the various types of validity tests, construct validity is particularly important when developing instruments for measuring psychosocial concepts. In the present study, factor analysis was used because it is the most frequently used method to examine construct validity (Park et al 2014). To elucidate the underlying factor structure of the devised assessment tool, we performed exploratory factor analysis using SPSS 21/PC. Confirmatory factor analysis was then conducted to validate the factor structure identified by exploratory factor analysis (Yong and Pearce 2013; Hurley et al 1997), using Lisrel 9.2. Internal consistency coefficients (Cronbach's alpha) were computed to evaluate the reliability of the devised 14-item tool.

FINDINGS

Descriptive analysis of subject general characteristics and major variables

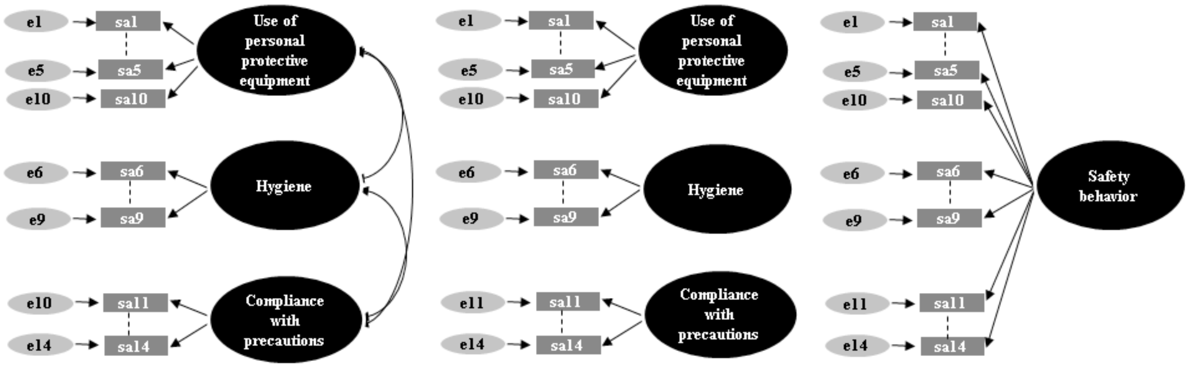
A total of 320 nurses were included in the study. Mean subject age was 30.10 (±5.41) years. The majority of subjects were working in general medical/surgical units (68.4%). In terms of career years as a registered nurse, 159 subjects (49.7%) had worked for less than 5 years, 76 subjects (23.7%) for 5-10 years, and 85 subjects (26.6%) for more than 10 years. In addition, 284 subjects (88.8%) had previous experiences of skin contact with contaminated blood or body fluid (n=206, 64.4%) or with sharps or needles (n=163, 50.9%).

Construct validity: exploratory and confirmatory factor analyses

Exploratory factor analysis yielded three components with eigenvalues greater than one, that is, 'use of personal protective equipment' (component 1), 'hygiene' (component 2), and 'compliance with precautions' (component 3). Factor names were based on the characteristics of the items that had the highest factor loading scores. The total variance explained by these three components was 60.1%, that is, 60.1% of variance in nurse safety behaviour was explained by these three components. Because the communality value of the fraction of variance should be ≥ 0.60 (Kim 2005), our tool appeared to be acceptable in terms of its explanatory power. As presented in table 1, five of the 14 items loaded onto component 1 (35.0% variance), four onto component 2 (15.6% variance), and five onto component 3 (9.4% variance). All of the loadings were above the minimum recommended level of 0.40. The 10th item, "I do not remove used needles from disposable syringes by hand." was found to have similar loadings onto components 1 (0.43), 2 (0.37), and 3 (0.40). After careful consideration, this item was allocated to component 3 based on item attributes (table 1).

For confirmatory factor analysis, the measurement model was designed such that there were three factors (use of personal protective equipment, hygiene, and compliance with precautions), and these three were correlated with and were composed of items with high loadings as determined by exploratory factor analysis (figure 1). Model fit was examined using two alternative models and comparing fit indices to determine which model provided the better fit. The first alternative model was constructed using all three factors, but not correlated to each other. The second alternative model was a one-factor model in which all items were loaded on a single factor.

Figure 1: The measurement and alternative models



A. Measurement model B. Alternative model I C. Alternative model II

We found that the measurement model had a significant Chi-square value (p>.001), which indicated the model was unacceptable. The Chi-square statistic has been known to be highly sensitive to sample size, and hence virtually any model is likely to be rejected by the chi-square test when large samples are used (Bentler and Bonnet 1980). All other fit indices were satisfactory or acceptable [χ2/df=2.14 (optimal values: 1~3), RMSEA=0.07 (optimal values: ≤.06~.08), NFI=.86 (optimal values: ≥.90), NNFI=.90 (optimal values: ≥.90), CFI=.92 (optimal values: ≥.90), GFI=.91 (optimal values: ≥.90), and AGFI=.87 (optimal values: ≥.90)] (table 2).

Table 2: Goodness of fit tests for measurement and alternative models (n=200)

χ2/p	χ2/df*	RMSEA† (95% CI)	NFI‡	NNFI§	CFI||	GFI**	AGFI††	BIC‡‡
<Original measurement model >								
158.68/<.001	2.14	0.07 (0.06~0.09)	.86	.90	.92	.91	.87	2502.67
<Modified measurement model>								
95.77/<.001	1.88	0.06 (0.04~0.08)	.91	.94	.96	.93	.90	2144.94
<Alternative model I|>								
313.24/<.001	4.23	0.12 (0.10~0.13)	.73	.74	.78	.85	.80	2630.71
<Alternative model II>								
291.95/<.001	3.79	0.11 (0.10~0.13)	.75	.76	.80	.79	.71	2651.57

*χ2/df≤3 †Root mean square error of approximation (≤.06~.08) (95% confidence interval)

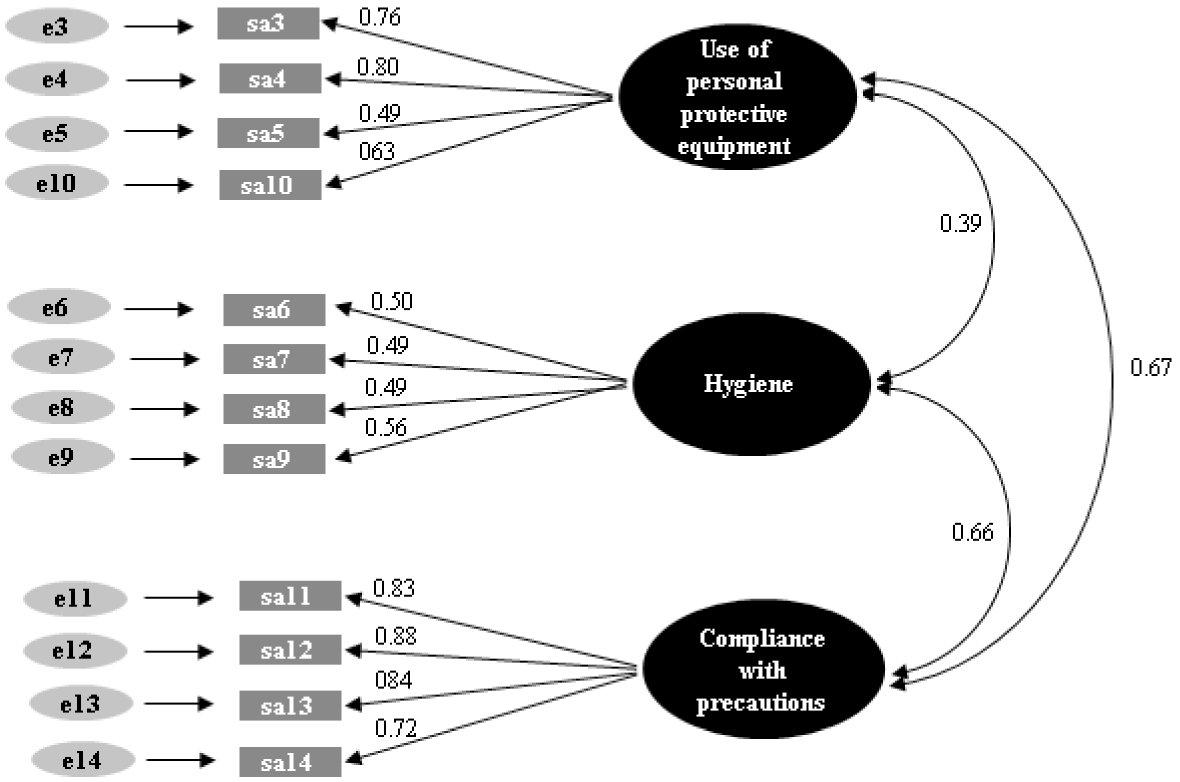
‡Normed fit index (≥.80~.90) §Non-normed fit index (≥.80~.90) ||Comparative fit index (≥.80~.90)

**Goodness of fit index (≥.80~.90) ††Adjusted goodness of fit index (≥.80~.90) ‡‡Bayesian information criteria

To improve model fit, standardised coefficients were then estimated. Standardised coefficients are considered sample specific, and need to be ≥.40~.50 and ≤.99 for a sample size of >200 (Yu 2015; Hair et al 2010). In the present study, most items had acceptable standardised coefficients (range 0.49-0.88), except item 1 (0.27) and 2 (0.19). Accordingly, the model was modified by removing items 1 and 2, and model fit was re-examined. This 12-item model showed better goodness of fit indicators: $\chi 2/df=1.88$, RMSEA=0.06, NFI=.91, NNFI=.94, CFI=.96, GFI=.93, and AGFI=.90 (table 2).

This modified 12-item model was accepted as the final assessment tool and contained the following items: four items for 'use of personal protective equipment' (standardized coefficient: .72~.88), four items for 'hygiene' (standardised coefficient: .49~.53), and 4 items for 'compliance with precautions' (standardised coefficient: .49~.80). All of their standardised coefficients were statistically significant (table 3). Correlation coefficients were r=.39 between 'use of personal protective equipment' and 'hygiene', r=.66 between 'compliance with precautions', and r=.67 between 'use of personal protective equipment' and 'compliance with precautions' (figure 2).

Figure 2: Confirmatory factor analysis of the measurement model



Reliability testing

The internal consistency of the devised assessment tool was found to be well supported. Cronbach's alpha (reliability coefficient of internal consistency) for all three components was 0.88 (was 0.89 for 'use of personal protective equipment', 0.79 for 'hygiene', and 0.76 for 'compliance with precautions').

Table 3: Measured variables estimated of the confirmatory factor model (n=200)

Factors	Items	B*(SE) †	β‡	t(p)	alpha§	
Use of personal protective equipment	12. I wear a face shield (or mask) to protect my eyes if splashing of blood or body fluids is likely.	1.00	.88		.89	.88
	11. I wear a gown or vinyl apron if splashing of blood or body fluids is likely.	0.97 (.06)	.83	15.74 (<.01)		
	13. I wear mask to protect my mouth if splashing of blood or blood or body fluids is likely.	0.93 (.06)	.84	16.22 (<.01)		
	14. I always wear gloves if I have a hand wound.	0.77 (.06)	.72	12.65 (<.01)		
Hygiene	8. I wash my hands before and after handling blood and body fluids.	1.00	.49		.79	
	6. I wash my hands after removing gloves.	1.12 (.28)	.50	3.98 (<.01)		
	7. I treat instruments or devices contaminated with blood or body fluids as infectious.	1.21 (.30)	.49	4.08 (<.01)		
	9. I instantly clean and disinfect the area where blood or body fluids are splashed or spattered.	1.39 (.33)	.53	4.28 (<.01)		
Compliance with precautions	3. I use special precautions when drawing blood samples from patients with infectious diseases.	1.00	.76		.76	
	4. I use standard precautions when handling blood or body fluids.	1.01 (.09)	.80	11.14 (<.01)		
	5. I do not recap used needles.	0.57 (.08)	.49	6.90 (<.01)		
	10. I do not remove used needles from disposable syringes by hand.	0.79 (.09)	.62	8.83 (<.01)		

*Unstandardised beta †Standardised error ‡Standardised beta §Reliability test: Cronbach's alpha

DISCUSSION

Face and content validity tests indicated the devised items appeared to reflect important individual-level safety behaviours adequately in clinics and well corresponded with conceptual definitions and attributes of nurse safety behaviour against blood borne infections. The factor structure of the devised assessment tool was found to contain three factors, 'use of personal protective equipment', 'hygiene', and 'compliance with precautions', and the total variance explained by these three factors was acceptable. The 'use of personal protective equipment' yielded the highest explained variance of 35% and contained four subscale items that assessed the use of personal protective equipment, that is, gloves, face shield, mask, or gown.

It is well known that gloving provides an excellent means of preventing hand contamination while touching body fluid, blood, mucous membrane, or broken skin of patients with specific infections, and thus, routine gloving is required to protect healthcare workers and patients (Tenorio et al 2001). However, it has not been clarified how well gloving prevents against blood borne infections caused by needle or sharps injuries. Therefore, sharp instruments must always be handled carefully, even when wearing of gloves. The use of mask, face shield, and goggles also has been proposed to prevent contamination of eyes, nose, and mouth (CDC 2001).

Subscale items under the second factor 'hygiene' consisted of items relating to hand washing before and after handling blood or body fluids and after removing gloves. Empirical evidence demonstrates hand washing is the most important and effective intervention for preventing the spread of infectious diseases (CDC 2001), and is an essential part of CDC standard precautions (Siegel et al 2007). Items related to the management of devices and areas contaminated with blood or body fluids were also under the second factor 'hygiene'.

The third factor ‘compliance with precautions’ consisted of subscale items concerning compliance with procedures for the handling of blood, body fluids, or needles. It has been suggested healthcare worker safety regarding blood borne infections could be significantly improved by following existing protocols or guidelines, such as, those related to the use of protective equipment, routine sanitary inspection, preventive efforts to reduce percutaneous injuries from sharp devices or objects, and proper cleaning and disposal of used devices or instruments (Do et al 2003). The high incidence of needle stick injuries supports the need for such precautions (Gabriel 2009). Needle stick injuries commonly occur during needle recapping (Kim et al 2003), and an item was included to assess such risk behaviour in our tool.

Confirmatory factor analysis showed that the three factors, ‘use of personal protective equipment’, ‘hygiene’, and ‘compliance with precautions’, were interrelated, that is, they were not independent of each other. Correlation coefficients were of medium strength, which supported discriminant validity of the assessment tool (Yu 2015). In addition, all subscale items had loading coefficients of >0.49, indicating excellent convergent validity.

Safety is an important issue for nurses, especially those who are clinically based. Close patient contact means nurses are at particularly high risk of exposure to blood borne pathogens. To develop a valid assessment tool of nurse safety behaviour against blood borne infections, 12 items were systematically devised based on a review of related literature, CDC standard precautions, and of existing tools designed to assess compliance with blood borne infection control precautions or preventive behaviours in the present study. We expect this assessment tool may be beneficial to help nurses understand safety issues, identify unsafe practice, and therefore promote their practice. However, its validity and reliability were tested with a sample of Korean nurses (n=320) recruited from two university hospitals, which limits the generalisability of the study findings to other populations. Accordingly, this tool still needs further verification and refinement with multi-centre multi-ethnic studies to be a standardised instrument for assessing nurse safety behaviour against blood borne infections.

CONCLUSION

The 12-item assessment tool produced, though concise, includes most of the essential components of the precautions that should be taken to prevent infection by blood borne pathogens, and offers a clinically useful means of properly assessing nurse safety related behaviours. In addition, we believe this tool could aid the identification and correction of problems associated with the adoption of safety behaviours and preventive practices related to blood borne infections, consequently reducing incidence of blood borne pathogen transmission. Furthermore, it provides specific information on safety precautions and on the preventive practices that should be followed by healthcare workers.

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Is provision of professional development by RNs to nursing students a choice?

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KEYWORDS

Clinical placement, nursing student, registered nurse (RN), teach, nursing standard, professional development

ABSTRACT

Objective

This paper reports on a major category that emerged as a result of a Grounded Theory study that explored Registered Nurses' (RN) understanding of the nursing standard requirement to provide nursing students with professional development during their clinical placements.

Design

Grounded Theory study.

Setting

Nursing clinical education.

Subjects

Fifteen registered nurses participated in this study (n=15). Thirteen were female and two were male.

Main outcome measures

In-depth semi-structured interviews were the means of data collection. Constant comparative method was used to analyse data.

Results

The notion of choice emerged as a major finding. Choice is conceptualised as choosing whether or not to be involved in the professional development of nursing students. The category choice is informed by two themes; unsuited to teaching, and respecting peers.

Conclusion

According to the Australian nursing standards RNs are responsible for providing professional development to nursing students on clinical placements. Results from this Grounded Theory study revealed that participants perceived it is an RNs choice whether or not to provide professional development to nursing students.

INTRODUCTION

When an RN renews their annual licence to practice in Australia they must declare they will practice (or begin to practice) according to the national nursing standards (NMBA 2016b). This process is similar in other countries such as the United Kingdom (UK), New Zealand and Canada, who also have annual registration renewal systems that require RNs to declare they will practice according to their respective country's nursing standards (Nursing and Midwifery Council 2015a; Nursing Council of New Zealand 2015; Canadian Nurses Association 2014). Embedded within the Australian registered nurse standards for practice is the requirement for RNs to contribute to the professional development of nursing students (NMBA 2016a). According to these standards "as part of practice, RNs are responsible and accountable for supervision and the delegation of nursing activity to enrolled nurses (ENs) and others" (Nursing and Midwifery Board of Australia 2016a, p.1) where the term 'others' includes nursing students. Furthermore standard number 2.7 states the RN "actively fosters a culture of safety and learning that includes engaging with health professionals and others, to share knowledge and practice that supports person-centred care" (NMBA 2016a, p.3). Similarly, other countries including Canada, the Republic of Ireland and the UK, have the expectation that RNs will provide nursing students with professional development embedded within their own nursing standards (Nursing and Midwifery Council 2015b; Nursing and Midwifery Board of Ireland 2014; College of Registered Nurses of British Columbia 2012).

Nursing students depend on RNs to teach and support them during their clinical placements (Daly et al 2014). Students rely on the knowledge and experience of RNs to teach them how to apply the skills they have learned in the classroom to a clinical environment (Rhodes et al 2012). However, the research literature suggests students do not always have good learning experiences when they are on clinical placements (Kassem 2015). In fact, sometimes they are "perceived as a burden and teaching not part of the registered nurse role" (Ó Lúanaigh 2015, p.451). According to Sanderson and Lea (2012) role confusion can occur in regards to RNs function with nursing students who are on clinical placements. This Grounded Theory study explored RNs understanding of the nursing standard requirement to provide nursing students with professional development during their clinical placements. This paper reports on a major category that emerged as a result of this Grounded Theory study, that is, choice.

METHODOLOGY

Grounded Theory methodology was used in this study. Grounded Theory was chosen as a research methodology because there was no known research about RNs understanding of the nursing standard that requires them to provide professional development to nursing students on clinical placements.

Ethics approval for this research was granted by the University Health and Medical Human Research Ethics Committee (Approval No: HE12/141). The study site was in Queensland, Australia. Fifteen participants were interviewed and included RNs with a minimum of five years' experience who had prior involvement working with nursing students on clinical placements. Of the fifteen participants, thirteen were female and two were male. One of the participants worked as a clinical nurse educator, three had nursing management roles and the remaining eleven participants were employed as clinical nurses (working clinically). Participation was voluntary and participants could withdraw at any time without prejudice. No participants withdrew from this study.

Individual semi-structured interviews were conducted with the participants to collect data. Each interview was approximately 45 minutes in length. Data from each individual interview was analysed using the constant comparative analysis technique. As data was collected it was analysed and sorted into codes and categories.

Data collected from subsequent interviews was then analysed and compared to existing codes and categories (Strauss and Corbin 1998). When no new data emerged the categories that were formed eventually became saturated, that is, data saturation had occurred (Liamputtong 2009). This paper reports on one of the categories from this research project, namely, *choice*.

FINDINGS

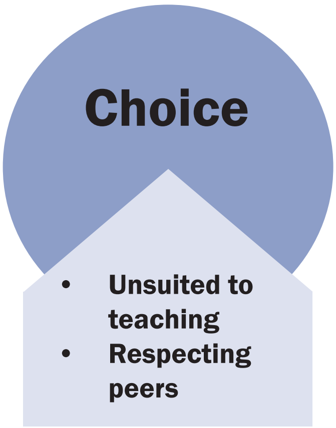
Choice

The category *choice* emerged from the notion that participants believed it acceptable to choose whether or not to provide professional development to nursing students on clinical placements. Participants expressed that it should be a personal choice whether or not to provide professional development to nursing students.

> *So it should still be a choice but you would want to have a -- I would think that you would want to have a good reason for not wanting to be involved as a registered nurse (P10).*

Two subcategories inform choice. These are: unsuited to teaching and respecting peers. The subcategory unsuited to teaching is about how participants described that it was preferable for some RN's not to be involved in the professional development of nursing students because they were deemed as being unsuited to teaching students. The subcategory respecting peers explains how RNs would accept their peers' decision whether or not they wanted to contribute to the professional development of nursing students. Figure 1 provides a visual illustration of the category choice.

Figure 1: Choice



Unsuited to teaching

Participants generally believed that some RN's were *unsuited to teaching* and were better off not contributing to the professional development of nursing students.

> *Yeah, no. She's just, yeah. I love her to death but as a student I would not want her as my preceptor. And she's too old to look at her own self and say "Hey, they might actually take me the wrong way", or, "Hey I can be a little bit abrupt maybe I need to change how I interact with people." You'll never change her now. It's too late. So I said we need to evolve people out (P1).*
>
> *I think it's better for the students if they're placed with someone who wants to teach them, rather than someone who sees them as a major burden and really don't want them there. You still try to get the staff to have students and sometimes they don't have a choice, but feedback I've heard from students is they often have better experiences with the staff that want to teach them (P9).*

There was suggestion that some RNs are not comfortable with providing professional development to students.

> *Yes, I know some people, yes, some people are really put off by it. They are just not comfortable doing it (P2).*

Others were considered harsh to students.

> *But sometimes they're more critical of the students. So, like more destructively critical of the students (P15).*

Burnout in nursing is well known (Melvin 2015). Participants highlighted burnout in respect to providing professional development to nursing students.

> *So if you've had say a student Monday to Friday for a week and you've given your heart and soul into it, and then the next Monday you've got a start all over again with a new student, eventually if you're not careful you'll burn that person out (P8).*

> *And there are times when I know myself I've gone, Oh my God, not another student for goodness sake (P9).*

> *Maybe we get a bit jaded about having the students because it just seems to be that week after week after week there's a new lot of students coming in or we just have some that are there for 4-weeks, they go, then the following -- we get another lot of students and sometimes you know, I mean it's good for us as it keeps us on our toes and makes sure that we're kept up to speed and fresh about policies and doing the right things, don't get into bad habits, but sometimes you just wish you didn't have someone with you because it can be very draining especially if your shift is very, very busy (P13).*

Sometimes participants said they just did not feel like having to provide professional development to students.

> *If I'm really ragged and I can't -- and I know that I haven't got perhaps as much patience or I just haven't -- I'm not thinking as clearly as I'd like to, I'd always say that to my colleagues and I say look maybe not today, maybe today's not a good day for me to do this. And we've talked about that as well at times because it's not fair on the students if you try and take on that responsibility and then you're not ready for it and that poor student will go home at the end of the day and probably think to themselves right, I don't really want to do this again (P5).*

As well as expressing how some RNs are *unsuited to teaching,* participants respected their peers' *choice* whether or not to provide professional development to students.

Respecting peers

The theme *respecting peers* is about participants being respectful of their peers' decision not to provide professional development to students. Participants indicated a general acceptance of the practice of not contributing to the professional development of students despite the nursing standard saying they should. Sometimes students were purposively not allocated to particular RNs:

> *So, they avoid -- say for example the person in charge would avoid giving them to somebody that they know that wouldn't teach them properly I suppose you could say (P7).*

There was acceptance that some RNs did not want to contribute to the professional development of students.

> *They've had students and they just don't want to do it anymore. They've sort of -- well I've done my time, I've put in the time and it's my time not to do it anymore, there's other people that you can ask you know (P2).*

There was also recognition that RNs sometimes needed a rest from students:

> *If you have students for 2 or 3 months and just about every shift you work you're working with students, mentally it's draining and sometimes it's just nice to be able to go, okay I just want to do my work and not have to worry about a student. So yes, I do think they -- and it's important for them, it's important for the staff and the student that the staff aren't becoming -- resentment towards the students, and come to work with the attitude of oh my God I've got a student again today (P9).*

Being respectful of how an RN feels in regards to having students was further highlighted by the following participant:

> *I mean you have to respect the individual and how they're feeling because if they're not interested in having a student, the student is not going to get anything from it and it's probably going to even put a student off going back to their second year or – you don't want them to have bad experiences and if the nurse – registered nurse is not interested and not into it well then you know, I don't think it's fair to – that the student has to be submitted to that (P11).*

In summary, participants believed that it was a personal choice whether or not to provide professional development to students. It was suggested that some RNs are unsuited to teaching nursing students. Being unsuited to teaching was considered appropriate justification for not being allocated nursing students. Participants were respectful of their peers' decision in regards to whether or not they wanted to be allocated students. To conclude, there was a belief that RNs could choose whether or not they wanted to be involved with the professional development of nursing students. This is relevant to nursing because according to the Australian nursing standards (NMBA 2016a) it is an RN's responsibility to provide professional development to nursing students and, furthermore, nursing students rely on RNs to teach them in the clinical environment in order to become competent practitioners.

DISCUSSION

This study explored RNs' understanding of the nursing standard requirement to provide nursing students with professional development during their clinical placements. Findings suggest that participants believed it is an RNs choice whether or not they contribute to a nursing student's professional development. The literature also suggests RNs tend to believe that providing professional development to nursing students is a choice.

Chuan and Barnett (2012) in their Malaysian study found RNs attitude toward students influenced students' learning. They found some RNs were not willing to teach students and were unpleasant to the students. This type of behaviour by RNs can adversely affect student learning (Levett-Jones and Lathlean 2009; Levett-

Jones et al 2007) which can ultimately effect the students' ability to deliver safe patient care. According to participants in this Grounded Theory study, RN's who behave in this way towards students tend to be referred to as *unsuited to teaching*.

Burnout which is a component of compassion fatigue, is emotional or psychological distress that can effect one's wellbeing (Gibbons et al 2011). Burnout from having students is known to occur to some RNs who regularly are allocated students on clinical placements (Courtney-Pratt et al 2012; Haydock et al 2011) and, according to this Grounded Theory study, can make some RNs become unsuited to teaching. Burnout from continuously having students should be managed within healthcare organisations however according to Brann and Gustavson (2013) management tends to overlook the extra work that goes with providing students with professional development.

Brown et al (2012) found sometimes students are not allocated to certain RNs because they [the RNs] were not considered suited to teaching students. In the same way findings from this Grounded Theory study describe how RNs were purposefully not allocated students because they were unsuited to teaching. Moreover, not all RNs feel confident with their ability to teach students (Luhanga et al 2010). Lack of confidence in teaching ability can deter some RNs from wanting to contribute to the professional development of students (Mather et al 2015).

Some RN's are simply hesitant to be involved in the professional development of nursing students (Brammer 2008). In their study, Levett-Jones and Lathlean (2009) found that RNs would argue during handover, directly in the presence of nursing students, over who would take the students because the RNs did not want to be allocated students. Lengthy debate of up to 'ten minutes' duration over who would or would not have the students would occur (Levett-Jones and Lathlean 2009, p.2874). This is an example of the behaviour of choosing not to contribute to the professional development of students as an accepted practice by some RNs. Similarly Brown et al (2012) describes negative body language and unfriendly behaviour towards students by RNs during handover. Brown et al (2012) found clinical teachers are inclined to accept this behaviour and focus on helping the students to get through their clinical placements.

Leners et al (2006) assert that some RNs just refuse to work with students. Dickson et al (2006, p.419) found clinical facilitators tend to avoid putting students with RNs who have the attitude of "Oh no not students again!" This demonstrates clinical facilitators (RNs) yielding to the negative attitudes of their peers toward nursing students. This is similar to the finding in this research where participants described they had observed RN's accepting their peers' decision whether or not to be involved in the professional development of nursing students.

Students depend on RNs to help them to develop their nursing skills and become competent in the clinical area. If RNs do not adhere to the practice standard requirements in regards to providing professional development to nursing students then students are at risk of not acquiring the necessary clinical expertise in order to become safe, competent practitioners when they graduate. This, in turn, could have implications for patient safety. Furthermore the NMBA (2017, para 1) states RNs must "meet the NMBA's professional standards in order to practise in Australia". RNs can be deregistered if they contravene professional boundaries, are unsafe and/or do not meet the nursing standards (AHPRA, 2017). If RNs do not adhere to the practice standards in regards to their responsibilities towards nursing students they are not meeting the professional standards.

LIMITATIONS

Limitations to this research project include that all participants were RNs from one state in Australia, Queensland and that the sample size was fifteen (n=15), meaning, the research was conducted on a specific group of people and the sample size was small. With this in mind, a qualitative research project aims to develop an overall understanding of a phenomena rather than to generalise findings from a quantitative perspective. RNs who read this research may find they can relate to the research results because an understanding of the phenomena resonates with them.

CONCLUSION

Participants in this research believed it was an RN's choice, rather than a mandated nursing requirement, whether or not to be involved in the professional development of nursing students on clinical placement. Findings revealed that being unsuited to teaching was justification for not being allocated nursing students. Furthermore participants explained how they were respectful of their peer's decision (choice) whether or not to be involved in the professional development of nursing students. This provides insight into why sometimes students on clinical placements do not feel supported by RNs. The findings demonstrate lack of consistency in the level of professional development provided to students on clinical placements. This is important because even though students are taught clinical skills at university; the students depend on RN's assistance and support in order to safely practice the nursing skills they have learnt in the classroom on real live patients. In other words, nursing students rely on the support and clinical expertise of qualified RNs to help them to become competent.

RECOMMENDATIONS

- Education is needed to raise RNs awareness that it is a nursing standard requirement to provide professional development to nursing students on clinical placement.
- Workshops are needed to educate RNs how to teach and support nursing students in the clinical environment so RNs can confidently provide students with professional development.
- To avoid burnout, additional time should be factored into RNs' workloads when they are allocated students.

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Long term effects of child abuse: lessons for Australian paediatric nurses

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Child abuse, long term effects, stress response, mental health

ABSTRACT

Objective
Child abuse has short and long term consequences. Literature that explores the long term effect of child abuse on children has been reviewed.

Setting
Prevalence of the long term consequences of child abuse within the Australian paediatric population

Sample
The search utilised medical search terms of 'child abuse', 'long term effects', 'adverse childhood events', 'violence', 'cortisol response to stress', 'post-traumatic stress disorder', 'nurs*', 'paediatric', 'abuse', 'neglect' and 'prevention' in health related databases to locate literature published from 2007 until present.

Primary argument
Data concerning child abuse and neglect in Australian children is sparse and inconsistent with no literature found specifically relating to the role of paediatric nurses.

Conclusion
Further analysis on the effects of child abuse and neglect on Australian children will help to gauge its health burden on the country, and to help health professionals better understand this contemporary child safety concern.

INTRODUCTION

The purpose of this review is to examine the current research and evidence outlining how child abuse affects an individual over the long term. The aspects of abuse that will be explored include, physical, verbal and sexual within a broad range of socio-economic backgrounds and populations. This review will focus on the evidence surrounding long term effects of childhood abuse on physical and mental well-being, physiological changes from prolonged stress, tendencies towards substance abuse, nursing considerations and recommendations for how to reduce the occurrence of a child experiencing violence or abuse. After reviewing the current evidence on child abuse, including the immediate and long term effects, it was clear that this issue was extensive. Not only was it clear that direct abuse to the child was detrimental, but indirect forms of abuse through witnessing or hearing about violence towards others affected children in many ways. Mental health, substance abuse, poor physical well-being, difficulty forming relationships and impact on coping development are just a few of the recurring themes within the literature. As a result of child abuse and neglect, adults who have survived child abuse have the potential to suffer from prolonged socio-economic disadvantage. Registered nurses play a vital role in identifying children who are at risk of experiencing child abuse, however many nurses report a lack of knowledge and confidence on this topic, thus reducing their willingness to report any suspicions of abuse.

METHODOLOGY

The databases used for research include; Medline with Full text, EBSCO and CINAHL. The search terms included literature published from 2007 until present; and included the search terms ‘child abuse’, ‘long term effects’, ‘adverse childhood events’, ‘violence’, ‘cortisol response to stress’, ‘post-traumatic stress disorder’, ‘nurs*’, ‘paediatric’, ‘abuse’, ‘neglect’ and ‘prevention’. Australian data was sourced in relation to child abuse and mental health statistics

CHILD ABUSE PREVALENCE

Child abuse encompasses a broad range of issues, and is defined as an act by the caregiver to intentionally do harm to the child (Klossner and Hatfield 2010). It can be delivered through physical domains, verbally, sexually, through household dysfunction including parental substance abuse, domestic violence, parental mental health issues and neglect (Austin et al 2016a and 2016b). The family unit is identified to have a significant impact on the prevalence of indirect and direct violence being experienced by a child. The experience of childhood abuse is influenced by environmental factors and demographics (Klossner and Hatfield 2010). Children who grow up in poverty, inadequate socialisation, diminished family support networks, parental mental health problems and substance abuse have shown to experience higher rates of adverse childhood experiences (Keane et al 2015). This type of environment is more likely to be experienced within the homeless and social housing population. Within Australia, 71% of the homeless population had experienced childhood trauma before turning 16 years old (Keane et al 2015). Socioeconomic status of the family, parental capabilities and stability in accommodation had a major impact on the child’s increased risk to experience indirect violence such as, violence between parents, or violence towards another family member (Zimmerman and Posick 2016). The study conducted by Austin and et al (2016b) found that children with disabilities have higher incidence of experiencing adverse childhood events, especially sexual abuse from an adult. It is reported that children with disabilities experience sexual abuse three times more than a child without a disability. These children with disabilities who had experienced adverse childhood events, were also more likely to participate in unhealthy risk behaviours such as of smoking, and those which increased the risk of HIV (Austin et al 2016b). It appears that children who identify as lesbian, gay or bisexual later in life had higher incidences of experiencing more than one type of adverse childhood experience (direct or indirect abuse) compared to the heterosexual population (Austin et al 2016a). Within this same study, Austin et al (2016a) found the homosexual population who had experienced child abuse had significantly increased rates of behavioural issues including substance use. In the United States of America (USA), the Centre for Disease Control and Prevention indicates that over 50% of adults have experienced abuse of some form (Salinas-Miranda et al 2015). Individuals who have been abused are more likely to engage in risk taking behaviours, such as excessive drinking as a coping mechanism. In the study conducted by Gospodarevskaya (2013), 8.3% of Australians had experienced some form of sexual abuse before the age of 21 years old. Within this same study, 40.2% of this Australian population met diagnostic signs and symptoms of Post-Traumatic Stress Disorder (PTSD) before the age of 18 (Gospodarevskaya, 2013). PTSD is a form of anxiety disorder characterised by a set of reactions that can develop in individuals who have been through a traumatic event which threatened their life or safety. Symptoms include flashbacks of the traumatic event, intrusive memories or nightmares, emotional numbing and heightened vigilance (Sane Australia 2016). According to the 2007 Australian Mental Health Survey, the average onset of PTSD occurred in children aged 11 years old. There is no doubt that all of these effects on a person's emotional and physical well-being has a negative impact on quality of life during adulthood.

PHYSIOLOGICAL STRESS RESPONSE TO TRAUMA

When the human body is exposed to traumatic and damaging experiences, a number of biological and physiological changes occur (Delima and Vimpani 2011). When a person is exposed to stressors, the biological response to stress is regulated through the sympathetic nervous system and the hypothalamic pituitary adrenal (HPA) system. During stress, the HPA system releases corticotropin releasing factor (CRF) from the hypothalamus, increasing secretion of adrenocorticotropin hormone (ACTH) from the anterior pituitary which creates glucocorticoid release from the adrenal (Bremner et al 2003). The release of these stress hormones, adrenaline and cortisol causes a cascade of immediate physiological effects. These signs and symptoms including, increased heart rate, increased respiratory rate, hypertension, vasoconstriction, increase blood glucose levels and increase in initial immune response (Carpenter et al 2011). In normal circumstances, once the stressor has been removed, the hypothalamus dictates for the stress response to dissipate, returning hormone function back to baseline. However, for people who experiences prolonged stress, the hypothalamus becomes damaged and is inhibited (Carpenter et al 2011). Long term activation of the stress response causes damage to the cardiovascular system due to persistent tachycardia and hypertension, increasing risk of stroke and myocardial infarction (Bremner et al 2003). Magnetic resonance imaging (MRI) has also shown evidence of accelerated depletion and metabolism of neurons, shearing of axons with hindering of neurogenesis in those who experience childhood trauma (Delima and Vimpani 2011). This prolonged activation of the stress response also causes damage to the structure and functional capacity of the brain including the hippocampus (Delima and Vimpani 2011). Damage to the hippocampus causes an inhibition to memory development and learning (Bremner et al 2003). It has been identified that children who experience prolonged stress early in life have an increased sensitivity of the noradrenergic system, which is consistent in the biological changes that occur in people with post-traumatic stress disorder (Bremner et al 2003). Chronic stress has been revealed to damage the process of naturally occurring dopamine and noradrenaline causing hypersensitivity, hyperarousal, mood disturbances and anxiety symptoms (Delima and Vimpani 2011). The study conducted by Carpenter et al (2011) explores the correlation between childhood trauma with neurohormonal and hypothalamic pituitary adrenal axis dysregulation. It is suggested that this dysregulation has a direct impact on an individual's immune system as seen by increased inflammatory markers of individuals with PTSD (Carpenter et al 2011). Deoxyribonucleic acid (DNA), is the hereditary material in humans. DNA methylation, or the epigenetic mechanism used by cells to control gene expression, may mediate persistent changes in gene function following chronic stress. These epigenetic alterations may contribute to the inflammatory and immune dysregulation observed in subjects with PTSD. (Smith et al 2011).

LONG TERM EFFECTS ON PHYSICAL HEALTH

Childhood abuse causes a life-time effect on an individual's physical well-being, causing serious harm. Within Australia, rates of foetal alcohol syndrome occurs in 0.68 in every 1,000 live births, with even higher rates among the indigenous population at 2.76 per 1,000 live births (Delima and Vimpani 2011). The exposure to high doses of alcohol while in utero is the earliest form of abuse, causing significant long term effects on the child once born. Through MRI imaging, it can be identified that children who are born with foetal alcohol syndrome have decreased brain size and thinning of the corpus callosum, inhibiting communication pathways from the left to right side of the brain (Delima and Vimpani 2011). Children with foetal alcohol syndrome also demonstrated functioning changes including, limited attention spans, low IQ, behavioural changes, difficulty with fine motor skills such as writing, inability for higher functioning, hyperactive and impulsive tendencies and poor judgement causing social deficits (Delima and Vimpani 2011). Delima and Vimpani (2011), further discuss the use of medical imaging, such as MRI, as a form of non-invasive diagnostic to illustrate the physical damage caused by other forms of childhood abuse. This damage can be seen through structural changes in the brain as well as behavioural changes (Delima and Vimpani 2011). MRI images also showed that children who suffered prolonged exposure to violence have decreased intracranial, cerebral and prefrontal cortex volumes. Problems in the pre-frontal cortex (reason, logic, problem solving, planning, and memory), amygdala (emotion) and hippocampus (learning and memory) associated with smaller brain volumes mean less neuron structure and have significant implications for learning (Hansen et al 2015).

Austin et al (2016a), reviewed the alarmingly high rate of adverse childhood experiences within the homosexual population and poor health in their adult life. The adverse childhood events include, physical, verbal, sexual abuse, violence within the family unit, substance abuse in the home, adults with mental illness, substance abuse and incarceration of a household member (Austin et al 2016a). Higher rates of asthma, cardiovascular disease and obesity have been reported in homosexual and bi sexual individuals. Not only does the individual experience higher rates of mental health issues related to abuse experiences, but there is also a link to diabetes, cancer, endocrine dysfunction, nervous system changes and increased mortality rates (Salinas-Miranda et al 2015). These effects on the body are chronic in nature and are often created as a result of higher incidences of risk taking behaviours, substance abuse and parental neglect (Klossner and Hatfield 2010). A direct link to mental health illness due to child abuse can contribute to the negative physical outcomes seen throughout the research.

LONG TERM EFFECTS ON MENTAL HEALTH

Epidemiological studies estimate that approximately one in every four young persons has experienced a traumatic event including abuse or violence (Gospodarevskaya 2013). These events may include direct violence directed towards them through personal victimisation or through witnessing a violent event occur to a friend, family member or within their household (Connor et al 2015). A traumatic event whether it is significant or frequent in nature can trigger stress responses that may or may not develop into post-traumatic stress disorder. Post et al (2015) explores the effects that verbal abuse alone can have on an individual's long term mental health. Childhood abuse, including physical and sexual, has been known to have a direct effect on early onset bipolar disorder and other mental health issues (Post et al 2015). The children within Post el al's (2015) study experienced verbal abuse and had a distinctly increased risk to developing bipolar disorder at an early age. Children who suffered from verbal abuse also had significantly higher risk of developing anxiety, substance abuse issues, rapid cycling between moods and more severe presentations of mania and depression. Hayashi et al (2015), found that children who experienced abuse including, sexual, physical, emotional and neglect, experienced a higher and more severe incidence of depression in adulthood. This may be related to the possibility of abuse causing changes in personality development during the crucial developmental years of childhood through creating low self-esteem and poor confidence. The recovery process for children who develop PTSD from childhood trauma is up to 10 years. This is significantly longer than children with PTSD from accidents or disasters (Gospodarevskaya 2013). As a result of these long term mental health issues, it is no wonder that children who experience childhood abuse have higher tendencies to engage in substance abuse and develop addiction.

SUBSTANCE ABUSE

Childhood trauma causes a magnitude of emotional disturbances that profoundly increase the risk of engaging in risk taking behaviours such as substance abuse (Zimmerman and Posick, 2016). The study conducted by Elton et al (2015), illustrated a connection between childhood abuse sufferers and the influence it has on the addiction to cocaine. Alcohol abuse has also been widely identified as a coping mechanism for those who have suffered childhood trauma. Through the study of neuroadaptive responses to stress, Delima and Vimpani (2011), identify the use of alcohol and substances as a form of self-medication to reduce the hyperarousal symptoms of PTSD. Because of the numbing effect of alcohol and substances, children who experience abuse are more likely to partake in drugs, engaging in repetitive and compulsive use leading to addiction to deal with their stress (South et al 2015). The prolonged and abusive use of alcohol has shown to decrease hippocampal volume, affecting an individual’s memory and cognitive ability (Delima and Vimpani 2011). Within Australia, among the homeless and social housing population, 43% of individuals meet the criteria for having a substance use disorder, with alcohol abuse being the most prevalent (Keane et al 2015). There is no doubt that the immediate effects of child abuse cause serious ramifications on a child’s developmental stages (Seehuus et al 2015). A child who is exposed to multiple stressful situations means they are more likely to engage in risk taking behaviours, have higher incidence of addictive traits and utilise substances as a form of coping (South et al 2015).

THE ECONOMIC BURDEN

Child abuse and neglect has a huge economic burden for the individual and society. The ‘direct’ costs of child abuse and neglect include hospitalisation of injured children, psychological counselling and support for the victims of abuse and neglect. Direct costs include operating a child welfare system, the cost of law enforcement and the legal system necessitating family and juvenile courts (Gelles and Perlman 2012). The ‘indirect’ costs of child abuse and neglect are those costs associated with the consequences of abuse and neglect such as special education services and early intervention services to manage developmental and educational delays. Juvenile delinquency, adult criminal behaviour and adolescent/adult homelessness are also counted in the indirect costs (Gelles and Perlman 2012). Gelles and Perlman (2012) estimated the cost of direct and indirect costs of childhood abuse and neglect in the USA of the 1.2 million maltreated children in years 2005-2006 adjusted to 2012 dollars as $80,260,411,087. While this is data from the USA it does show how the costs can often be life-long.

Many of the consequences of child abuse and neglect may have an impact on the individual’s subsequent economic productivity. Adults with histories of childhood abuse and/or neglect have been shown to have lower levels of education, employment, earnings, and fewer assets as adults (Currie and Spatz Widon 2010). Currie and Spatz Widdon (2010) suggest that the experience of maltreatment reduces peak earnings capacity by approximately $5,000 per year.

NURSING CONSIDERATIONS

Nursing a child who has experienced any form of abuse can be stressful and an emotionally draining experience for registered nurses. This type of situation raises many conflicts for nurses as they are educated to be professional and treat every patient and his/her family equitably. However, confronting the abuse of a child may present nurses with feelings of anger and distrust towards the caregivers who have instigated the abuse (Tingberg et al 2008). Nurses describe their ability to care for these families with emotional ambivalence where they may have very strong feelings of anger, however they present as professionals towards the family, which can prove to be extremely difficult. Tingberg et al (2008) explore this notion of nurses who want to provide the best care possible to their patients, and have as little contact with the parents or perpetrators as possible. This type of discord gives nurses feelings of dissatisfaction in this conflicting role and without appropriate strategies to deal with these situations, the risk of nurses burning out from the profession can increase drastically (Tingberg et al 2008).

Psychological support for nurses is vital when caring for abused children. This type of support can be provided in informal ways such as discussions about the situation with colleagues or as formal debriefing sessions or clinical supervision during an allocated time in the hospital environment (Chihak 2009). Being informed about what roles other authorities such as police, child protection unit and social workers have with cases of child abuse was another strategy that assists nurses in understanding the whole process of reporting and investigating instances of abuse. Nurses who were informed about the outcomes of reporting child abuse, even after the child was discharged from hospital, felt a sense of closure and considered themselves better prepared to care for abused children in the future (Tingberg, 2008). Hospitals and management must ensure that nurses feel supported while caring for children who have been abused. Providing follow up information about the outcome of the child and allowing nurses to have time away from the hospital environment to seek counselling services is paramount to ensure nurses have a decreased risk of feeling burnt out (Eveline et al 2012).

EDUCATION

There is no doubt that registered nurses have a legal obligation to report any signs of child abuse and neglect to the relative authorities. The factors that hinder a registered nurse from reporting include, experience, knowledge and confidence (Fraser et al 2009). Providing education for nurses is a key element in enhancing their ability to identify and report instances of suspected child abuse. Unfortunately, nurses show a major gap in their knowledge and ability to recognise child abuse, resulting in instances of child abuse not being reported and children left in vulnerable circumstances (Chihak 2009). As reported by Eveline et al (2012), without thorough and appropriate education for nursing staff, this barrier to reporting child abuse will increase. Throughout the literature it is very clear that nurses who had a lack of knowledge about signs and symptoms of child abuse, were also fearful about the misdiagnosis of child abuse and therefore being judged by the parents (Chihak 2009). Formal education sessions should be provided to all registered nurses regularly with content focusing on different types of abuse, symptoms of abuse, the mandated reporter and his/her role, the role of the bedside nurse, patient assessment, accurate documentation and steps to report suspected events of abuse (Eveline et al 2012). Education should also inform health professionals about the specific laws, hospital policies and procedures in place within the state they are working in. E-learning programmes have a much more positive impact on learning compared to didactic lectures as they increase learner participation, create engagement with the topic and improve learning through a more positive experience (Ward et al 2015). Smeekens et al (2011), discovered that emergency nurses who participated in e-learning programmes displayed higher levels of confidence and efficiency when assessing children for any signs of child abuse. E-learning programmes should be utilised in addition to formal education sessions to ensure that nurses are becoming more aware of which children are at higher risks of experiencing child abuse and increase their knowledge and confidence (Ward et al 2015). It is clear that appropriate and concise education is a major benefactor in enhancing nurses' knowledge, confidence and understanding about the risk signs of children suffering abuse.

NURSING ASSESSMENT

As health care professionals, paediatric nurses in Australia, have a duty of care to be mandatory reporters of suspicion of child abuse. Assessing a child's risk for experiencing abuse is a vital part to preventing mistreatment and adverse childhood events in the future (Van der Put et al 2016). It is expected that Registered nurses will be able to identify children at risk of experiencing abuse, including the signs and symptoms of physical, sexual and psychological abuse. Nurses have a responsibility to conduct age and culturally-appropriate assessments on their patients and their families to identify these risks (Chihak 2009). Emergency nurses are often the first persons to interact with patients and their families, putting them in an advantageous position to assess a child and his/her family for signs of child abuse (Keane and Chapman 2008). Introducing mandatory child abuse screening tools into emergency departments have proved to be an effective way for nursing staff to identify risk factors and have the confidence to provide evidence behind their reports (Eveline et al 2012). In the study conducted by Eveline et al. (2012), a mandatory screening tool was introduced to an emergency department known as the 'escape form'. This form was presented to nurses alongside face to face teaching sessions about appropriate use of the form and screening each child that presented to emergency for signs of abuse. The form consisted of 6 questions identifying warning signs of child abuse and if any signs were marked then the physician must be notified to evaluate that child's risk of experiencing abuse. After using this checklist for a prolonged period of time, nurses reported they had a better understanding about the risk factors of child abuse and had more confidence when presenting suspicions to other nursing and medical staff (Eveline et al 2012).

When conducting the nursing assessment, a thorough physical examination should be conducted, looking for any bruising, abrasions, burns or marks that may not be conducive to the story given by the caregivers on presentation (Klossner and Hatfield 2010). If necessary, photographs should be obtained of the child with accurate, objective documentation in the medical notes being aware that these may be required in a court of law (Dixon and Crawford 2012). Observing the child and his/her interaction with his/her caregivers is another important element in identifying a potential abusive environment. There are a large array of signs that may assist the nurse in identifying child abuse or neglect (Klossner and Hatfield 2010). These signs may include, the child isolating himself/herself withdrawing from his/her caregiver, depressive symptoms, attention seeking, abnormal separation anxiety, poor school attendance, substance abuse, quick to anger and increased anxiety (Dixon and Crawford 2012). As a nurse, maintaining a professional and non-judgemental relationship is paramount. It can be difficult and can cause emotional distress to the nurse and medical team treating the child (Klossner and Hatfield 2010). Seeking appropriate support networks is important for nurses and doctors to be able to continue caring for children who have experienced child abuse.

PREVENTATIVE MEASURES

Children who experience one type of violence are more likely to experience another type and more frequently (Zimmerman and Posick 2016). Identification of these youths at risk is important in order to prevent further incidents of violence occurring. Zimmerman and Posick (2016) suggest education of community members and professionals on how to identify and assist these youths with their needs. Strategies to assist in preventing incidences of violence include school initiatives based on strategies to de-escalate and avoid violent situations and coping mechanisms for indirect experiences of violence. Addressing the child's household stability is a crucial factor in preventing recurrences of direct and indirect violence. Zimmerman and Posick (2016), spoke about the need for creating safe and nurturing family environments as well as participation in community extracurricular activities. Youth organisations that aim to provide a safe, social and productive environment, assist young people to engage with others in a positive manner and thereby decreasing the likeliness to be involved in violent situations (Zimmerman and Posick 2016). McMillin et al (2016), suggests a key preventative measure in decreasing rates of child abuse comes from the appropriate education to parents about child development and milestones. The research suggests that parents with poor education on childhood development are more likely to engage in child maltreatment as they believe their child should be reaching much higher milestones than appropriate for their age (McMillin et al 2016). They then engage in physical punishment of their child when they do not perform as expected due to frustration, impatience, or inappropriate expectations of development milestones (McMillin et al, 2016). This trend is significantly higher for children with disabilities, at a rate of 3 to 4 times higher incidence of physical abuse among this population. Post et al (2015) recommends family-based treatments with an emphasis on psychoeducation, intra-family communication and education on coping mechanisms to ensure parents do not convert their frustration into aggressive behaviours. The study by Zimmerman and Posick (2016), concluded that perhaps indirect exposure to violence (witnessing violence or abuse) is more conducive to the household environment, meaning that a child who is raised in a loving, warm and nurturing household with effective communication and encouragement in developmental activities has a far less likely risk of experiencing violence.

CONCLUSION

Childhood abuse causes a manifestation of mental, emotional and physical health issues over the lifespan (Seehuus et al 2015). The literature research has found there is a vicious cycle that children who experience abuse face in life. Typically children who experience violence, abuse or neglect have caregivers that experienced this themselves in childhood (Zimmerman and Posick, 2016). Dysfunctional families and households that are unable to cope with stressors in life create dysfunctional environments for their children to grow up into. This causes a cascade of emotional insecurities, disruption to crucial developmental stages and triggers of stress. All of these factors attribute to the increased risk of mental health illness and substance abuse tendencies that have negative ramifications on the child's physical health throughout his/her lifetime (South et al 2015). Various preventative measures can ensure that incidences of violence, child abuse and neglect are decreased. Education for parents is reported as one of the most effective strategies to prevent abuse (McMillin et al 2016). As healthcare professionals, nurses play a vital role in identifying children at risk of abuse. As mandatory reporters of child abuse, it is paramount that nurses have an in-depth knowledge base about the risk factors as well as signs and symptoms of child abuse. Currently nurses are reporting a lack of confidence and knowledge base, hindering them from reporting suspicious presentations (Keane and Chapman 2008). Quality education that is tailored to nursing staff, including e-learning programmes and abuse screening checklists, can dramatically improve knowledge and confidence to report any suspicions of child abuse (Eveline et al 2012). Caring for children who have experienced any form of abuse can be emotionally draining for nursing staff. It is important for nurses to care for themselves through seeking emotional assistance and attending debriefing sessions in order to continue to care for children who have experienced abuse in the future. Lastly, nurses must maintain and provide professional, non-judgemental care in order to allow the child to feel safe and nurtured while in the hospital environment (Klossner and Hatfield, 2010).

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Improving pain management through addition of the functional activity score

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KEY WORDS

pain measurement; nursing assessment; pain management; pain, postoperative, Mainland China

ABSTRACT

Objective

This study investigated the benefits of adding a new measurement tool, the Functional Activity Score to a validated measurement tool, the Numeric Rating Scale.

Design

Prospective cohort comparing cases (with intervention) to controls (usual care).

Setting

Inpatients from a Chinese Mainland teaching hospital.

Subjects

Eighty three postoperative patients of mixed gender and Chinese ethnicity.

Interventions

Adding Functional Activity score, a subjective observer assessed pain measurement tool, to usual postoperative pain intensity assessment.

Main outcome measures

Median 24 hour dynamic pain rating intensity. Episodes of moderate to severe pain.

Results

Median 24 hour dynamic numeric rating pain postoperative pain intensity rating with cough 3 [2.25, 3.75] versus 6 [5, 7] ($p< 0.001$), and at rest 0 [0,0] versus 2 [0,3] ($p < 0.001$) were both significantly lower in the intervention group versus the control group. The intervention group also experienced significantly less episodes of moderate to severe pain ($p=0.02$) and reported significantly less cough related interference with pain ($p=0.003$).

Conclusion

Functional activity score is easy to teach and apply, complements existing objective pain assessment after surgery and is beneficial for patient care.

INTRODUCTION

Early postoperative mobilisation is associated with a decrease in pulmonary and thrombotic complications and reduced length of stay after pulmonary surgery (Epstein 2014). Conversely, immobility resulting from postoperative pain is linked to increased risk of pulmonary complications after open heart and knee surgery (Korean Knee Society 2012; Milgrom et al 2004).

Dynamic pain combines nociceptive and non-nociceptive signaling, for example deep breathing and coughing involving a thoracic or upper abdominal wound. Uncontrolled dynamic pain may promote hyperalgesia and allodynia (Gilron et al 2002).

Despite improvements in analgesic techniques, postoperative pain is still inadequately treated as a result of inadequate assessment (Joshi and Ogunnaike 2005). Recent patient estimates of moderate or severe postoperative pain were as high as 75% in a United States of America survey conducted in 2003 (Apfelbaum et al 2003), while a Swiss survey reported inadequate assessment of pain and provision of postoperative analgesia by nurses and physicians (Klopfenstein et al 2000).

Insufficient postoperative pain poses significant problems in Mainland China, as evidenced by high rankings of functional restriction reported by patients after thoracotomy (Ying Ge et al 2013). Inadequate pain assessment is thought to be a common accompaniment to inadequate pain management (Srikandarajah and Gilron 2011), a conclusion supported by authors of this study who estimate that 71% of nurses in Mainland China have never assessed the effect of pain on function among patients with pain (Ying Ge et al 2013).

Assessment and analgesia directed at dynamic pain has the potential to facilitate mobilisation, and improve outcomes after surgery (Breivik et al 2008). At present there is heavy reliance on patient rated static and dynamic pain assessment, which is subjective in nature and does not offer benefits arising from combination with objective assessment by health professionals (D'Arcy 2011; Wood et al 2010).

The Functional Activity Score (FAS), recommended by the Australian and New Zealand College of Anaesthetists (ANZCA) and Faculty of Pain Medicine of Australia and New Zealand has been recommended as an adjunctive measurement tool adopted for postoperative analgesia care in Australia (Victorian Quality Council 2008). One of the defining properties of the FAS is that it is undertaken by persons caring for and managing patients, making it objective. Statistical validation and reliability of Chinese version-FAS has been confirmed in a recent study involving Chinese patients (Cheng et al 2015). Moreover, this same study confirmed that Mainland Chinese Hospitals are ideally suited for evaluation of the effectiveness of educational intervention as nursing knowledge of dynamic pain management is currently at low levels.

Pain management programs conducted by nursing educators are essential in developing knowledge, improving attitudes and assessment skills in the context of managing patients experiencing pain (Tse and Ho 2014; Zhang et al 2008). Such programs offer an ideal environment to assess the usefulness of FAS to evaluate analgesia therapies directed at dynamic pain.

We propose a study which aims to confirm that FAS can be easily incorporated into nursing practice alongside standard more traditional observations such as patient rated pain intensity. A further aim is for nurses to be able to interpret and use information from FAS and pain intensity in a way that can lead to improved analgesia management.

This links in with our hypothesis that FAS guided escalation in analgesia management can be effectively implemented after intensive education of nursing and medical professionals in Mainland China, allowing for more effective postoperative analgesia rehabilitation through better timing of analgesia delivery. We hope to prove this hypothesis by showing improved patient rated dynamic pain intensity ratings in an intervention group where nurses and doctors use FAS and pain intensity information to guide analgesia management compared with a control group where FAS and pain intensity were measured but not used to guide analgesia management.

METHOD

Quasi-experimental research was used for this controlled study.

Design

We received approval from the Institutional Review Committee of the participating hospital on 28 October 2014 for our prospective cohort. This study was conducted at a teaching hospital from March to June 2015. This teaching hospital was chosen because its nursing and medical staff had not received previous education as to the concept of using the FAS to guide escalation of analgesia care.

FAS is an objective observer rated measurement that assesses restriction of functional activities related to an anatomical area where a patient experiences pain following surgery. FAS has not been tested in research settings in Australia, but a Chinese version has undergone psychometric validation, reliability and clinical utility testing (Cheng et al 2015). Internal consistency reliability, Interclass Correlation Coefficient (ICC) and Content Validation Index (CVI) were 0.93, 0.93 and 0.97 respectively. Criterion validity was $r=0.48$; ($p<0.001$) between the FAS and the NRS for pain intensity. Clinical application of FAS was first explored in this same observational study involving 107 patients after major surgery (Cheng et al 2015).

FAS involves an observer requesting a patient is to complete a physiological task relevant to the site of their pain. An example relevant to this study might be to deep breathe and cough after thoracic or upper abdominal surgery. The observer then uses a simple ordinal scale to objectively rate how the pain affects their ability to perform this task. Scoring the patient at "A" indicates the patient is unrestricted by pain when performing the chosen activity. Scoring the patient at "B" indicates the patient's activity is only partly limited by pain and the activity can be largely undertaken. Scoring the patient at "C" indicates the patient's activity is severely limited by pain (Victorian Quality Council 2008).

Sample size

Primary Hypothesis: Group 1(experimental group, N1) =Group 2 (control group, N2).

According to the $N_1=N_2=2\times\left[\frac{\left(u^{\alpha}+u^{\beta}\right)}{\delta/\sigma}\right]^2$ "δ" is mean difference (MD) of two groups, "σ" is combined standard deviation of two groups, $\alpha=0.05$,$u^{a}=1.96$, $\beta=0.01$, $u^{\beta}=1.282$. According to the results of a preliminary experiment whose evaluation index is pain interference with coughing (0-10), the MD of experimental group (3.87) and control group (5.03) is 1.16, and the combined standard deviation of two groups is 1.59. These calculations suggest that each group needs 39 cases in this study. We have added 15% to the sample size to account for loss of subjects, resulting in a sample size of 45 for each of the control and intervention groups.

Participants

To be included in this study, patients had to provide informed consent, be aged 18-80 years, be capable of understanding questions provided in the survey, be able to accurately rate their pain, and present for elective open thoracic or upper abdominal surgery. Patients with allergy or contraindication to opioid or nonsteroidal anti-inflammatories, or who had a diagnosis of severe renal or hepatic impairment were not eligible for inclusion. Nurses who were employed by the participating hospital were eligible for educational intervention. All nurses included in the educational intervention had to provide informed consent.

During the research, five patients of the Intervention Group quit the study because of personal reasons. In the Control Group, two patients refused to answer the whole questionnaire. As a result, eighty three patients were included in the study. There were forty patients in the Intervention Group and forty three patients in the Control Group.

Procedures

Prior to recruitment of the patients, two education programs were developed by the research team, comprising a pain specialist nurse and senior nursing staff from the participating hospital. The same team validated the content of the educational programs.

Eighty three patients who underwent open thoracic and open upper abdominal surgery were included in this study. Consent discussions with patients did not include explanations of the use of the FAS to guide pain management; rather patients were informed that usual medications for pain management would still be employed and the study would evaluate how the patient controlled analgesia (PCA) was used to treat postoperative pain. The consent described NRS pain assessment where patients were shown the NRS and educated to describe their pain intensity in relation to the numeric scale where zero indicated no pain and 10 the worst pain imaginable. Patients had to demonstrate appropriate understanding of the NRS and ordinal rating scales used for collection of additional data before they were recruited to the study. NRS was the favored measure of patient rated pain intensity in this study owing to its reliable and valid qualities as a measurement tool (Wood et al 2010). All patients in the study were instructed both in the consent and by nurses to use their PCA to reduce their pain levels at rest and when undertaking painful activities, as is usual practice at this hospital.

All patients had demographic variables of age, gender, educational attainment, and surgical operation recorded.

Forty three subjects were initially enrolled to the control group. The control group received usual analgesia care for the participating hospital. This involved PCA boluses of 0.5 ml of a solution of Flurbiprofen (2 mg/ml) and Sufentanyl (1ug/ml) with a 15 minute lockout together with a background infusion of 1.5 ug Sufentanyl per hour.

Prior to recruitment of controls, nursing staff from surgical wards in the participating hospital attended the first education program and received education in measurement of the FAS, so they were able to record FAS scores for the purpose of comparison with controls. The pain specialist nurse and one of the research team members delivered lectures to the nurses.

After surgery, control patients provided static and dynamic NRS ratings at 4 hourly intervals, and staff also recorded FAS of controls at 4 hourly intervals for the first 24 postoperative hours.

Following recruitment of controls, a second intensive educational program was provided to the same nurses from surgical wards and also to medical staff. This program comprised a series of lectures and printed material describing the FAS and how to use the FAS to improve analgesia care. The lectures were given by the same pain specialist nurse and researcher as the first program, and followed by case scenarios encouraging interactive discussion about analgesia care based on FAS assessment. Nurses and medical staff were required to pass a test based on educational content before they were allowed to further participate in the study.

Recruitment of forty subjects to the intervention group followed the intensive education of medical and nursing staff. Patients in the intervention group received FAS guided analgesia intervention.

FAS was assessed by nurses in the intervention group at four hourly intervals in the first twenty four postoperative hours. An FAS of B or C accompanied by a dynamic NRS patient rated pain intensity of greater than 4 activated an intervention whereby the patient was instructed to deliver a bolus injection from their PCA. Two consecutive FAS of C in combination with an NRS pain intensity of greater than 4 elicited an intervention from a doctor who provided appropriate escalation of analgesia care irrespective of patient rated dynamic pain intensity. The intervention consisted of additional doses of opioid or non opioid analgesic other than NSAID. Patients who had FAS of A alone, or B in combination with dynamic pain intensity reports of less than or equal to 4 did not require an intervention.

Data Collection

Twenty four hours after completion of surgery, patients in both control and intervention groups were asked a series of questions in relation to their pattern of PCA use and experience of pain. The survey questions were mostly derived from "Quality indicators and suggested measures for pain management" adapted from a survey recommended by American Pain Society Quality of Care Task Force (Gordon et al 2005). Six quality indicators were analysed from 20 studies performed at eight large hospitals in the United States of America from 1992 to 2001. The study suggested that although there were no perfect measures of quality, longitudinal data support the validity of a core set of indicators that could be used to obtain benchmark data for quality improvement in pain management in the hospital setting (Gordon et al 2002). In 2013, six quality indicators and a set of standardised measures were translated to Mandarin Chinese, and used to evaluate quality of post-surgery management at five hospitals in China (Ying Ge et al 2013.). Content Validation Index (CVI) was 0.97. A similar survey was used in a pilot for this current study (Cheng et al 2015). The questionnaire used in our study has been specifically adapted for our aims, replacing one question from the survey by Gordon (Gordon et al 2005), "how does pain interfere with your activity, mood and sleep" with more specific questions about pain interference with coughing and mood.

Five survey questions covered patterns of PCA use prior to undertaking painful activities (Yes/No response), worst and least pain intensity, pain interference with coughing, pain interference with mood, with the last three questions involving use of a numeric rating scale.

The final two questions utilised ordinal assessment scales and enquired about the amount of time where moderate to severe pain was experienced; and adequacy of preoperative explanation of analgesia technique. The survey questionnaire is included in figure 1.

Figure 1: Patient survey questions at 24 hours after surgery

Survey Question	Measurement
During the first postoperative 24 hours did you push the PCA button before undertaking painful activities?	Yes/No
On this scale please circle the number that indicates the worst pain intensity that you experienced in the first 24 hours after surgery (0 means no pain, 10 means worst imaginable pain)	Rating placed on 100mm numeric rating scale
On this scale please circle the number that indicates the least pain intensity you experienced in the first 24 hours after surgery (0 means no pain, 10 means worst imaginable pain)	Rating placed on 100mm numeric rating scale
Please circle the number that best describes how much pain interfered with your coughing during the first 24 hours after surgery (0 means does not interfere at all, 10 means interferes completely)	Rating placed on 100mm numeric rating scale
Please circle the number that best describes how much pain interfered with your mood during the first 24 hours after surgery (0 means does not interfere at all, 10 means interferes completely)	Rating placed on 100mm numeric rating scale
How often did you experience moderate to severe intensity pain in the first 24 hours after surgery?	Never, almost never, often, almost always, always.
Describe the adequacy of information that you received about the best way to control your pain	Poor, fair, good, very good, excellent.

Data Analysis

SPSS version 17.0 for windows (Chicago, IL, USA) was used for data analysis. Descriptive statistics were used for sample characteristics of demographic data including age, gender, education and types of surgery. Chi squared testing compared categorical variables such as use of PCA prior to functional activity, frequency of moderate to severe pain and adequacy of information about pain during hospitalization. Mann–Whitney U test was used for evaluation of the questionnaire such as current pain (at rest and during cough), worst and least pain in the past 24 hours, pain interference with coughing and with mood. A p value of less than 0.05 was considered significant.

FINDINGS

Demographic data are included in table 1. Mean age of subjects was 60-63 years, approximately two thirds male, with educational attainment mostly at or below primary school level, with both control and intervention groups undergoing similar surgeries.

Table 1: Demographic characteristics of study participants. Data are presented as number (%), mean (SD), and median [interquartile range] as appropriate.

Variable	Intervention Group (n=40)	Control Group (n=43)	P Value
Age (years)	60.4 (11.5)	62.9 (10.5)	0.50
Gender			
Male	25 (62.5)	27(62.8)	0.96
Female	15(37.5)	16(37.2)	
Educational attainment			
College	2(5)	1(2.3)	0.32
High School and Middle School	18(45)	16(37.2)	
Primary School and Below	20(50)	26(60.5)	
Type of surgery			
open pneumonectomy	11(27.5)	21(48.8)	0.71
open partial gastrectomy	11(27.5)	8(18.6)	
open proctectomy	10(25)	6(14)	
Open colectomy	8(20)	8(18.6)	

Static and dynamic patient rated and observer rated FAS are included in table 2. Subjects in the intervention group reported significantly lower static (p< 0.001) and dynamic pain (p< 0.001), while observer rated FAS was higher in the intervention group (p=0.02)

Table 2: Static and *Dynamic pain intensity measurement over 0-24 hours following surgery and observer rated FAS. Data presented as median [interquartile range] and number (percentage) as appropriate. P< 0.05 is considered significant.

Variable	Intervention Group (n=40)	Control Group (n=43)	P Value
Static pain intensity	0[0-0]	2[0-3]	< 0.001
Dynamic pain intensity	3[2.25-3.75]	6[5-7]	<0.001
Observer rated FAS			
A	4(10)	3(7)	
B	33(82.5)	27(62.8)	0.02
C	3(7.5)	13(30.2)	

* Denotes primary end point

Survey of pattern of use of PCA before undertaking painful activities are included in table 3. The intervention group also reported more preemptive PCA use (p=0.02).

Table 3: Pain measurements and responses to survey questions taken from patients 24 hours following surgery. Data presented as median [interquartile range] or number (percentage) as appropriate. P< 0.05 is considered significant.

Variable	Intervention Group (n=40)	Control Group (n=43)	P Value
Worst pain intensity	6[5-6.75]	7[5-8]	0.029
Least pain intensity	2[0-2.75]	2[2-3]	0.150
Frequency of moderate to severe pain			
Always	3(7.5)	4(9.3)	0.020
Almost always	3(7.5)	11(25.6)	
Often	5(12.5)	12(27.9)	
Almost never	21(52.5)	13(30.2)	
Never	8(20)	3(7)	
Pain interference with mood	4[3-5]	5[3-6]	0.284
Pain interference with cough	5[3-5]	5[5-6]	0.003
Adequacy of information			
Poor	3(7.5)	3(7)	0.076
Fair	2(5)	5(11.6)	
Good	12(30)	23(53.5)	
Very good	17(42.5)	8(18.6)	
Excellent	6(15)	4(9.3)	
Using PCA before painful activity			
Yes	14(35)	5(11.6)	0.01
No	26(65)	38(88.4)	

Worst pain intensity, episodes of moderate to severe pain, together with pain interference with coughing were all statistically significantly lower in the intervention group compared with the control group (refer table 3). Lowest pain intensity, impact of pain on mood, and adequacy of information about pain at 24 hours following surgery were not statistically different (refer table 3)

DISCUSSION

Our prospective cohort has confirmed that intensive education of Mainland Chinese nurses and medical staff in the role of FAS combined with dynamic NRS pain intensity can successfully influence delivery of analgesia after major surgery. This is highlighted by improved patient rated dynamic pain intensity in the 24 hours following chest and upper abdominal surgery.

The current study involved a hospital setting where staff were introduced to FAS for the first time. This contrasts with our pilot study involving a different hospital, where nursing staff were familiar with the FAS (Cheng et al 2015). This meant that control subjects were able to receive usual analgesia care free from nursing bias and that the intervention (addition of FAS to help guide escalation of usual analgesia care) was assessed as accurately as possible. This contrasts with the previous study whose aim was to confirm the validity, reliability and utility of the FAS as a clinical measurement tool in a Mainland Chinese population.

Our experience in Mainland China is that nursing staff do not yet appreciate the significance of measuring dynamic pain, and will usually only record pain at rest (Ying Ge et al 2013). It is also likely that doctors and nursing staff in Mainland China as well as other countries can not differentiate between subjective and objective measures of pain intensity as the FAS is not in common use throughout the world. Pain intensity is currently evaluated subjectively by adult patients in normal practice, and objectively using behavioral, subjectively by visual cues in pediatric (Voepel-Lewis et al 1997; Wong and Baker 1988) and objectively by carers in critical care settings (Payen et al 2001). It is our belief that objective pain assessment should extend to all clinical settings and be combined with subjective patient assessment where possible, to direct analgesic intervention.

Our intervention group was more likely to preemptively use their PCA to facilitate painful activities compared to controls. This is despite both groups receiving the same advice about reducing pain at rest and with painful activities prior to surgery, as is part of usual care in this Mainland Chinese hospital. It is possible that the intervention group recognized the pattern of PCA use in the setting of low FAS and began to use the PCA autonomously in the setting of potentially painful situations. This represents a situation where a concept that is discussed and demonstrated through nurse led intervention is more effectively understood by the patient.

Patients of Chinese ethnicity are more likely preoperatively to expect severe pain and prefer to exercise less autonomy in the control of their own pain management (Konstantatos et al 2012). This is combined with the wrongful perception that rest is more beneficial than early rehabilitation after surgery (Liu et al 2013). It appears that patients in this study were able to overcome these preconceived beliefs and favorably change their behaviours through adoption of patterns of PCA use initiated by nurses to facilitate postoperative rehabilitation.

We were unable to show a difference in pain intensity effect on mood. Age and educational attainment, both similar among intervention and control groups, are correlated with anxiety levels among Mainland Chinese (Xie et al 2010). Age and educational attainment may have stronger influence on mood than pain intensity in people of Mainland Chinese ethnicity.

A limitation of our study was that we did not evaluate patient satisfaction with pain management in our cohort. We evaluated satisfaction in our pilot study that preceded this cohort (Cheng et al 2015) and found that satisfaction did not vary between the control and intervention groups. We felt that Chinese patients may have had trouble conceptualising the benefits brought about by active rehabilitation, given their low educational attainment and contrasting belief that rest is beneficial after surgery (Liu et al 2013). Another potential limitation is the ethnic context of our study. People of Chinese ethnicity are known to exhibit less autonomy in the management of their pain in the postoperative setting compared with Caucasian Australians (Konstantatos et al 2012), making them less likely to self- deliver bolus doses of PCA without prompting from nurses. A Caucasian population experiencing conditions similar to the controls in our study may have initiated more PCA analgesia without prompting from nurses, and may have experienced less increase in dynamic pain intensity compared to an intervention group.

CONCLUSION

This study's findings have highlighted the importance of nursing assessment for improving patient analgesia following painful surgery. Evaluation combining FAS with dynamic NRS allows nurses to guide and educate patients to better use PCA dosing to facilitate functional recovery. Skillful patient management, in turn, requires that nurses be educated competently to record and accurately interpret FAS to improve analgesia care. These findings may be of universal benefit, especially where nurses require more experience in the use of multiple pain management tools to deliver effective postoperative analgesia.

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