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Understanding infant feeding practices of new mothers: findings from the Healthy Beginnings Trial

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KEY WORDS

infant feeding practices, breastfeeding, solid food, health education

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ABSTRACT

Objective

This study aimed to explore the experiences of infant feeding of first-time mothers and identify the barriers and facilitators in relation to healthy infant feeding practices.

Design

As part of the Healthy Beginnings Trial, descriptive analyses were conducted using data extracted from both baseline and six month surveys. Twenty five face-to-face in-depth interviews were conducted at 12 months postpartum by two trained research nurses with a series of semi structured questions to explore mother's infant feeding experience.

Setting

The study was conducted in southwest Sydney, the most socially and economically disadvantaged area of metropolitan Sydney, New South Wales in 2007-2010.

Main outcome measures

To understand mothers' experiences of infant feeding and identify the barriers and facilitators in relation to healthy infant feeding practices.

Results

A total of 561 mothers completed both baseline and six month surveys. Of these, 25 agreed to participate in a face-to-face in-depth interview at 12 months postpartum. A high proportion (96%) of mothers initiated breastfeeding, only 38% continued breastfeeding at 6 months postpartum due to numerous barriers. The main barriers for breastfeeding were milk supply and unsettled baby, latching baby to the breast and pain. The main barrier for appropriate timing of introduction of solid food was confusion about the recommended guidelines. Hospital support was regarded as the main facilitator for healthy infant feeding practices.

Conclusions

A significant proportion of mothers did not meet the WHO recommended guidelines for breastfeeding. The first week of life was the most critical time for first time mothers to establish and consolidate breastfeeding. Education around appropriate timing of introduction of solids for both mothers and health professionals would be beneficial in ensuring consistency and adherence to the guidelines.

INTRODUCTION

Infant feeding practices including breastfeeding, infant formula and complementary foods (solids) constitute an important aspect of early child growth. The World Health Organization (WHO) recommends that parents breastfeed exclusively for the first six months of life, continue to breastfeed for up to two years or beyond and wait until the second half of the first year to introduce solid foods (NHMRC 2013). The recommendations have been adopted and endorsed by many countries including Australia.

Infant feeding practices are among the most identifiable factors contributing to the early onset of childhood obesity. One longitudinal study and one systematic review of breastfeeding and childhood overweight and obesity conclude that breastfeeding is protective against overweight and obesity, with some studies showing a dose response (Beyerlein and von Kries 2011; Grummer-Strawn and Mei 2004). There is also a growing body of evidence linking the early introduction of solids to the risk of obesity (Toschke et al 2007; Baker et al 2004; Grummer-Strawn and Mei 2004). The latest evidence from the UK Millennium Cohort Study with more than 10,000 children, found that when solids were introduced before four months, children were more likely to be overweight or obese at three and five years of age compared to babies given solid foods after four months (Griffiths et al 2009).

Challenges of breastfeeding faced by new mothers in the first few months following the birth of their child are well documented (Li et al 2008; Bailey et al 2004). The health benefits of exclusive breastfeeding for the first six months of life are significant (NHMRC 2013). However, the proportion of mothers who continue to breastfeed for the recommended period of time is low (AIFS 2008; Australian Bureau of Statistics 2003). Although Australian breastfeeding initiation rates have increased (AIFS 2008), assistance is needed to overcome the challenges thereby sustain breastfeeding over a longer period of time.

The timely introduction of solid food remains a controversial topic, particularly as over the last two decades there has been a change from commencing complementary food from 4 - 6 months to six months. Current recommendations in Australia are to introduce solids at around six months (NHMRC 2013). While debate and discussion surrounding the introduction of solids continues, a number of issues can lead to infants being given complementary food before six months of age, including advice from family and friends, parental perceptions that the infant is hungry, parental anxiety and fatigue (Scott et al 2009; Alder et al 2004).

With increasing recognition of the need to improve infant feeding practices as a means of early childhood obesity intervention, the Healthy Beginnings Trial (HBT) was conducted in southwestern Sydney, New South Wales, Australia in 2007-2010, to test the effectiveness of an early childhood obesity intervention in the first two years of life. The intervention uses a home-visiting strategy to promote healthy feeding of babies among first-time mothers. One of the aims of this trial was to improve mothers' infant feeding practices through a home-based intervention (Wen et al 2007). This study was part of the HBT aiming to explore the experiences of infant feeding of first-time mothers in the HBT and identify the barriers and facilitators in relation to healthy infant feeding practices.

METHODS

The main study of the HBT was a randomised controlled trial and conducted in southwest Sydney, in 2007-2010. The study was approved by the Ethics Review Committee of Sydney South West Area Health Service. Women were eligible to participate if they were living within the local area, expecting their first child, aged over 16 and able to communicate in English. For this particular study, both quantitative and qualitative methods were used.

Quantitative study

Data for quantitative study were extracted from the HBT baseline survey conducted by face-to-face interviews with a total of 667 first-time mothers at 24-36 weeks of pregnancy in their home prior to randomisation. The questionnaire included a range of questions relating to general demographics, health, nutrition and physical activity from the NSW Health Survey (Centre for Epidemiology and Research 2004). To assess mothers' knowledge of and intended breastfeeding practices before giving birth specific questions were asked:

"What do you understand to be the recommended age to which you should continue to exclusively breastfeed your child?"

'Do you plan to breastfeed your child?'

"To what age do you plan to exclusively breastfeed your child?"

"To what age do you plan to breastfeed your child whilst also giving them other foods?"

To understand mothers' infant feeding practices at six month postpartum a telephone survey with both open and closed questions was conducted by one principal interviewer and lasted 30 – 45 minutes. A total of 561 mothers completed the telephone survey. Specific questions on aspects of infant feeding were taken from the NSW Child Health Survey (Centre for Epidemiology and Research 2002) along with other standard questions and included health service usage, physical activity and smoking (Centre for Epidemiology and Research 2004).

An Access database was created to store all quantitative data collected for the HBT. Data were imported into Statistical Package for the Social Sciences for descriptive analysis.

Qualitative study

To gain understanding of the individual experience of first time mothers, participants were invited to undertake a face-to-face in-depth interview. Two research nurses were trained to interview participants and were guided by a series of semi structured questions to explore their infant feeding experience, nutrition, active play, physical activity, family functioning and the impact of the HBT interventions.

Sample selection

Purposive sampling was used in order to focus on the selection of information rich cases for in depth study which facilitates the examination of meanings, interpretations and processes (Liamputtong and Ezzy 2005). Inclusion criteria guided the sample selection which ensured a mix of intervention and control participants, infant feeding methods and demographics including age, marital status and income. Mothers were invited to participate in an interview at the HBT 12 month survey; those accepting signed written consent. Data saturation was reached at 25 interviews.

Data Analysis

Interviews were audio-taped with the participant's permission and transcribed. Transcript accuracy was checked by comparing the transcript to the audio-tapes. The computer software NVIVO was used to support data management, coding and thematic analysis to facilitate the identification of emerging themes and issues (Green and Thorogood 2009). Interview transcripts were reviewed by two researchers through the process of reading, coding and identification of common and divergent themes and triangulated with matching some questions with the six month phone survey.

A two stage coding process was used. At first stage 'Topic Coding' was used to allocate passages of text to topics requiring little interpretation. The interview questions formed an initial coding framework subsequently refined through the second stage coding process of 'Analytic C coding' with the interpretation and reflection on meaning (Richards 2009).

RESULTS

Retention rate

A total of 667 first-time mothers were recruited into the HBT. Sixteen percent (106) of participants were lost to follow-up at six months. The main reasons were unable to be contacted (70%), too busy/not interested (12%), moved (10%), illness/death (7%).

Demographics

Participants in the HBT reflect a diverse mix of social and economic standing with baseline characteristics. Among 561 mothers remained at six month survey, mothers' ages ranged from 16 to 47 years with the majority between 20 – 29 years (64.4%). Most mothers (88.4%) reported being with a partner and 10% spoke a language other than English at home. Total annual incomes varied substantially with 19% earning less than \$40,000. Levels of educational achievement varied with just over half of the participants (55%) attaining their High School Certification or TAFE certificate/diploma and 25% attaining a university degree.

INFANT FEEDING PRACTICES

Intention

At baseline (n=667) the majority of mothers (94%) intended to breastfeed their baby. For some breastfeeding was a given:

"..before I even got pregnant I was always going to breastfeed..."

" ..just always wanted to, even when I was a kid I was always like oh well, when I have a baby I'll breastfeed.."

Many others acknowledged the nutritional, immunological, bonding, practical and cost effective benefits of breastfeeding:

"....I just think it is a mother and child bonding, whatever happens nobody else can do it, just I can do it for my baby".

"I guess myself, I really wanted to breastfeed and everything and I knew that it was healthy for her, yes, and just mainly for health reasons."

Patterns of Infant Feeding

Of the participants who took part in the six month phone survey (n=561) breastfeeding initiation and duration were reported with 96% of babies having ever breastfed, 4% of babies were being exclusively breastfed, 6% were fully breastfed meaning they received breast milk as the main form of nourishment but also had been given other fluids but not infant formula or solids, 13% were being fed with breast milk and infant formulas and 63% infant formula feeding only.

Cessation of Breastfeeding

Of the mothers who ever breastfed their infant, 38% were still giving any breast milk at six months. Within the first week of delivery 11% of mothers stopped breastfeeding. By one month an additional 18% had stopped, with a further 17% at three months and a further 12% by six months.

Data from the six month phone survey triangulated with findings from the in-depth interviews provided a broad overview of experiences and concerns which influenced mothers to stop breastfeeding. The group of mothers who breastfed their children less than six months shared many similar experiences and concerns which we have grouped into six key areas including milk supply or unsettled baby, latching or pain issues, support in hospital, health related issues, mother's preference, and the impact of work, or school, or pregnancy.

Milk supply or unsettled baby was the most common reason cited for giving up breastfeeding throughout the first six months. Expressed at six months in terms of:

".....milk dried up....."

"not producing enough milk...."

"poor milk supply....."

"didn't think he was getting enough"

and similarly in the in depth interviews:

"I wanted to breastfeed. I did for three weeks, not realising I didn't have enough milk..."

".....to me it seemed like he wasn't getting much milk."

Attachment, latching baby to the breast and pain associated with breastfeeding were the second most common reason cited for giving up breastfeeding within the first three months. Described at six months in terms of:

"Baby would not latch on...."

"Painful nipples..."

"....experienced blistering and bleeding nipples"

and again in the in depth interviews:

"I persevered with it as long as I could but.....couldn't get him to latch."

"...but with me it didn't work, I was having pain and my nipples were really sore..."

Hospital experience was another area where mothers had mixed experiences. While some mothers found initial support in hospital fantastic:

"...hospital experience and breastfeeding in hospital was very good....midwives were very helpful."

“... I had a really, really good midwife...fantastic midwife and when I got to that really stressed point, like I can't feed my baby, she just took him, she said it's okay, he'll survive this, you'll survive this ...”

Others had a different experience:

“.....but still there are people there that just push you and push you and push you. I can understand why people get stressed out about it when it comes to feeding.”

“They pressured me quite a bit – as if I had to make the decision there and then whether I wanted to give the baby formula or breastfeed.”

For others there were acute health related issues for the mother and/or baby that presented practical issues to be overcome, precipitating emotional dilemmas for some and other mothers that just didn't like breastfeeding.

The reasons for weaning babies varied at different time postpartum. Supply was cited as the most common reason for stopping breastfeeding in the first 6 months, particularly from one week to three months. Latching and pain were cited as the second most common reason to wean babies particularly in the initial post natal period.

Introduction of solid food

The six month survey identified the age mothers started introducing solid food on a regular basis, i.e. at least once a day. Almost a third of mothers (32%) met the recommendations for introducing solids at 6 months (24 weeks) or later. Almost half (46%) introduced solid foods between five and six months (20 – 24 weeks). The remainder (19%) introduced solids between four and five months (16 - 19 weeks) with a small number (3%) of mothers introducing solid food before four months (16 weeks).

The key reasons given by mothers for commencing solids at different ages were analysed. At less than four months, the main reasons given were advice from family and friends and unsettled baby. The earliest recorded age for commencing solids was ten weeks. Explanations recorded for commencing solids at less than four months at the six month survey included:

“Other friends did same. Tried it and they liked it”.

“Mother advised her to start”.

“Child wanted more infant formula. This stopped when solids were introduced”.

One mother reported her rationale for this action at the six month survey:

“Baby still hungry after bottles. Once started more satisfied and started sleeping through the night, previously waking every 3 hours”.

and again an opportunity to recall her experience as a participant in the in-depth interviews:-

“He would cry, he was feeding every two hours, I was told to stretch him out to three, then to four hours. He was always hungry. He was a big baby and was just always hungry and I made the decision to try him on Farex at a very early age and it was the best decision I ever made.He was 10 weeks”.

At 4 - 5 months, mothers felt their baby was always hungry, baby was unsettled or they had received advice from a General Practitioner, nurse, family or friends. They reported at the six month survey:

"Feeding every 2 hours, hungry. Once started more satisfied returned to 4 hourly feeds".

"Mother suggested".

"At 4 months GP said ready to start. Showing signs".

From the in depth interviews mothers again recalled their experiences for us:

"D..... started on solids from about four months old, because the bottles weren't doing enough for him, so I just gave him food and he seemed a lot happier".

"Mainly my daughter when she saw us eat, she would make gestures that she wanted a bit of food, and the age, she was about five months when I started with solids".

"But T..... was hungry, he was screaming, he was feeding every hour by then. That's when my nipples started to hurt again, I just couldn't maintain it. Then one of the clinic nurses.... recommended just give it a go and see?"

At 5 - 6 months, solids were commenced because their baby was showing signs, unsettled, appeared hungry or they had been given advice from a General Practitioner or nurse:

"Showing interest looking at parents eating"

"Wants to eat grabbing mum's food. Opening mouth when seeing mum eat".

"Not satisfied with breastfeeding. Once started more satisfied".

"Nearly 6 months and her doctor suggested to start before 6 months"

"Nurse came at 5 months. Ready to eat."

According to in-depth interview, we also found that mothers faced confusion about the recommended age to commence complementary food as shown in the following quotes:

"I was a bit confused, because some of the things that I'd read, or I guess there were more materials from advertising had four months and some, the more formal reading materials, had six months. So I was a bit confused, when do you start".

"If I took advice from my mum and grandmother and everyone else, they all said babies go on solids at four months, because that's when we were all put on solids".

“Always looking at mum when she is eating. Saw infant food in supermarket for 4-6 month olds so tried it”.

“Six months – isn’t that from the government, the NSW Health Department or something like that”.

DISCUSSION

This study found that most first-time mothers understood the benefits of breastfeeding for both the baby and themselves with a high proportion (96%) of mothers initiating breastfeeding, however only 38% continued breastfeeding at 6 months postpartum due to numerous challenges faced by them.

Our findings are consistent with other studies showing that a range of social and emotional factors impact on mothers’ infant feeding practice in the postpartum period, particularly in the first 6 months. The study also provides insights into the barriers and facilitators in relation to healthy infant feeding practices and suggests that the first month following birth is critical to tackle practical issues including latching, pain, supply and initial support stated as key reasons for cessation.

This study found that many participating first-time mothers ceased breastfeeding during the first week postpartum due to common breastfeeding problems (such as pain and latching) and support in hospital. Hospital guidelines focusing on common breastfeeding problems (Taveras et al 2003) and the introduction of the Baby Friendly Hospital Initiative (BFHI) could play a role in the continuation and duration of breastfeeding, particularly in the first few days following birth. While hospitals in Australia are working towards BFHI accreditation, currently only 19% of hospitals in Australia who offer maternity services are accredited (BFHI website 2012), so further work in this area is needed.

It would be beneficial for Health Services to have breastfeeding policies that include antenatal education for women who have chosen to breastfeed. Education and support covering common breastfeeding issues like engorgement and painful nipples, the length of time these issues last and treatment may assist women tackling these challenges in the immediate postpartum period. Evidence shows specific lactation support in hospital for mothers choosing to breastfeed prolongs duration of breastfeeding (Gatti 2008; Bronuck et al 2005).

Participants had mixed experiences with clinicians in hospital; some found the care very supportive others had negative experiences. Follow-up studies with staff directly involved with mothers and newborn babies is needed to give further insight into addressing the reasons why mothers perceive they have a lack of support in hospital. While midwives have breastfeeding expertise, employed lactation consultants to assist breastfeeding mothers in the hospital setting would be useful.

Of all mothers who stopped breastfeeding, supply was cited as the most common reason for weaning, particularly in the first three months. In fact, only a very small number of mothers cannot produce enough milk for medical reasons. Although there is a 24 hour validated measure for breast milk supply, this is not commonly utilised (Schwartz et al 2002). Low supply is more often than not related to the mother’s opinion that infants are not receiving enough milk to meet their needs and other studies have supported this (Griffiths 2009; Hector et al 2005; Schwartz et al 2002). Lack of milk supply warrants further investigation. Supporting mothers to understand the lactation process, like how milk is produced and maintained, assisting with mechanical aspects of breastfeeding and ensuring mothers understand infant growth and development may assist in the issue of low supply.

The findings in this study were consistent with other studies suggesting the most common reason cited by mothers for stopping breastfeeding was that the baby was unsettled, a behaviour often interpreted by mothers

as indicating an insufficient milk supply. This perception of insufficient supply appears to be due to a lack of information or lack of confidence regarding the normal process of lactation (Wen et al 2009).

Recent studies (Li et al 2010) have also indicated breastfed infants may be better able to self-regulate their intake, meaning they will only feed until they feel full; this could also have implications for childhood obesity as breastfed babies will only eat what they need. Also educating new mothers on understanding these infant cues around feeding is important as each feed will be different depending on the baby's needs.

The introduction of complementary food to infants often presents a dilemma for new mothers today; they receive information and advice from a range of health professionals and also have easy access to a diverse range of information, advice and support platforms. Family and friends are also very influential when mothers are making decisions about introducing solids. With infant feeding guidelines changing over the last decade and continued discussion and debate about the introduction of complementary foods it can be a confusing time.

Those mothers who commenced solids early were greatly influenced by family and friends, having a baby who was unsettled and the amount of conflicting information on the introduction to solids. Educating and empowering mothers in understanding the reasons for the current introduction to complementary food recommendations may assist them when receiving advice from others. Education in the second to fourth months postpartum would be an ideal time to develop this, along with incorporating an intervention for mothers in understanding baby cues and techniques for dealing with babies that appear hungry or unsettled may alleviate the issue of early introduction of solids. Parents should also be educated in the different environmental factors that can relate to a baby being unsettled, which can subsequently affect growth and development. These can include changes in parental circumstances, returning to work, childcare arrangements and even the feelings associated with being a new parent.

Ensuring adequate infant feeding guidelines and training packages for health professionals that deal with new mothers is necessary. This should incorporate hospital and community staff, paediatricians, general practitioners and pharmacists. Advocating for appropriate labelling on infant food packaging is also an area where future work could take place.

However, this study had limitations. The generalisability is limited due to the locality of the study area since southwest Sydney is the most socially and economically disadvantaged area of metropolitan Sydney. The analysis did not take into account method of milk feeding and if this influenced the introduction of solids and did not take into account socio-demographic data or lifestyle behaviours such as smoking and exercise which may have given a different insight into groups who commence solids prior to 6 months. The questionnaire and in depth interviews only asked why mothers started solids early, it would be beneficial to find out the reasons mothers waited until six months, as this may have given insight into the development of further interventions to assist mothers when making decisions about introducing solids.

CONCLUSION

This study found that a significant proportion of mothers did not meet the WHO recommended guidelines for infant feeding. It highlighted that the first week postpartum was the most critical time for first time mothers to establish and consolidate breastfeeding. The specific barriers regarding breastfeeding faced by first time mothers were milk supply and confusion about the recommended guidelines for exclusive breastfeeding and the introduction of complementary foods.

RECOMMENDATION

By placing emphasis on supporting mothers with breastfeeding in the first weeks postpartum may result in a longer duration of breastfeeding. Education around the timely introduction of solids for both mothers

and health professionals would also be beneficial in ensuring consistency and adherence to guides. Further studies on the link between obesity and introduction of solids should be explored. Translating the results of this study into policy and practice will be a challenge and further studies about this are needed.

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Knowledge and practices of nurses concerning intravenous potassium administration in a Turkish hospital

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ABSTRACT

Objective

Based on this literature review, it is clear that intravenous potassium is a potentially toxic electrolyte, which has been responsible for a large number of deaths in hospitals. In Turkey, research on intravenous potassium administration is limited in the available literature. In addition, clinical observations made by the researchers suggests there is knowledge and practice deficiencies among nurses related to potassium administration. Thus, this study aimed to determine how wide the knowledge and practice deficiencies among nurses was concerning intravenous potassium administration in a Turkish Hospital.

Design

This was a descriptive study.

Setting

This study was conducted in a university hospital in Turkey.

Subjects and Method

The sample of this study consisted of a total 105 nurses working in surgery clinics or surgical intensive care units of a university hospital, who volunteered to participate in the study. The questionnaire used in this study was developed by the researchers with the help of material obtained from the literature review. Questionnaires were distributed and collected to participants by researcher. In the calculation of knowledge and practice scores, every correct answer was assigned 1 point, while incorrect answers were assigned 0. Mean, percentage, ANOVA, the kruskal-wallis h test, the mann-whitney u test and pearson correlation were used for data analysis.

Results

The mean knowledge score of nurses on intravenous potassium administration was found to be 9.48 ± 3.21 , while the mean practice score was 10.85 ± 2.04 . These results suggest that the nurses' knowledge and practice scores were found to be relatively lower compared to 17 which is the highest scores of both knowledge and practice about intravenous potassium administration. It is also important to state that statistically significant and positive relationship was found ($r: 0.595$; $p < 0.05$). The majority of the nurses (61.9%) did not know all the elements of a correct potassium order. The differences in nurses' knowledge scores according to the type of hospital unit and training status on liquid electrolyte balance were found to be statistically significant ($p < 0.05$). Nurses with duration of employment of over 10 years were found to have higher knowledge scores than nurses with employment duration of below four years. This difference was found to be statistically significant ($p < 0.05$).

Conclusion

In light of the findings of this study it is recommended that nursing curriculum and in-service training programs in Turkey should address intravenous potassium administration more extensively and that protocols related to intravenous potassium administration be developed and implemented.

INTRODUCTION

Patient safety, which is one of the highest priority goals of patient treatment and care, is affected by various factors such as hospital environment, the complexity of the quality and the quantity of healthcare workforce, medical processes, technology, and team work. However, patients can be faced with various medical errors (Sezgin 2007). Many studies since 2004 indicate the rate of medical error faced by patients ranges from 5.7% to 12.2%. It is suggested that these errors extend the duration of hospital stay, cause permanent health problems in 5-14% of the patients, and result in death in 3-15.9% percent of cases (Michael et al 2009; Wong et al 2009; Aranaz-Andrés et al 2008; Zegers et al 2007; Herrera-Kiengelher et al 2005; Baker et al 2004).

In a report published by the Institute of Medicine in the United States of America (USA) in 2003, three out of 20 areas that were selected as top priority issues in the quality of health care services were about patient safety. These areas were medication (medication administration), hospital infections, and the health of the elderly (Institute of Medicine, 2003). Medication errors are a serious issue that can cause various illnesses, disabilities, and death. Studies show the frequency of medication errors is substantial (Valentin et al 2009; Prot et al 2005; Institute of Medicine 2003; Barker et al 2002). It is clear all hospitals should collect and report their medical errors individually as part of their quality assurance processes. However, it is very rare to find a hospital reporting its medical error. For this reason some national figures on medical errors in Turkey are used to show the importance of the topic. In Turkey, the most common reasons of medication errors are wrong medication (16%), wrong dose (41%), and wrong route of administration (16%) at physician orders (Minister of Health of the Republic of Turkey, 2012). Certain medications were found to be responsible for most deaths related to medication errors and were grouped under the category 'High-Risk Medications' (Cohen 2001). The medications in this group were insulin, intravenous anticoagulants (heparin), opioids, sodium chloride solutions with a concentration of above 0.9%, and intravenously administered potassium chloride and potassium phosphate among the medications most commonly cause side effects in patients (Cohen 2001; Hadaway 2000; Bates et al 1995).

Intravenous potassium administration is a high-risk practice with regard to patient safety and can cause ventricular tachycardia, ectopic beats and ventricular fibrillation if given incorrectly. Therefore, it is critical that all healthcare personnel, but especially nurses, be knowledgeable about the potential risks of intravenous potassium administration. In a study conducted with the aim of assessing the need for pharmacological knowledge of nurses, it was found nurses had limited pharmacological knowledge (King 2004). In another study conducted to determine the knowledge level of nurses about high-risk medications, it was found 75.4% did not have enough knowledge about the administration of high-risk medications, and 31.8% did not know that 15% potassium chloride solution should never be administered as intravenous bolus (Hsaio et al 2010). Deaths concerning administration errors of intravenous potassium are highly debated in case studies on the subject, since medications with similar-sounding names, shaping, colour of the ampoule etc can be confused with potassium (Moyen et al 2008; Wetherton 2003).

Research on medication administration errors including intravenous potassium by nurses in Turkey is limited in the available literature. Thus, this study was designed to identify the knowledge and practices of nurses concerning intravenous potassium administration. One of the main reasons for carrying out this study was to close this knowledge gap. In addition, the results of this study can help to develop a high risk medicines management protocol.

METHOD

This was a descriptive study that aims to examine the knowledge and practices of nurses concerning intravenous potassium administration. The study was conducted in surgery clinics and surgical intensive care units of

a university hospital in Turkey. These clinics and units did not have a set protocol regulating intravenous potassium administration. Physicians give written orders about potassium solutions and nurses prepare them accordingly. A total of 105 nurses working in these clinics and units who volunteered to take part in this research were included in the study. A questionnaire was prepared by the researchers using information from existing literature about the subject and was used to collect data. The questionnaire consisted of two parts. The questions under Part I collected data on demographic characteristics of the nurses. Part 2 included close-ended questions on intravenous potassium administration. The questions in the questionnaire were tested for structure and clarity by the researchers in a pilot study. No revisions to the questions were indicated.

Ethical approval by Local Ethics Committee was obtained prior to the study. Participants were instructed on how to fill in the questionnaire. A written consent was obtained from all participants. Participants who were willing to participate in the study were given the questionnaire. The forms were collected on the same day at the end of the shift. Filling in the questionnaire took approximately 20 minutes.

SPSS 15 (Statistical Package for the Social Sciences) was used to analyse the data. In the calculation of knowledge and practice scores, every correct answer was assigned 1 point, while incorrect answers were assigned 0. The maximum scores of both knowledge and practice that participants could achieve on the form were 17 while the minimum score was 0. Mean, percentage, ANOVA, the kruskal-wallis h-test, the mann-whitney u-test and pearson correlation were used for data analysis.

RESULTS

Of all participants, 41.9% were between 19–24 years of age, 90.5% were female, 65.7% held an undergraduate degree, 56.2% had been working as a nurse for less than five years, and 70.5% had been working in the same clinic for less five years. 7.7% of the participants were administering potassium almost every day. The rates of those who underwent training on fluid- electrolyte balance, on intravenous potassium administration, and on patient safety were 67.6%, 48.6%, and 66.7% respectively. 94.3% of the participants stated they kept a potassium ampoule for emergent situations in their clinics, and 81% indicated that solutions containing potassium were not prepared in pharmacies.

Table 1: Knowledge and Practice Scores of Nurses on Intravenous Potassium Administration (N: 105)

Knowledge and Practices	Mean Score $\pm$ SS	Minimum	Maximum
Knowledge	9.48 $\pm$ 3.21	0	15
Practice	10.85 $\pm$ 2.04	4	15

It was found 61.9% of the nurses in this study did not know all the elements of a correct potassium order. The mean knowledge score of the nurses on intravenous potassium administration was found to be 9.48 $\pm$ 3.21, while the mean practice score was 10.85 $\pm$ 2.04. These results suggest the nurses' knowledge and practice scores were found to be relatively lower compared to 17 which is the highest scores of both knowledge and practice about intravenous potassium administration. It is also important to state that statistically significant and positive relationship was found ($r: 0.595$; $p < 0.05$). In addition, the minimum and maximum knowledge scores of the nurses were 0 and 15, respectively while minimum and maximum practice scores of them were 4 and 15, respectively (table 1).

Of all participants, 98.1% stated the amount included in the potassium ampoule before administration should be checked; 97.1% stated that a tag on solutions containing potassium that reads "Contains Potassium" should be applied; 92.4% stated that the urine volume of the patients who received potassium chloride in their infusions should be observed; and 90.5% stated that the peripheral vein used for potassium administration

should be checked for irritation and inflammation. 98.1% the participants stated that potassium ampoules for emergent cases should be stored in clinics; 61.0% stated that they did not know whether a solution bottle containing potassium should be shaken before administration.

The majority of participants (98.1%) stated that they wrote “Contains Potassium” on solutions containing potassium; 97.1% stated that they checked the amount of potassium contained in the ampoule; 95.2% stated that they followed up on patients’ urine volume after potassium administration, 92.4% stated they checked the peripheral vein used for intravenous potassium administration for any possible irritations and inflammations.

The differences in the knowledge scores according to the type of clinic were found to be statistically significant ($p=0.007$ $p<0.05$). Participants working in otorhinolaryngology and plastic and reconstructive surgery clinics were found to have lower knowledge scores than those working in cardiovascular or brain surgery intensive care units ($p=0.003$ $p<0.05$). This significant difference could be attributed to the higher frequency of intravenous potassium administration in cardiovascular surgery clinics and intensive care units. The differences in knowledge scores according to training status on fluid-electrolyte balance and intravenous potassium administration were found to be statistically significant ($p=0.012$ $p<0.05$). Participants who underwent training were found to have a higher mean knowledge score than those who did not. This finding suggests education increases nurses’ level of knowledge about intravenous potassium. No statistically significant relationship was found between the mean knowledge scores of nurses and duration of employment as a nurse, duration of service in their current clinic, level of education, training status on patient safety, and willingness status to participate in a training program on the subject ($p> 0.05$).

Participants with a duration of employment over 10 years were found to have higher knowledge scores than nurses with duration of employment of below four years. This difference was found to be statistically significant ($p=0.030$ $p<0.05$). This finding suggests while participants might not possess sufficient knowledge about intravenous administration of potassium at graduation or in the first years following their graduation, they become more knowledgeable on the subject as they get more experienced over the course of their employment as a nurse. No statistically significant relation was observed between practice scores and duration of service in the current clinic, level of education, type of clinic, training status on fluid-electrolyte balance, intravenous potassium administration, or patient safety, and willingness status to participate in a training program on the subject ($p> 0.05$).

Table 2: The Relationship between the Knowledge and Practice Scores on Intravenous Potassium Administration (N:105)

Dimension	Dimension	N	R	P
Practice Score	Knowledge Score	105	0.595	0.000

A statistically significant and positive relationship (59.5%) was observed between the knowledge and practice scores of the nurses ($r=0.595$; $p<0.05$). The practice scores of nurses on intravenous potassium administration increased as their knowledge scores went up (table 2).

DISCUSSION

As the administration of medication requires the collaboration of a team that includes doctors, nurses and pharmacists. Every team member has their own specific responsibilities. More than half of the nurses in this study did not understand the requirements of a potassium order. It is crucial that nurses know about the proper form of medication order in so far as a knowledgeable nurse can warn the physician in case of an improper medication order. Literature shows that physician orders with missing information and those that are difficult to read and understand might cause errors in medication administration (Bohand et al 2009; Tubman et al, 2005; Aşti&Acaroğlu, 2000).

In our study, it was found that the big majority of the nurses did not know that undiluted potassium ampoules should not be stored in clinics. In addition, majority of the nurses stated that there were potassium ampoules in clinics, and more than half of them reported that potassium ampoules were kept in an unlockable medication cabinet. Potassium solutions might have serious side effects if not diluted or if applied too fast. Therefore, undiluted potassium ampoules should be available only in pharmacies or be securely locked in a cabinet in the clinic only if storing it in a pharmacy is not an available option (Hsaio et al 2010; Van De Vreede et al 2008; Cronish et al 2007; Wetherton 2003; Tubman et al 2005; NHS 2002; Cohen, 2001; Hadaway 2000; Davis 1995). In a study conducted by Lankshear et al (2005) it was found that undiluted potassium solutions were found in 42.0% of the clinics and that in 80% of these clinics potassium solutions were kept in a lockable medication cabinet. Tubman reports that undiluted solutions of potassium chloride are found in 59.4% of the emergency care departments and in 71.9% of the intensive care units according to a study conducted by the National Patient Safety Association (Tubman et al 2005). In this study these figures were higher than those found in the existing literature on the subject.

These findings have significant implications for practice. Currently, potassium ampoules remain available in clinics of most Turkish hospitals and, as long as this continues, the risk that another potentially fatal error will occur increases. In addition, some hospitals have introduced extra safety measures for storing potassium ampoules in specialty areas and, undiluted potassium solutions or potassium ampoules are found only in the hospital pharmacy and infusion of the required dilution is prepared in this pharmacy in some accredited hospitals. Lack of appropriate policies, procedures, and protocols can impact medication safety. National Patient Safety Agency recommends that ready-to-use diluted infusions should be used where possible and, if an infusion of the required dilution is not available, it should be prepared in the hospital pharmacy (Van De Vreede et al 2008).

This study found the majority of participants (76.2%) either did not know that these solutions should be prepared in pharmacies or had incorrect knowledge related to this issue. Moreover, a great many of the participants stated the potassium solutions in their clinics had not been prepared in a pharmacy. The findings of this study do not quite follow what is recommended in the existing literature on the subject. Undiluted potassium solutions should be diluted with a large quantity of intravenous solution and should not be administered as intramuscular or intravenous bolus (George et al 2010; Hillin and Hicks 2010; Tubman et al 2005). More than half of the participating nurses knew undiluted potassium solutions cannot be administered intravenously as bolus or push (68.6%), and the majority of participants (80.0%) stated they correctly administered undiluted potassium solutions. In a study conducted by Hsaio et al (2010) it was found that 31.8% of the participating nurses did not know they should never administer potassium chloride as intravenous bolus. The findings of that study are parallel to those of this study.

Nurses are most involved with the medication administration phase although they provide a vital function in detecting and preventing errors that occurred in the prescribing, transcribing and dispensing stages. Nurses could make medication errors because they do not have sufficient knowledge and practice about intravenous potassium administration and medication safety. These errors may cause fatalities and incidents. The investigators found that significant increases occur in the cost of hospitalisation because of increased length of stay, patient mortality and postdischarge disability (Van De Vreede et al 2008). Appropriate policies, procedures, and protocols about intravenous potassium administration do not exist in the hospital where this study was conducted and in many other hospitals in Turkey. Therefore, protocols related to prescribing, storage, preparation and administration of intravenous potassium should be developed and these should be added in nurse training programs as well as in service training in hospitals.

In conclusion, the findings of this study suggest that nurses' knowledge and practice scores on intravenous potassium administration were slightly above the medium-level. However, the health care personnel practicing intravenous potassium should have a high level of knowledge and practical skills because of the risks associated with administration error.

CONCLUSION

The results cannot be generalised to all hospitals because this study was conducted in only one hospital in Turkey. Despite this main limitation, the study yielded important evidence on nurses' knowledge and practices about intravenous potassium in Turkey. The researchers of this study suggest protocols related to intravenous potassium administration should be developed and enforced; that this issue should be presented in in-service training programs. In addition, a similar study can be conducted with a larger sample and using the method of observation.

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Nurses supporting life-partners conversations about end-of-life care wishes: a literature review for guidelines

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KEY WORDS

end-of-life, conversations, life- partners, nurses, palliative care

ABSTRACT

Setting

Nurses providing end-of-life care.

Objective

A literature review was conducted to establish what guidelines are available for nurses to encourage discussions between life-partners about end-of-life care wishes.

Subjects

Life-partners and nurses

Primary argument

This literature review located articles that addressed the impact terminal illness, culture and established communication patterns have on end-of-life discussions for the broad group of family members and carers. Articles generally presented the challenges doctors, nurses and other health care professionals face in speaking about end-of-life care wishes with patients, carers and family members. However, articles relating to conversations specifically between life-partners about end-of-life care wishes were not evident. This is surprising because frequently the life-partner is the primary care giver during the end-of-life care phase of a life limiting illness. Furthermore, literature indicates life-partners who are able to speak freely about most life issues adjust better to the challenges that events such as illness, may present to them as a couple.

Conclusion

By using the main themes identified within the literature review from discussions held by family members, nurses and health professionals it may be possible to develop guidelines for life-partners. The use of a guideline may assist nurses in encouraging life-partners to have conversations about end-of-life care wishes. This will not only acknowledge the uniqueness of the relationship between life-partners, but also contribute to providing holistic patient centred care for each couple.

INTRODUCTION

In Australia health facilities and organisations have increasingly encouraged the general public to engage in open conversations about end-of-life care wishes (Advance Care Planning Australia 2014). In particular through the Respecting Patient Choices Program, an initiative of the Palliative Care Branch of the Australian Department of Health and Ageing at Austin Health in Melbourne, Victoria (Advance Care Planning Australia 2014). This program has since been widely adopted by many health care facilities throughout Australia. Such programs have been pertinent since authors such as Browning (2008) identified one of nurses' greatest frustrations in providing end-of-life care occurs when family caregivers are unsure of their loved one's wishes and are therefore indecisive when consulted. Stephenson (2010) explains that end-of-life care is provided for a patient whose disease process has progressed, the health of the patient has declined and it is evident that the patient is in the final stages of the illness prior to death. Whilst the beginning of this stage of illness can be easily identified for some patients, for others subtle changes may occur over an extended period of time particularly if the disease process is of a chronic nature (O'Connor et al 2012). Advance Care Planning Australia (2014) describes that an Advance Care Directive as:

'a written document that records the medical treatment wishes of a person, which can then be used if a person is unable to speak for themselves due to illness or injury. The document may also appoint a substitute decision maker and include non-medical wishes for end-of-life such as spiritual care.'

It is estimated that up to 50% of Australians will not be able to make or express their own decisions when they are near death (Advance Care Planning Australia 2014). The appointed proxy needs to be the person who has the best interests of the patient foremost in mind and who is willing to advocate on their behalf (Advance Care Planning Australia 2014). Where a life-partner is present it is likely that they will be the appointed proxy. Literature related to life-partners conversations about end-of-life issues appears to be scarce. Hence, the search was widened to explore what has been published about families and health care professionals' conversations. Searches were conducted using the Medline, Pubmed, CINAHL and OvidSP databases. A combination of search words including 'communication', 'death', 'family', 'advanced directives' and 'terminal' were used. Collectively these searches yielded 580 articles. The parameters guiding all searches included: full text, peer reviewed articles in the English language published between 2003 and 2012. Following the reading of abstracts, 51 articles were retained. After reading of the full text, 28 articles were excluded from the review as they did not specifically relate to conversations about end-of-life care wishes. Subsequently it was identified that one article was common from three databases in the final selection of 23 articles, this redundancy reduced the sample to 21 articles. The articles excluded from the final selection did not make any direct connection to discussions between family members, health professionals and the patient about end-of-life care wishes. For example, articles relating to communication between health professionals only, articles exploring end-of-life care and palliative care in general terms only, and studies and discussions in the use of Advance Care Directives with no reference to communication in specific terms were excluded from the enquiry. Four different themes were identified from the selected articles. These were: the impact of terminal illness on family communication; the impact of culture; established communication patterns within the family; and the challenges encountered in communicating with health care providers about end-of-life care issues. This paper goes on to explain how these themes may be applied in developing guidelines for life-partners to encourage conversations about end-of-life issues.

DISCUSSION

Conversations between life-partners

Lyons (1978) explores the typical functioning structures of conversation within a marital relationship, recording how changes occur in the developing relationship and through a couple's life journey. This work indicates that communication between life partners does not remain static. Instead, it is an evolving mechanism within the relationship influenced by life events and other relationships (Lyons 1978). One example of such an event may be the occurrence of a terminal illness. This unplanned interruption in a couple's life plans may allow little time for emotional and psychological adjustment. Dakof and Liddle (1990) established that life-partners who were able to talk freely with each other about their illness were more likely to adapt to the changes that would occur than couples who did not converse openly. In a study Sanford (2003) conducted with 37 married couples, 24 different topics were identified as being difficult topics to converse about within the relationship. It is interesting that this list did not include conversations about end-of-life. An implication of this could be that in general, life-partners are concerned with living everyday life rather than considering the need to contemplate and communicate about the possibility of separation through death. This highlights the challenge for nurses and other health care professionals in supporting life-partners, when they are dealing with the reality of facing a life limiting illness.

The demands of care giving

Melin-Johansson et al (2012) acknowledge that the primary care giver is often a close relative of the patient. In general, if care is being provided in the home this caregiver is consumed with the tasks of caring for their loved one, taking on roles not previously filled within the relationship for example navigating through a foreign health care system and dealing with their own physical and existential needs (Melin-Johansson et al 2012). The pressure of attending to such pressing practicalities reduces the opportunities for conversations about end-of-life care wishes between the patient and carer. If an Advance Care Directive is not completed nurses may be required to care for patients without any clear direction about the patients' wishes about their end-of-life care during the final stages of an illness. A dilemma may occur in trying to encourage these conversations at a time when the life-partner as the primary care giver is exhausted and not willing or knowing how to initiate such difficult discussions. Kanacki et al (2012) supports this, reporting that research in both pre-and-post death studies of married couples where one partner is primary carer found that the experience was profoundly life changing. In addition many of the participants reported these experiences were often too painful and distressing to talk about freely (Kanacki et al 2012).

The influence of family communication patterns

Many commentators agree that open communication between family members has positive outcomes in providing patient-centred care, which assists in addressing the end-of-life care wishes of the patient (Wittenberg-Lyles et al 2012; Del Gaudio et al 2011; Browning 2008; Gauthier 2008; Pautex et al 2008; Kahana et al 2004; McDonald et al 2003). However, these articles fail to provide insight into how life-partners can initiate difficult conversations with their loved one about end-of-life care wishes. This was confirmed by McDonald et al (2003) in a study of 119 participants including health care professionals and family members. Many subjects were unable to provide suggestions on how to improve open conversations with families. Benkel et al (2012), found that ultimately, the patient and caregiver may have different needs at different times, making conversation around the impending death difficult. Gardner and Krama (2009) reported a number of patients wished to speak more about their approaching death but refrained from doing so with their life-partner because they thought it would be too upsetting. Reluctance to upset one's partner might explain the finding of Kahana et al (2004), where single older adults were more likely to have discussions with other family members than were married older couples. Moorman (2011) explains this further, recording some older patients felt their spouse

understood their wishes well and therefore, in-depth conversations were not needed. In contrast, following the death of their loved one, a number of spouses expressed some doubts to whether their understanding of their loved one's wishes had been correct (Moorman 2011). Benkel et al (2012) suggest conversations are more likely to focus on the practical issues such as, treatment, care options, and funeral arrangements when loved ones are faced with the diagnosis of a life limiting disease. Braun et al (2006) provide results of a study in which a group of carers were provided with a series of five educational booklets to help improve their understanding on topics including: Advance Care Planning; how to plan for the funeral; what to do at the time of death; saying goodbye; and the bereavement journey. It was found that caregivers who were actively engaged in providing care for a loved-one at home were more likely to read the booklet relating to preparing to say goodbye which included information about common symptoms experienced by a patient during the end-of-life phase of an illness. This booklet also provided suggestions on how to make their dying loved one more comfortable. Topics included in this section may provide a valuable framework for nurses and other health professionals in directing life-partners' conversations about specific end-of-life care wishes.

Links between communication, family stress and terminal illness

Some articles described the stresses the family caregivers experience when faced with caring for a loved one with a terminal illness. Del Gaudio et al (2011) explain many families make the adjustment of living with a life limiting illness well despite many difficulties, while others find this occurrence exceptionally stressful. For example, families with a history of conflict can experience an exacerbation of family discord when a life-threatening illness occurs (Del Gaudio et al 2011). Erlen (2005) highlighted that while Advance Care Directives are designed to protect the patient's autonomy in decision-making, the family caregiver and others may not always agree with the expressed wishes of the patient. In some cases the family may try to influence the patient's wishes, however,

'in some states, such as Queensland, South Australia and the Northern Territory, an Advance Care Directive is a legally binding document. In other states Advance Care Directives may still be valid, and therefore persuasive to some extent, under common law (Harris 2008).

All states and territories in Australia have an Office of Public Advocate, or a similar independent statutory body whose role is to provide support in the event of an Advance Care Directive being disputed (Office of Public Advocate of South Australia 2013; Office of Public Advocate, Victoria)

The family caregiver may also experience the need for self-protection as well as feeling compelled to restore relationships that have not been harmonious in the past (Erlen 2005). These authors suggest such stress can prevent conversations within the family around the issues of the patient's end-of-life care wishes. However they do not discuss specific stressors that life-partners may experience within their relationship related to communicating about these challenging topics.

Impact of culture on communication between life partners

Blank (2011) explains that culture defines the way in which communications occurs around impending death, the meaning of declining health and any related distress. In broad terms, culture is a "constellation of shared meanings, values, rituals and modes of interacting with others that determines how people view and make sense of the world" (Kraukauer et al 2002). Hinders (2012), Johnstone and Kanitsaki (2009), Ko and Lee (2009) all agree that in some cultures it is neither acceptable nor appropriate to discuss matters related to dying, and therefore, it may be unreasonable for the family to discuss such topics with the patient. These articles shed no light upon the ways in which cultural norms may constrict communication between life partners in specific terms and provides no specific clues for nurses and other health professionals in knowing if or how to approach or encourage cultural appropriate discussions between life-partners.

Communication between health care professionals the patient and family

Goldsmith et al (2011) acknowledge acquiring the skills to communicate sensitively with family and patients around the difficult topic of dying is challenging for health professionals. A number of articles pertaining to open and honest communication between the patient, family and health professionals were reviewed (Sessanna and Jezewski 2008; Ingalls 2007; Tuttas 2002). Ingalls provides an overview of the holistic approach health care professionals can adopt to foster effective end-of-life discussions with the patient through exercising empathy, being present, and applying good self-care. Tuttas (2002) suggests that in particular, nurses need education around how to initiate conversations with patients. Topics for such education would include being in tune with when, and how, the patient may wish to speak about dying. It is possible that some of these strategies, focused as they are upon the health professional rather than the patient, may be useful when it comes to fostering communication between the patient and life-partner. In their systematic review of Advance Care Directive decision making, Sessanna and Jezewski (2008) identified that the majority of older adults were comfortable in discussing end-of-life care wishes with nurses and other health care providers. However nurses and health professionals were less likely to have these conversations with the older person yet no reason was reported for this not occurring (Sessanna and Jezewski 2008). Hinders (2012) suggests that some medical staff do not feel comfortable speaking about the impending death with the family caregiver, patient and significant others, resulting in these conversations not always occurring. This may also be the case for some nursing staff, despite a myriad of information pamphlets and brochures being widely available from many organisations in Australia. Again, these articles primarily focus on communication between the health professionals and family members, the care giver and health professionals and the patient and health professionals, rather than specifically between the patient and their life-partner.

As demonstrated there is a need for guidelines to be developed specifically for life-partners. This guide could firstly explain what an Advance Care Directive is, what is meant by the term end-of-life and the importance of life-partners' having an Advance Care Directive in place. The document could then suggest ways in which the couple can discuss end-of-life care wishes together.

RECOMMENDATIONS

Evidence suggests topics within guidelines for life-partners could include answers to questions such as:

- What is end-of- life?
- What is an Advanced Care Directive?
- Why is having an Advance Care Directive in place important?
- Why are conversations about end-of-life care wishes important for life-partners?
- When and where life-partners can talk together about these important topics?
- How often these conversations could occur?
- How to start conversations about end-of-life care?
- How to seek support from family to allow private time for these discussions to occur?

In addition, a list of potential topics for discussion between life-partners could be provided. These may include:

- wishes relating to preferred site of care;
- discuss any competing demands that the life-partner as the primary caregiver may have;
- support services that are available for home based care and what services are acceptable for both life-partners;

- common symptoms of distress that may occur at end-of-life and how to manage these;
- understanding normal responses to loss of health;
- spiritual needs and wishes;
- financial and legal arrangements and wishes; and
- funeral arrangements.

CONCLUSION

With the emergence of Advance Care Directives and other documents encouraging patients, carers and family members to discuss end-of-life care wishes, nurses and health care professionals are aspiring to provide holistic patient-centred care. This literature review has identified that whilst many guidelines are available to the public relating to end-of-life care there is a gap in information being provided specifically for life-partners. This review has demonstrated that by drawing on broader approaches and challenges for other carers a set of guidelines could be developed for life-partners to assist them in discussing the difficult topics relating to the end-of-life care wishes. In providing customised guidelines the unique relationship that exists between life-partners is acknowledged. Nurses and other health care workers providing end-of-life care are well positioned to foster these conversations between life-partners by utilising such guidelines.

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Enhancing the pre-admission process for a patient with breast cancer

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KEY WORDS

family, women with breast cancer, pre-admission, nurse interventions and assessments

ABSTRACT

Objective

The purpose of this paper is to detail the development and implementation of a patient focused pre-admission process, part of which is the check list identified within this paper and comprising the main point of the paper because it is based on patient and publication evidence for women with breast cancer. Women with breast cancer together with health professionals had specific input into the designed pre-admission clinic at a tertiary care hospital. A pre-admission clinic had been established some time ago however, women who attended this clinic deemed it most unsatisfactory for their needs. Results from an evaluation provided information that indicated women with breast cancer required an improved pre-admission process that was aligned to their needs and those of the Breast Cancer Multidisciplinary Team (BCMT).

Setting

A large tertiary care hospital in Sydney, New South Wales, Australia.

Subjects

Fifty (50) women of mixed cultures. Men can be diagnosed with breast cancer however, throughout this project, women were the only patients presenting for surgery.

Primary Argument

Even though remarkable progress has been made in breast cancer survival through medical treatment, women, newly diagnosed with breast cancer are frequently concerned, stressed and anxious as they attempt to come to terms with the news on their cancer diagnosis. Beside the initial medical consultation that informs them on their diagnosis, the women's first major interaction with the healthcare system commences when they attend the pre-admission clinic as a pre-admitted person. Therefore it is appropriate to examine current nursing practices during the pre-admission phase of a Tertiary Hospital so women, newly diagnosed with breast cancer are able to receive appropriate and supportive care. The goal of health professionals is to respect each patient and give voice to them by developing a specifically designed pre-admission process. It is expected any pre-admission process will utilise available evidence and include consultation with the Breast Cancer Multidisciplinary Team (BCMT). Thus the project commenced by identifying the needs of women with breast cancer in consultation with the BCMT, including nurses, physiotherapists, doctors and social workers. This evidence based approach to best practice in the pre-admission process and clinic has not been attempted previously for this cohort of patients.

Conclusion

Improving the pre-admission process of patients encourages analysis of the evidence that is appropriate for this cohort and nursing practices. In addition, it offered time to ensure applicability of the pre-admission process and clinic to the lives of the women concerned. During this project opportunities arose for reflection on the journey women follow after their diagnosis and the involvement of the BCMT. Moreover, this process encouraged examination of the most appropriate allocation and use of resources within the context of the pre-admission process and clinic, surgery, and discharge through to home follow up. This paper maps some of the adopted process, the collected data and briefly summarises resources utilised in relation to the pre-admission process.

BACKGROUND

According to the Australian Institute of Health and Welfare (2012) there were 14,560 persons diagnosed with breast cancer in 2012, with 2,940 deaths resulting from breast cancer. Those persons diagnosed early had an 89% chance of survival in a five year period compared to the general population. The risk factors for breast cancer continue to be, obesity and physical inactivity, family history and genetic susceptibility, diet, alcohol consumption, reproductive and hormonal factors, radiation and ageing (Australian Institute of Health and Welfare 2012). Therefore, the situation for women's life expectancy with early diagnosis of breast cancer has improved. However, the women's needs are substantial in view of the reality of their situation and the impact upon their lives and those of the family following diagnosis.

Following a diagnosis of breast cancer, many women experience serious psychological distress; if not addressed early in the process, can adversely affect care and outcomes (Fox et al 2013). Moreover, the perception and uncertainty about the diagnosis may be reduced at the completion of treatment (or its recurrence), creating even greater concerns about the effort to resume normal life. Family members become affected as well, mostly due to disruption within the family unit. In facing these challenges, women seek new strategies to live with the disease (Tritter and Calnan 2002), which manages short and long term psychosocial aspects of the diagnosis, and the many consequences (Eley and Rogers-Clark 2012). These include potential treatments, such as chemo-therapy and/or radiation therapy and concern about the cancers recurrence, intervention and treatment can impact on many aspects of life and living with family. An editorial by Saeki (2013), from which the question is asked – “Do we ask? Do we listen?” where this author laments on the infrequency of speaking with patients, of asking them questions about their care and wishes. Today nurses must embrace evidence that assists them to understand the array of personal meaning contexts that influence patient values and therefore patient decisions, given the situation they find themselves in and the context (Grace and Powers 2009).

Studies about the nurse-doctor contribution suggest that women, in particular are more satisfied with nursing care (Corner 2002). Nurses tend to demonstrate this through good communication – which has long been recognised for achieving immediate goals and contributing to the patient's wellbeing and recovery (Major and Holmes 2008). Pearce (1941 n p.2) stated, “...a nurse with the gift of making her patients feel at home and free from fear, inspires confidence and provides an atmosphere of peace, serenity and security which is so important an adjunct to the relaxation of mind and body necessary for recovery from disease”

Patients and families are not expecting a diagnosis of breast cancer as illness is not present in the same way as other disease processes, for example heart disease, diabetes or stroke. Shock and concern becomes an inherent part of the journey, particularly when the diagnosis of cancer involves ...chronic illness and the potential to produce pain, and disabling of physical activity (Tritter and Calnan 2002). This includes fear of the unknown, which must be confronted on a daily basis. As a consequence of these concerns, a patient focused, pre-admission process in a tertiary level hospital with expert nurses must involve the family. Nurses understand both patient and family by meeting the women in the pre-admission clinic, and then following each one (Bergman et al 2013) towards a state of wellness. In fact, Ke et al (2012) and Eley and Rogers-Clark (2012) acknowledge the importance of funding programs in a centralised system of teaching hospitals due to the availability of specialists services in most Australian cities. This saves money and contributes to whole of family care. Expert nurses also save time because they can focus on the central issue(s), they understand patient concerns and are able to inform patients and families in a more holistic way – thereby integrating psychosocial, physical and welfare needs (Cioffi 2012). In addition, communication skills tend to prevent critical human errors (Fryer 2012) that can be fatal.

Despite a woman's age or the family support available, a diagnosis of cancer of the breast affects each person in different ways: women are unable to acknowledge how it can be handled in their busy life. Most individuals express concern about their future, feeling anxious about family needs, the general lack of knowledge about breast cancer and the pre and post-operative interventions most are required to participate in for recovery (Boehmke 2004). Newspapers and television historically have mostly told stories on the bad outcomes of women with breast cancer. Given this diagnosis, women need support from BCMT of which the relevant breast care nurse is one experienced member (Eley and Rogers-Clark 2012; Cahill et al 2010; Cruickshank et al 2007). As previously stated, concerns experienced by these women with breast cancer require effective communication that is comprehensive, not difficult to understand or manage, an environment that is safe and free from errors (Fryer 2012), timely yet exhibiting empathy and understanding (Morse et al 1992). In fact the pre-admission process for newly diagnosed women with breast cancer is the cornerstone for all future interactions, interventions and processes within the continuum of care, both within hospital and home care. It should reflect a pathway of evidence based practice where nurses recognise human responses to health situations in order to provide individualised, holistic care (Grace and Powers 2009). Given the introduction of short stay surgical interventions, women with breast cancer do not remain in hospital for a lengthy time period. Individuals and their family members must learn to cope at home, managing drains, wounds and complex issues related to the diagnosis and subsequent therapies. Thus surgery for breast cancer can no longer be in isolation to family members; collaborative partnerships have to develop between patients, families, hospitals and community nursing members (Martin et al 2013).

Aim of the Project

The primary purpose of the project was to implement a pre-admission process based on the needs of women with breast cancer, in conjunction with the BCMT and incorporate relevant evidence and research findings within a tertiary hospital environment. A secondary aim sought to improve the immediate level of support to the women concerned. Moreover, the development and implementation of patient focused changes required leadership to create and share an organisational vision for staff motivation, supportive collaboration and improved practice (Walker et al 2011). Family members of the women concerned who had previously not been recognised had to be included, and a process facilitated that sought to improve support for children thus decreased the mothers concern following diagnosis. For this project, the continuum of care is defined as commencing with the pre-admission program and continuing through surgery, clinical ward and home care follow up. For this project, the primary focus was on the pre-admission process.

Methods

Before this program was implemented, there was a considerable waste of resources, staff rarely consulted with each other, errors occurred, some patient education was disseminated to the women but not enough to meet their needs, nor those of the family, and more importantly, family members were excluded, there were duplications in paperwork and diagnostic testing – each contributing to a very expensive process. There was little policy about the introduction of evidence based practice, an issue of great importance to improved patient care (Jeffs et al 2013). The idea of partnership between family, the patient and hospital staff had not been nurtured, thus many family members complained of feeling ignored, even though the primary patient had sought inclusion of family. Morris and Thomas (2002) and Bell and Wright (2011) asserted that the family should not be ignored during the pre-admission process. A collaborative effort should involve patients, partners in particular, and the respective members from the BCMT. In a focus group held prior to the commencement of this project, women with breast cancer and family members had expressed the lack of personalised attention experienced in the pre-admission process.

The BCMT agreed to use evidence from research findings described by Osborne and Gardner (2010 p.46),

who advocate use of the best practice evidence, in conjunction with clinical experience, and knowledge of each patient: in this way, these issues were included through all phases of the project, commencing with the pre-admission phase. This was combined with concepts from Family Systems Nursing (Bell and Wright 2011) who found that nursing practices are partnerships between the nurse and the patient and/or family members. Its implementation is the theoretical family assessment and intervention issues offered within a therapeutic conversation.

Despite the fact the initial project was funded by an external agency, the requirements of the hospital executive and BCMT had to be met in a timely and cost effective way so the long term goal of sustaining this program could be accomplished. The hospital executive viewed this project as an innovative example of nursing practice to assist new patients with their journey on the cancer care continuum. The rationale behind future improvements aimed to enable the patient to find support early in their hospital experience, thereby preventing any adverse experiences. It is asserted that if nurses are to develop patient focused care for patients and their families, it is essential to identify individual needs early and harmonise these with what is required and expected by BCMT members. This will likely lead to satisfaction with the governance of various interventions, including environment that fosters patient centred care, reflective nursing practices, increased flexibility amongst staff and enhanced co-operation amongst all members of the BCMT. The goal is to improve clinical practice outcomes for each patient, without incurring additional costs.

The project details on the program together with the focus group questions were submitted to the Human Ethics Committee and received consent without any changes. A convenience sample of 50 women, previously diagnosed with breast cancer and their family members were asked to volunteer and consent to participate in the development of the pre-admission process. From this group two focus groups (twenty five participants in each group) were facilitated by an external person to remove bias.

Data collection

The foundation data collected from the initial focus group is not reported here other than to infer the women were most unsatisfied with the pre-admission process for their admission into hospital. The aim for the data collection process was to keep it simple and use only several main questions. The number of women participants and family was n=50. The main questions posed to these women participants were:

Q.1. If you were designing a pre-admission process for women with breast cancer what would you include?

Q.2. As a family member what would you like to see included on a purpose designed pre-admission program?

The data collected was recorded by an external person and transcribed by the project co-ordinator. Two external experts analysed and categorised the results into a list of items suitable for the development of a check list on pre-admission process. An example checklist was developed and used by ten randomly selected women participants to refine and design a meaningful list appropriate for women with breast cancer being admitted through a tertiary hospital.

Data results and analysis

A randomly selected group of ten women participants (not previously used) and their family members checked and verified the analysed data and ordered the itemisation of priority elements, that is, some items needed to come before other items. From this information, the project co-ordinator categorised the list into four sections within the proposed pre-admission checklist:-

a) Personal Section – this section contained each of the elements necessary for hospital records;

b) Patient Education – this contained information that was essential in adequately preparing the patient for medical diagnostic tests, surgery and post-operative care to improve the outcome;

c) Pre-admission work-up – usually was carried out by the anaesthetists, and

d) Follow up – carried out by the breast care nurse and included organising referrals, continuing patient education, advocating for patients at BCMT meetings, ensuring there were no complications.

This tentative list was circulated to the members of the BCMT who were asked to mark items they wished to either retain or discard on the final checklist. Members of the BCMT stipulated the checklist had to be accessible, flexible, adaptive to individual needs, and user-friendly for experienced registered nurses with varying skills to use it as a template to trigger items to address with each patient. In addition, the BCMT wanted the pre-admission information to become an integral part of related paper work for each patient, including all suitable development into computerised documentation. This would enable portability and continuity of information from one health professional to another, whilst at the same time, prevent duplication or loss of details, volunteered by patients and their family. It also fostered holistic family care. The main results from the focus group data analysis is reflected in the checklist below.

Pre-admission – Women/men with breast cancer and family

A) Personal section

Patients partners and family members are encouraged to attend	☐
Set the scene by being warm, friendly but professional interactions. Commence communication by asking the person concerned to tell her/his story	☐
Assess patient's knowledge and understanding about future surgery	☐
Identify feelings and views and if possible, develop and empower each person. Make each interaction patient focused	☐
Encourage each person to talk about previous experience with health care	☐
Encourage self-appraisal of health	☐
Identify each persons' coping ability in previous stressful events	☐
Assess for stress/anxiety (NB and OCC questionnaire) – depending on results –refer	☐
Elimination, bowels habits/continence	☐
If person concerned is having a mastectomy, discuss prosthesis and/or plastic surgery (this is a very sensitive area and may not be appropriately addressed here but later)	☐

B) Patient education

Multidisciplinary Team discussion and purpose	☐
Diet, stress, fatigue, balancing life and body image	☐
Pre-operative preparation – deep breathing, fluid intake and exercise	☐
Hygiene factors, liquid anti-bacterial soap	☐
Post-operative showering and management of drains	☐
Process and procedure of in-hospital journey	☐
Anaesthetists and anaesthetic process	☐
Pain control and management	☐
Recovery and wards	☐
Drains and sutures/staples	☐
Outline normal post-operative trajectory over 1,2,3 days	☐
Deep breathing and leg exercises	☐

Discuss ward, hierarchy of staff, language used in health care, future plans	☐
Family, support and visiting	☐
Identify high risk (young women, women with children etc and refer to appropriate resource for care)	☐
Physical exercise and activity within ward	☐
Importance of fluid intake twenty four hours prior to anaesthetic	☐

C) Medical pre-admission work up

Blood biochemistry and pathology	☐
ECG – if ordered	☐
Chest x-ray if ordered	☐
Medical assessment and admission documentation, including assessment by anaesthetist	☐

D) Follow up

Referrals –social worker, clinical psychologist, physiotherapist, cancer support	☐
Discharge planning	☐
Identify who is at home and link patient into home care or support from community nurses	☐
Visit to ward area and explain	☐
RN or breast care nurse follow up at home	☐
Telephone call and visit to person at home	☐

Evaluation of above checklist and pre-admission process

A focus group follow up was used to collect data from ten women patients who in the previous two weeks had breast surgery. Qualitative data was collected that indicated the checklist met their needs. To ensure patient confidentiality and preserve anonymous responses, patients and family members were designated a number by the clerical staff in Hospital Admissions. The members of the BCMT were also asked about their use of the pre-admission data and documentation and feedback from their patients. There was a positive response with many stating the planned and developed pre-admission checklist met each of their needs.

Conclusion

This was a timely, yet important step in the development of the first phase in a patient-focused process. It advocates for patient and family focused care and follows what Tritter and Calnan (2002) recommend, as the incorporation of experiences of patients, those that care for patients, as well as those who provide treatment and support. Cancer and the patient experience, despite having aspects in common with other chronic diseases, is distinctive (Tritter and Calnan 2002). With growing complexity associated with health care, health professionals are advised to reflect and examine their views on whether they and the service with whom they work, is meeting the needs of individual patients and families. In addition, there is a growing recognition that the carers and support family- members who frequently continue the care of patients after discharge, require information (Morris and Thomas 2002) and education. To remain contemporary, current and dynamic, health care professionals and their service organisations need to review, adapt and even modify practices to include best practice of the day for patients, families and carers. Safe practice is best practice for patients. Edozien (2013) postulates that safety for patients and families is a key aspect of healthcare delivery, and hospitals are obliged to have robust systems in place to continually monitor and improve safety of care for patients. With resource limitations, so often there is little time or money to carry out a full circle

of a patient's journey however, pressures from consumers is becoming an ever increasingly real requirement and nurses are ideally equipped to carry out this vital partnership with patients.

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A nurses' guide to the critical reading of research

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research critiquing, research methodology, evidence based practice (EBP).

ABSTRACT

Objective

A sound theoretical foundation to guide practice is enhanced by the ability of nurses to evaluate and implement research. This article provides a structured route to questioning the methodology of nursing research as well as aiding the construction of nursing research.

Primary Argument

It is common for students to wonder about the relevance of research (Wright-St Clair and et al 2014). Gaining a degree in the health sector requires the nurse to be familiar with research in a way that informs practice (Wright-St Clair et al 2014). Nurses may benefit from a structured approach that helps them understand the sequence of the text and the subsequent value of a research paper (Moxham 2012).

Conclusion

A framework is provided within this article to assist in the analysis of a research paper in a systematic, logical order. The questions presented in the framework may lead the nurse to conclusions about the strengths and weaknesses of research methods presented in a research article. The framework does not intend to separate quantitative or qualitative paradigms but to assist the nurse in making broad observations about the nature of the research.

INTRODUCTION

There is an increased emphasis on evidence-based practice (EBP) to substantiate clinical decision-making (Joanna Briggs Institute 2014). EBP is defined as the conscientious integration of best research evidence with clinical expertise, patient values and needs in the delivery of high-quality, cost effective health care (Wright-St Clair et al 2014; Burns and Grove 2009, p.17). This substantiation, or evidence, can arise from tradition, authority, experience, trial and error, logic or reason or importantly by nursing research (Urden et al 2014, p.3; Moxham 2012). A fundamental goal of nursing research is to improve nursing care and outcomes by basing care on sound scientific evidence (Elliott et al 2012, p.11). Knowledge gained from adverse events should be used to further improve patient outcomes (Australian Commission on Safety and Quality in Health Care 2014; The Cochrane Collaboration, 2014; Australian Nursing Federation 2009).

The Nursing and Midwifery Board of Australia (2012) requires a registered nurse or registered midwife to maintain their professional knowledge and competence by delivering care based on current evidence, best practice and, where applicable and available, validated research. Such an objective can be achieved if nurses and midwives understand the research process and demonstrate an ability to retrieve and critically evaluate research findings (Wright-St Clair et al 2014; Moxham 2012). This is strongly reinforced by the Nursing and Midwifery Board of Australia (2012) who state nurses have a responsibility to whom they provide care, society and each other to provide safe, quality and competent nursing care. The importance of understanding, critically evaluating and applying research becomes vital when so much rests on professional ability and accountability (Nursing and Midwifery Board of Australia, 2012). Evidence and research are threaded through practice, professional work and study in the health sciences (Bradshaw 2012, p.15; Burns and Grove 2009, p.17). This paper provides a simple structured process to assist the nurse in evaluating research papers.

CRITIQUING RESEARCH

Critiquing is defined as reading and examining the strengths and limitations of a published study (Jirojwong et al 2011, p.396). Similarly, critical appraisal is a term used to assess outcomes for evidence of a research study's effectiveness (Burns and Grove, 2011; Jirojwong et al 2011, p.396). Nurses need to look for the merits and demerits of the methods used as well as the applicability to the health care setting (Wright-St Clair et al 2014).

Research Methodology:

A research report should contain a carefully and concisely worded problem statement identifying key variables (Polit and Hungler 2013). Research is often categorised as qualitative or quantitative, the former concentrating on words expressed by people in order to determine the reality of practice, whereas the latter tends to emphasise the use of numbers. Quantitative approaches to data collection and analysis are precise and systematic (Burns and Grove 2009, p.45) whereas qualitative research means any kind of research that produces findings not arrived at by means of statistical procedures or other methods of quantification (Burns and Grove 2009). A quantitative approach may be chosen because the researcher wishes to collect information in a numerical form as the results will be based on rigour, objectivity and control (Polit and Hungler 2013; Burns and Grove 2011). Qualitative research allows the researcher to study things in their natural surroundings and attempt to interpret, or make sense of, phenomena (Burns and Grove 2009) which is subjective in nature (McNaughton 2014) and includes the analysis of themes (Jirojwong et al 2014).

Mixed method research is a combination of quantitative and qualitative approaches (Borbasi and Jackson 2012, p.148; Jirojwong et al 2011, p.166). Complex concepts of interest in nursing may require both approaches to sufficiently study the phenomena. Examples of different data collection methods might include

questionnaires, the use of physiological instruments to measure patient responses, as well as observation techniques to provide a more rounded picture of the concept under study (Burns and Grove 2009). The combined approaches are known as triangulation (Polit and Hungler, 2013; Burns and Grove 2009, p.30).

RESEARCH CRITIQUE FRAMEWORK

Title

The title should not be long and complicated and should reflect what the research is about. Quantitative titles are usually straightforward whereas qualitative research titles may be expressed in metaphor or be more artistic (Borbasi and Jackson 2012).

Author

The author's brief biographies may be important sources of information about academic degrees, certification, position and place of employment, from which clinical and research expertise can sometimes be discerned (Nieswiadomy, 2012).

Date

Research papers can be significantly delayed before publication. It is important to determine whether the paper has been developed from a recent piece of work in order to assess its relevance to inform current practice (Polit and Hungler 2013).

Journal

Members of the editorial panel or board may represent a combination of academic research and practice and may have either national or international representation. A peer-reviewed, or refereed, journal is one where manuscripts are evaluated by subject experts chosen by the journal's editorial staff (Nieswiadomy 2012).

Abstract/Summary

An abstract or summary should clearly outline the problem or purpose, the hypothesis or research question(s), aims and objectives of the study (Polit and Hungler 2013; Nieswiadomy 2012). It should also cite the methods, which may include either a qualitative or quantitative approach, or a combination of both, to collect the data, the results, conclusions and recommendations for practice (Nieswiadomy 2012). Abstract length is usually less than 200 words (Borbasi and Jackson 2012, p.178).

Identifying the problem

The problem should clearly describe what will be studied (Nieswiadomy 2012). In order to evaluate the value of the research it is important for the hypothesis, aims and/or objectives to be clearly and unambiguously stated. Ideally the topic is narrowed down to a specific one sentence statement of the problem (Nieswiadomy 2012). A useful strategy for formulating EBP question is the acronym PICO/s (patient, population or problem, intervention or interest, comparison, outcome and study design) (Hoffmann et al 2013, p.22; Burns and Grove 2009, p.474).

Literature Search

The literature review is generally in the introductory section (Polit and Hungler 2013). Reference to original sources is important as information can be taken out of context and used inappropriately therefore an abundance of secondary sources should be viewed with caution (Polit and Hungler 2013; Nieswiadomy 2012). The purpose of the literature review is to discuss what is known, identify gaps in knowledge, establish the significance of the study and situate the study within the current body of knowledge (Hoffmann et al 2013; Polit and Hungler 2013; Burns and Grove 2009).

The researcher should critically appraise and use the literature to inform their thinking and methodology (Polit and Hungler 2013). Journals often place strict limits on word length so check superficiality is not the result of editorial demand (Nieswiadomy 2012). The search should consider how the major variables were explored previously by critiquing the strengths and limitations of the methods used eg. design, sample and instrument (Burns and Grove 2009). Previous methods should be appraised to assess suitability or modification for the current research. In short articles it is unreasonable to expect an exhaustive list of references however they should be relevant and current (Polit and Hungler 2013). Alternately, there may be little literature available.

METHODOLOGY

Designs

There are numerous research designs. More common examples include: experimental (the investigator controls the independent variable and randomly assigns subjects to different conditions); quasi-experimental (the investigator manipulates an independent variable but subjects cannot be randomised); or descriptive (the main objective is to accurately portray characteristics of persons, situations, or groups and the frequency with which certain phenomena occur) (Polit and Hungler 2013). The choice of design should allow the variable to be measured or manipulated in the study (Burns and Grove 2009). Polit and Hungler (2013) state that before a study can progress, the researcher will usually clarify and define the variables under investigation and specify how the variable will be observed and measured in the actual research situation. This is known as an operational definition (Polit and Hungler 2013; Nieswiadomy 2012).

Hierarchies of evidence can tell you what type of study provides the most robust (that is, free of bias) evidence and what to look for – systematic reviews are at the top of the hierarchy, typically seen in Cochrane Collaboration (2014) reviews, as opposed to case studies at the bottom (Hoffmann et al 2013 p.27).

Instrument

It is important for the researcher to justify the use of selected instruments. The rationale may clearly state the advantages and disadvantages of using one tool rather than another and the literature search should also have commented on the use of particular instruments in previous studies (Polit and Hungler 2013). The reliability and validity needs to be considered. Reliability refers to the degree of consistency or accuracy with which an instrument measures the attribute it has been designed to measure (Polit and Hungler 2013). Data retrieved may look authoritative but it could be incomplete or inaccurate or may not be sufficiently reliable to be of value in generalising to the larger population. Concurrently, validity refers to the degree to which the instrument measures the phenomena in the first place or reflects the abstract construct being examined (Burns and Grove 2009, p.479). Use of validated research tools can reduce the overall cost of undertaking research.

Sample

It would be ideal to include every relevant subject but this is usually impossible (Polit and Hungler 2013). The total membership of a defined set of subjects from which the study subjects are selected is termed the 'target population'. From this group the final population entered in the study is determined (Polit and Hungler 2013). Investigators must ensure their subjects have attributes that make it possible to accomplish the purpose of the research. This includes "Inclusion" and "Exclusion" criteria which are both ethically and statistically important to increasing the likelihood of producing reliable and reproducible results (Yale University 2014). Inclusion criteria are characteristics the prospective subjects must have if they are to be included whereas exclusion criteria are those characteristics that disqualify prospective subjects (Yale University 2014).

The paper should reveal the mechanism for arriving at the sample eg. random, stratified random, cluster. From a sampling point of view, each individual in the population should have an equal opportunity to be selected

to prevent sampling bias (Hoffmann et al 2013, p.31). The method which achieves this is random sampling (Burns and Grove 2009). Stratified random sampling allows the random selection of subjects from two or more strata of the population independently (Burns and Grove 2009). Cluster sampling involves the selection of a large group or groups (eg. a nursing school with sub-sampling on a smaller scale eg. nursing students) (Polit and Hungler 2013). Smaller samples of subjects are likely to appear in qualitative research where interview approaches, observational methods, or case studies aim to gain a depth of enquiry. The sample should possess characteristics compatible with that of the target population in order to be representative. Generalisations can be more readily made when the results of the research can be applied to the larger group (Hoffmann et al 2013, p.237; Polit and Hungler 2013).

Ethics

The researcher is obliged to consider the implications of the proposed research for the participating subjects, their families and society (Burns and Grove 2009). Most nursing research usually requires the permission of an appropriate ethics committee (Elliott et al 2012, p.93; Jirojwong et al 2011, pp.63-66). Ethical guidelines outline a set of standards for conducting research. Within their practice nurses have a moral and legal obligation to protect the privacy of an individual (Nursing and Midwifery Board of Australia 2012, Conduct Statement 5) and this holds true within nursing research. Equally important is the premise to protect individuals from the risk of significant harm (Nursing and Midwifery Board of Australia 2012, Conduct Statement 8).

The National Statement on Ethical Conduct in Research Involving Humans is intended for use by any researcher conducting research with human participants, any member of an ethical review body reviewing that research, those involved in clinical governance and potential research participants (NHMRC 2014; Jirojwong et al 2011).

Pilot Study

A pilot study is a trial run of the research (Nieswiadomy 2012). The function of a pilot study is to obtain information for improving the project or assessing its feasibility. Costly mistakes can be avoided by a pilot study (Polit and Hungler 2013). Reliability and validity of the instrument(s) is usually determined in the pilot study (Polit and Hungler 2013).

Main Study

The collection of data is typically time consuming. The paper should explain why the researcher has chosen a particular method of data collection. Questionnaires tend to be less costly require less time and energy to administer, offer complete anonymity and avoid bias. The strength of interviews is the response rate will probably be high with a face-to-face format. Members of society who cannot complete questionnaires (eg. people who are blind or elderly) can be included, the interviewer or respondent can clarify questions and additional information can be gathered through observation (Polit and Hungler 2013).

Nursing studies most frequently involve the use of interviews or questionnaires, socio—psychological scales, direct observation or a biophysical measures which lend themselves to studying nursing phenomena (Polit and Hungler 2013). Another method may include a focus group where the group discusses a given topic. Group interaction can clarify or quantify ideas, however, the group interaction of the focus group can be affected by both the personal characteristics of the participants and interviewer such as class, gender and race (Nieswiadomy 2012).

Results

Numerical data tends to be presented in two forms, firstly as raw figures and percentages and secondly, more visually, as line graphs, tables or histograms (Burns and Grove 2009). Although quantitative analysis can only be carried out with numbers, the numbers themselves have no intrinsic worth so they need to be given meaning by those who are using them.

Measures of central tendency, also known as the average, identify how near the usual response a particular variable lies (Burns and Grove 2009). These averages are expressed as mean, median and mode (Burns and Grove 2009). The mean is the average, that is all scores are added up and divided by the number of subjects. The median represents the exact middle score or value in a distribution of scores. The mode is the value that occurs most frequently in a distribution of scores (Polit and Hungler 2013; Burns and Grove 2009). Figures may be expressed as $p > 0.05$ or $p < 0.05$ which gives a level of significance known as probability (Burns and Grove 2009, p.37). This means that techniques were used to ensure that each subject in the population had an equal chance of being selected. If a probability result is statistically significant ($p = < 0.05$) the result had a less than 5% possibility of being caused by chance and therefore becomes significant and important (Polit and Hungler 2013). Qualitative data may be reported in a more discursive way, featuring actual quotes from interviews and discussions (Burns and Grove 2009).

Discussion/Recommendations

The discussion of findings allows the researcher to make interpretations (Nieswiadomy 2012). Recommendations could be implemented in practice readily or cautiously taken up and piloted over a period of time. Alternatively the results may not be considered unless modifications are made. An important point to remember is the research does not necessarily prove a point and may only suggest a relationship or highlight an issue needing further investigation. As Nieswiadomy (2012) states, the research study may raise more questions than it answers!

Conclusions

All major findings related to the original aims of the study are discussed in relation to whether the data supports or negates the hypothesis or research question(s) (Nieswiadomy 2012). In the discussion the reader should be able to evaluate the research design and the overall merit of the study. Competent researchers will highlight these concerns within a section on limitations of the study.

Reference List

Research papers conclude with a list including books, reports and other journal articles used to support the concepts outlined. For those interested in pursuing additional reading on the topic, the reference list provides an excellent starting place (Polit and Hungler 2013).

CONCLUSION

The methodological approach used in this paper provides a framework to analyse research papers logically and systematically. Whilst this paper is deliberately simplified it still allows for the major components of the research process to be identified and considered.

THE FRAMEWORK

The framework is a visual tool to stimulate questions to assist in the assessment of the value of a research paper. The framework is intended to allow the reader to question each section of any paper, allowing better interpretation of the contents.

The framework provides trigger questions; the reader should explore them within the paper and provide a rationale for the researcher's inclusions or omissions.

Questions to consider	Yes	No
1. Title		
Is the title clear and accurate ie. does it describe the research?		

2. Author

What are the author's qualifications and current position?

3. Date

When was the research undertaken? When was it published? Is it a recent piece of work? Is it relevant to present practice? NB. This is not always easy to establish with online articles.

4. Journal

Does the journal deal in nursing research? Are the members of the editorial board from a wide range of academia and practice? Who is the target audience?

5. Abstract/Summary

Does the abstract clearly outline the problem, the hypothesis/research question, aims and objectives, methodology, results, conclusions and recommendations? Are you clear about what is being investigated?

6. Identifying the problem

Is the problem and/or purpose clearly identified? Is there a rationale for the study?

7. Formulation of research questions

Are the aims and objectives clearly stated? How many research questions (qualitative)/hypotheses (quantitative)? Is too much being attempted? Does the hypothesis follow logically from the original problem? Do the aims and/or question/s follow logically from the original problem?

8. Literature search

Is there an unbiased discussion of related research? Does the researcher demonstrate insight into the subject under study? Is there an appropriate timescale for the literature cited? Does the search identify whether a theoretical framework has been used? Is the search a collection of quotes or does it critically appraise previous studies?

9. Methodology**9a.Design**

Is the study described adequately? Can you identify what type of study is used, eg descriptive, experimental, quasi-experimental?

9b.Tools

Are the reasons for the choice of instrument given eg questionnaire, observation, interview, patient records, diaries? Is the advantage/limitation of the tool used discussed?

9c.Sample

Is the sample representative of the population under study? Have the characteristics of the sample been considered eg size, culture, gender? How appropriate is the method of sample selection?

9d.Ethics

Has informed consent been given? Is confidentiality and anonymity assured? Was the right not to participate explained? Was dignity upheld? Were the subjects free from harm? Was ethics committee approval sought?

9e. Reliability and validity

Has the study considered the issue of reliability and validity? Is the research methodology biased?

10. Pilot study

Has a pilot study been completed? What modifications were made and why?

11. Main study**11a.Results**

Are the raw figures and percentages or dialogue provided in the text? Are they visually presented eg. graphs, bar charts, scatter-grams, extracts of dialogue? Is the rationale provided for the inclusion or omission of statistical testing? Is the probability of the result by chance included?

11b.Discussion/Recommendations

Is the discussion of the results understandable? Are the recommendations self-evident after reading the rest of the paper? Are the recommendations able to be implemented? Has the researcher acknowledged their limitations? Are their suggestions for further research?

11c.Conclusion/s

Do the conclusions relate logically to the results? Are there any distortions attempted to 'fit' preconceived ideas? Are the aims, questions or hypothesis posed earlier addressed? What omissions have been made and has the researcher referred to these?

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