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THE AUSTRALIAN JOURNAL OF ADVANCED NURSING

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Rotating shift work and colorectal cancer among nurses and midwives: a cross-sectional study

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Conflict of interest

Authors declare no conflict of interest.

KEY WORDS

Rotating shift work, shift work, colorectal cancer, colon cancer, nurses, midwives

ABSTRACT

Objective

The main aim of this study was to explore any association between colorectal cancer (CRC) and rotating shift work in nurses and midwives. The secondary aim of this study was to identify risk factors for CRC in nurses and midwives who are rotating shift workers.

Design

Cross-sectional study.

Setting

Electronic survey of participants from Australia, New Zealand and the United Kingdom.

Subjects

A sample of 8,199 male and female nurses and midwives from Australia, New Zealand and the United Kingdom invited through their registration papers or newsletter advertisement.

Main outcome measure

Prevalence of CRC in participants who have worked rotating shifts for 1-14 years or ≥15 years compared to participants who have never worked rotating shifts. In addition, risk factors for CRC in the rotating shift work population were analysed in a multivariate logistic regression model in order to obtain odds ratio of CRC.

Results

No statistically significant difference was found in the prevalence of CRC between those who have never worked rotating shift work, worked 1-14 years and worked 15 or more years.

Among rotating shift workers, diabetes was associated with a 123-fold (95% CI 39-392; $p<0.001$) increased odds of CRC, while Inflammatory Bowel Disease (IBD) was associated with a 190-fold (95%CI 68-526; $p<0.001$) increased odds of CRC. Screening colonoscopy or sigmoidoscopy for CRC was associated with a 10-fold (95% CI 3-35; $p<0.001$) increased odds of being diagnosed with CRC.

Conclusion

No significant association was found between rotating shift work and colorectal cancer in nurses and midwives. In nurses and midwives who are rotating shift workers, diabetes, IBD and CRC screening significantly increased the odds of CRC.

INTRODUCTION

The twenty-four hour nature of healthcare demands many nurses and midwives work in shifts. Around 40% of nurses and midwives work rotating shifts (Holland et al 2012). Rotating shift work involves shifts that vary regularly between morning, afternoon and night (International Labour Office 2004). Shift work can have deleterious effects on nurses' physical, mental, and social wellbeing (Matheson et al 2014). In recent times, there has been a growing interest in research on the association between shift work and cancer. The International Agency for Research on Cancer in 2007 classified shift work involving circadian disruption as a probable carcinogen (International Agency for Research on Cancer 2007). A number of possible mechanisms have been proposed to explain the suggested carcinogenicity of shift work. Light exposure at night supresses melatonin, a hormone that regulates sleep-wake cycle and appears to have oncostatic effects (Hill et al 2015; Stevens and Zhu 2015). Circadian disruption may affect clock-related gene expression in cells which may lead to tumourgenesis (Masri et al 2015; Kelleher et al 2014).

A recent meta-analysis investigating night shift work and colorectal cancer (CRC) by Wang et al (2015) found odds of CRC is increased by 11% (OR=1.11, 95% CI 1.03–1.20) for every five years of night shift work. Two studies on the association between rotating shift work and CRC among nurses have been conducted in the Nurses' Health Study. Firstly, Schernhammer et al (2003) prospectively followed up a cohort from the Nurses' Health Study between 1988 and 1998. They found a 35% (RR=1.35, 95% CI 1.03-1.77) increased risk of CRC in nurses who worked rotating shifts for 15 or more years in a multivariate hazard ratio analysis. The second study investigated all-cause and cause-specific mortality, including CRC, of nurses from Nurses' Health Study between 1988 and 2010 (Gu et al 2015). They found an increase in CRC mortality and rotating shift work, but when adjusted for a number of variables, the result was not statistically significant.

A meta-analysis by Johnson et al (2013) found a number of risk factors associated with CRC. These were inflammatory bowel disease (IBD), family history, increased BMI, red meat intake, cigarette smoking, low physical activity, and low fruit and vegetable consumption. CRC is the second leading cause of cancer death and it is amongst the top ten leading causes of death in Australia (Australian Bureau of Statistics 2015). Therefore, it is vital to conduct epidemiological studies to investigate the possible link between shift work and CRC. The primary aim of this cross-sectional study is to explore any association between CRC and rotating shift work among nurses and midwives. The secondary aim is to identify prevalence of other risk factors for CRC in this population.

METHODS

This cross sectional study utilised self-reported data from Nurses and Midwives e-cohort Study (NMeS). NMeS was an internet-based longitudinal study designed to examine health and workforce factors in nurses and midwives. The present study uses survey 1 from that cohort study. This survey collected data from nurses and midwives from Australia, New Zealand and the United Kingdom (UK). The survey was opened from 1st April 2006 to 31st March 2008. In Australia and New Zealand, nurses and midwives received their invitations along with annual registration papers. In the UK, potential participants were invited through an advertisement in the UK Nursing and Midwifery Council's quarterly newsletter. The participants were directed to a website (http://www.e-cohort.net), where consent, and demographic and work details were obtained. The survey contained various instruments, and answering each question was voluntary. Participants were given a unique ID and were not identifiable in the data analysis. Data collection and management of NMeS are described in papers by Schluter et al (2011) and Huntington et al (2009).

The outcome variable was a self-reported diagnosis of CRC. The participants were asked *"have you ever been professionally diagnosed with colon or rectal cancer?"* for which they could answer either yes or no.

The exposure variable was rotating shift work. The participants were asked “what is the total number of years during which you worked rotating shifts?” Available answers were – never, 1-2 years, 3-5 years, 6-9 years, 10-14 years, 15-19 years, or 20 or more years. For the primary analysis of this study, these were categorised into 3 variables as never, 1-14 years, and 15 or more years. These categories reflect those used in a similar study by Schernhammer et al (2003).

A number of covariates were included. These were age, gender, menopausal status, ever use of oral contraceptives (OC), BMI, smoking, alcohol consumption, red meat intake, vegetable intake, fruit intake, physical activity, sleep duration, family history of CRC, diabetes, IBD and screening colonoscopy or sigmoidoscopy. BMI was calculated from height and weight provided by participants. Smoking status was classified as current smoker, former smoker and never smoker. Pack years were calculated from the number of cigarettes per day multiplied by the number of years smoked, divided by 20. Pack year data was only available for current smokers. Alcohol intake was calculated based on a food frequency questionnaire adapted from Willett et al (1985). Participants provided frequency of consumption for alcoholic beverages - light beer, heavy beer, red wine, white wine, and spirits. This frequency was multiplied by alcohol content of each beverage to derive daily consumption of alcohol. Red meat intake, vegetable intake and fruit intake were extracted from Australian Recommended Food Score (ARFS) (Collins et al 2008) where participants answered yes or no to 74 items relating to diet. Red meat intake variable was derived as having had any of veal, beef, lamb or pork 1-4 times per week which were individually selected by participants as part of ARFS. Data regarding other types of red meat were not available from ARFS. Physical activity was calculated using the long form version of International Physical Activity Questionnaire (IPAQ) (Craig et al 2003). This questionnaire surveys respondents’ physical activity from a range of domains such as time spent in leisure, transport, job, and domestic/garden work. Metabolic equivalent of tasks (MET) is the amount of oxygen consumed while sitting at rest. Multiples of MET provide the energy cost of physical activities as multiples of basal metabolic rate at rest (Jetté et al 1990). The number of minutes spent in each activity as surveyed from participants could be weighted according to intensity and converted to MET minutes per week (Craig et al 2003). Sleep duration responses provided by participants were categorised to three groups - 5 hours or less, 6-8 hours, 9 or more hours. These categories are due to two studies indicating a short sleep duration of <6 hours (Thompson et al 2011) and a long sleep duration of ≥9 hours (Zhao et al 2013) may be associated with an increased risk of CRC. Participants were asked whether they have had a colonoscopy or a sigmoidoscopy in the last 2 years, with possible answers – no, yes-for symptoms, and yes-for routine screening. We have excluded those who chose “yes for symptoms”.

Statistical analysis was performed using STATA 14.0. Calculations were based on non-missing data. Chi-squared test was used for categorical variables. Fisher’s exact test was used instead of chi-squared test when less than 80% of cells had an expected count of less than five. T-test was performed on continuous variables. Frequencies and percentages for categorical variables; and frequencies, percentages, means, and standard deviations are reported for continuous variables. Results with a p-value <0.1 were fed into a backward stepwise logistic regression model. This enabled calculation of odds ratios and 95% confidence intervals. A p-value <0.05 was considered significant.

FINDINGS

The number of participants who answered both the outcome variable and the exposure variable were 7,303 out of 8,199. The prevalence of having ever had diagnosis of CRC was 1.03% (n=7), 0.98% (n=47), 1.32% (n=24) in the never group, 1-14 years group and ≥15 years group respectively. There was no significant association between rotating shift work and colorectal cancer (p=0.481). Due to this large p-value no further analysis from the above data was conducted.

Table 1: Prevalence of colorectal cancer in nurses and midwives by length of rotating shift work

Variable	Colorectal cancer Yes n(%)	 No n(%)	Chi-squared	p-value
Rotating shift work (n=7303)			1.47	0.481
Never	7(1.03)	671(98.97)		
1-14 years	47(0.98)	4,759(99.02)		
≥15 years	24(1.32)	1,795(98.68)		

Table 3: Risk factors, as continuous variables, for colorectal cancer among nurses and midwives who are rotating shift workers

	Colorectal cancer				
Variable	Yes		No		
	n(%)	M ± SD	n(%)	M ± SD	p-value
Age (n=6,624)	71(1.07)	47.04 ± 7.97	6,553(98.93)	43.95 ± 9.54	0.007^
BMI (n=6,513)	67(1.03)	28.28 ± 6.11	6,446(98.97)	27.36 ± 5.67	0.187
Physical activity MET/week (n=6323)	69(1.09)	4371 ± 4037	6,254(98.91)	3651 ± 3844	0.122
Pack years* (n=6,601)	70(1.06)	5.51 ± 14.99	6,531(98.94)	3.26 ± 10.69	0.082
Alcohol per day in grams (n=6414)	71(1.11)	9.02 ± 13.71	6,343(98.89)	8.44 ± 13.28	0.717

^p< 0.05; ^^p< 0.001; *for current smokers

Tables 2 and 3 display the prevalence of risk factors in the rotating shift working population. Participants with a history of CRC had a mean age of 47±8 years compared to a mean age of 44±10 in those without a history of CRC (p<0.05). A history of CRC was more common in post-menopausal women compared with pre-menopausal women; 1.68% vs 0.81% (p<0.05). A history of CRC was significantly far more prevalent in participants with diabetes than those without diabetes; 24.15% vs 0.22% (p< 0.001). A history of CRC was significantly far more prevalent in those with IBD than those without IBD; 43.07% vs 0.19% (p< 0.001). CRC was also more likely in nurses and midwives who had undergone CRC screening by colonoscopy or a sigmoidoscopy in the last two years. CRC prevalence did not significantly differ at p-value of 0.05 for non-modifiable risk factors of gender and family history. Neither did it differ for modifiable risk factors of OC use, smoking status, red meat intake, vegetable intake, fruit intake, sleep duration, BMI, physical activity, pack years, and alcohol intake.

Table 2: Risk factors, as categorical variables, for colorectal cancer among nurses and midwives who are rotating shift workers

Variable	Colorectal cancer Yes n(%)	 No n(%)	Chi-squared	p-value
Gender (n=6,625)			0.24	0.625
Male	7(1.28)	541(98.72)		
Female	64(1.05)	6,013(98.95)		
Menopause (n=6,065)			9.05	0.003^
No	35(0.81)	4,305(99.19)		
Yes	29(1.68)	1,696(98.32)		
Ever use of OC (females) (n=6,023)			0.55	0.458
No	7(1.36)	506(98.64)		
Yes	56(1.02)	5,454(98.98)		
Smoking status (n=6,612)			0.50	0.781
Never smoked	38(1.05)	3,580(98.95)		
Former smoker	22(1.02)	2,129(98.98)		
Current smoker	11(1.30)	832(98.70)		
Red meat intake 1-4 times per week (n=6,596)			0.01	0.921
No	11(1.03)	1,054(98.97)		
Yes	59(1.07)	5,472(98.93)		
4 or more vegetables per day (n=6,608)			0.08	0.779
No	21(1.13)	1,835(98.87)		
Yes	50(1.05)	4,702(98.95)		
2 or more fruit per day (n=6,604)			0.01	0.944
No	22(1.09)	1,999(98.91)		
Yes	49(1.07)	4,534(98.93)		
Sleep duration (n=6,611)			0.51	0.775
≤5 hours	6(1.13)	527(98.87)		
6-8 hours	63(1.09)	5,713(98.91)		
≥9 hours	2(0.66)	300(99.34)		
Family history of CRC (n=6,437)			1.69	0.194
No	60(1.03)	5,752(98.97)		
Yes	10(1.60)	615(98.40)		
Diabetic status (n=6,602)				<0.001^^*
No	14(0.22)	6,352(99.78)		
Yes	57(24.15)	179(75.85)		
IBD status (n=6,571)				<0.001^^*
No	12(0.19)	6,422(99.81)		
Yes	59(43.07)	78(56.93)		
Screening colonoscopy or sigmoidoscopy in the last 2 years (n=6,311)				0.008^*
No	58(0.96)	5,978(99.04)		
Yes	8(2.91)	267(97.09)		

^p< 0.05; ^^p< 0.001; *Fisher's exact

Table 4: Univariate odds ratios for variables with a p<0.1

	Odds of having colorectal cancer		
Variable	**OR**	**95% CI**	**p-value**
Categorical Screening colonoscopy or sigmoidoscopy in the last 2 years			
No	1.00*		
Yes	3.09	1.46 - 6.53	0.003^
IBD status			
No	1.00*		
Yes	404.81	209.31 - 782.91	<0.001^^
Diabetes status			
No	1.00*		
Yes	144.48	79.04 - 264.10	<0.001^^
Menopause			
No	1.00*		
Yes	2.10	1.28 - 3.45	0.003^
Physical activity			
Low	1.00*		
Moderate	0.52	0.21 - 1.29	0.160
High	1.08	0.48 - 2.41	0.857
Continuous			
Age	1.04	1.01 - 1.06	0.007^
Pack years	1.01	1.00 - 1.03	0.086

^p< 0.05; ^^p< 0.001; *reference group

Table 5: Multivariate odds ratios derived from logistic regression modelling

	Odds of colorectal cancer		
Variable	**Adjusted OR**	**95% CI**	**p-value**
Screening colonoscopy or sigmoidoscopy in the last 2 years			
No	1.00*		
Yes	10.13	2.97 - 34.57	<0.001^^
IBD status			
No	1.00*		
Yes	189.62	68.30 - 526.39	<0.001^^
Diabetes status			
No	1.00*		
Yes	123.20	38.75 - 391.77	<0.001^^

^p< 0.05; ^^p< 0.001; *reference group

Table 4 presents univariate odds ratios of variables with a $p<0.1$. These were input into a backward stepwise logistic regression model to provide adjusted odds ratios in table 5. As per adjusted odd ratios, having IBD increased the odds of having a history of CRC by 190 fold (95%CI 68-526; $p<0.001$). Nurses and midwives with diabetes also have 123-fold increased odds of having a history of CRC (95% CI 39-392; $p<0.001$). Having had a screening colonoscopy or sigmoidoscopy in the last 2 years also increased the odds of having a history of CRC by 10-fold (95% CI 3-35; $p<0.001$).

Age and menopause increased odds of CRC by 1.04 (95% CI 1.01-1.06; $p<0.05$) and 2.10 (95% CI 1.28-3.45; $p<0.05$) respectively. However this was not seen in the multivariate analysis.

DISCUSSION

We did not find any association between rotating shift work and CRC. This is in contrast to Schernhammer et al study (2003) which found an increased risk of CRC in nurses who worked 15 or more years (RR=1.35, 95% CI 1.03-1.77). The Schernhammer et al study differs from our study in many respects. It was a prospective longitudinal study that followed participants for 10 years, whereas our study was a cross-sectional study. Schernhammer et al study had a much larger number of participants. Moreover, the participants were American compared to Australian, New Zealander and British participants in our study. Ethnical distribution may be different in these cohorts which could possibly have an impact on the frequency of CRCs. In the present study, statistically significant risk factors in the rotating shift working population were age, menopause, diabetes, IBD, screening colonoscopy or sigmoidoscopy. In Australia, 98% of all CRCs occur in persons over the age of 40 (Australian Institute of Health and Welfare 2014). In our study the mean age in the CRC group was slightly higher. Increased prevalence of cancer in older age is common among many cancers. Accumulation of mutations over time as well as age-related signalling pathways have been hypothesised to explain this association (Bordonaro and Lazarova 2015). The observed association between CRC and menopause may be due to the fact that postmenopausal women tend to be older. Postmenopausal women tend to have lower estrogen levels compared to their younger counterparts (Honma et al 2015). Some studies show a reduction of CRC risk in postmenopausal women having hormone replacement therapy (Honma et al 2015). Our study did not find a statistically significant difference in CRC prevalence between those who have ever used oral contraceptives and those who have not.

In our study, IBD, diabetes, and screening colonoscopy or sigmoidoscopy considerably increased the odds of CRC. This may be due to the increased capacity of colonoscopy to diagnose CRC. The screening is done amongst specific population groups and therefore colonoscopy itself should not be seen as a risk factor, instead a mean for early detection. In terms of diabetes, a meta-analysis (Luo et al 2015) found that diabetes was associated with an increased risk of CRC (RR=1.37, 95% CI 1.30–1.45). Activation of insulin and insulin-like growth factor 1 receptors expressed in cancer cells due to hyperglycemia and hyperinsulinemia along with increased inflammatory cytokines have been proposed as possible mechanisms explaining this association (Sharma et al 2014). An Australian cohort study (Selinger et al 2014) reported a 7% (95% CI 4-10%) cumulative incidence of CRC among persons with ulcerative colitis (UC) and 2% (95% CI, 0%–4%) with Crohn's disease (CD) at 30 years of follow-up. Selinger compared this incidence to corresponding age and gender matched general population, which were 1.9% for UC and 1.1% for CD. Over recent decades, there has been a substantial decrease in risk. A Danish study reported a RR of UC over background population of 1.34 (95% CI, 1.13–1.58) in 1979–1988 compared to 0.57 (95% CI 0.41–0.80) in 1999–2008 (Jess et al 2012). In the study, CD RR was 0.85 (95% CI, 0.67–1.07), which did not change over time. A 2013 meta-analysis states that IBD increases the risk of CRC but not as much as previously thought (Lutgens et al 2013). In patients with IBD, CRC is increased with the duration of the disease, the extent of colonic inflammation, family history of CRC, and coexisting primary sclerosing cholangitis. It has been proposed that chronic inflammation causes DNA damage through oxidative stress. This can cause a loss of tumour suppression gene function leading to increased proliferation of tumour cells (Beaugerie and Itzkowitz 2015). About 30% of CRC cases have a positive family history (Brosens et al 2015); however we were unable to find a statistically significant difference in our population. Notably, we did not find any statistically significant relationship with many other risk factors such as increased BMI, red meat intake, cigarette smoking, low physical activity, and low fruit and vegetable consumption, as found in the meta-analysis by Johnson et al (2013).

This study has a number of noteworthy limitations. This study analysed data from a pre-existing database which limited the inclusion of a number of important covariates such as vitamin d level, fibre intake, and familial syndromes. For example, between 2-5% of all CRC can be attributed to hereditary syndromes such as lynch syndrome and familial adenomatous polyposis, which considerably increase the risk of CRC in those individuals (Jasperson et al 2010). We were not able to gather data from participants regarding these syndromes; even though we asked them about their family history of CRC. Some data were missing as respondents did not answer all the questions. For example, out of 8199 participants only 7303 answered both questions on shift work and CRC, which amounts to around 11 percent missing observations. It is also notable that there are generally a small number of observations in the positive CRC group for each variable compared with the negative CRC group. This results in large differences in odds. This perhaps gives a greater effect size than it otherwise would have been if we had a much larger sample size (Nemes et al 2009). This study being cross-sectional, the results should be interpreted cautiously as it is possible for CRC to have preceded the risk factor which means causation cannot be assumed. The study contained data from three countries – Australia, New Zealand and the UK which means these findings may not translate to nurses and midwives of other countries. There could be a social desirability bias where respondents may have provided data which they thought were more socially appropriate. The objectivity of some data (for example, height and weight) should also be questioned as data were received through self-report. There could be a response bias inherent in this study design as those people who decided to take part in the survey may have been different from those who did not decide to participate. Some nurses may have been more comfortable using non-electronic means such as paper-based surveys.

Observational studies such as this attempt to identify risk factors that affect the health and wellbeing of nurses and midwives. Identification and mitigation of these risk factors may help ensure a sustainable workforce into the future. Future studies may consider if different work schedules such as permanent night shifts have different outcomes, and whether these differ from other shift worker populations such as police officers. Future studies may also evaluate costs associated with the loss of nurses and midwives from the workforce due to CRC. This may help with workforce planning. Other research opportunities may involve exploring how nurses and midwives manage their diabetes or IBD in the context of CRC.

CONCLUSION

In this cross-sectional study we did not find any significant association between rotating shift work and CRC in nurses and midwives. However, IBD and diabetes were correlated with an increased probability of CRC in nurses and midwives who were rotating shift workers. Further research should be conducted using a large prospective cohort design to investigate the effect of rotating shift work on CRC.

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Elements to promote a successful relationship between stakeholders interested in mental health promotion in schools

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KEY WORDS

Community engagement, collaboration, mental health, health promotion, resilience

ABSTRACT

Objective
An evaluation of a mental health promotion program called iCARE which depended on collaboration between multiple partners.

Design
A qualitative exploratory evaluation that involved purposeful sampling of a range of stakeholders in the School settings.

Setting
Two Secondary Schools in Tasmania.

Intervention
iCARE stands for Creating Awareness, Resilience and Enhanced Mental Health and is a structured six-week program in which trained facilitators engage Year 8 students in learning about mental health and developing resilience. The collaboration involved university researchers, child and youth mental health clinicians, and education staff. It required investment in time and resources as well as intellectual effort and good will from each of the key players.

Results
Successful elements of collaboration were distilled from the interview data, indicating that for a mental health promotion program to succeed in schools, highly tuned negotiation and communication skills are required.

Conclusion
Nurses are increasingly working within the community to promote the health and wellbeing of many groups. To work effectively with young people in schools, and to share the impact of that work with the professional community, requires collaboration between health, education and university stakeholders. This evaluation found that success in this interdisciplinary connection requires respect, communication, negotiation and appreciation for disciplinary differences.

INTRODUCTION

Mental health is the leading health issue facing young people world-wide and it is a whole of community concern, an issue that crosses and even transcends disciplines and professions (Robinson et al 2016). The last two decades has seen a call to increase collaboration with a broad network of stakeholders involved in youth mental health including parents, schools and health services (Hoagwood et al 2010). Schools can only do so much to support health and wellbeing on their own, as their core business is education, and recent reports identify significant school-based workforce shortages as impacting on the ability to intervene early in youth mental health (Carbone et al 2011).

A mental health promotion program designed for delivery by health professionals within the Australian school context has been developed to respond to these concerns. 'iCARE' is a universal mental health promotion program that takes a solutions focus (McAllister 2013) and aims to build resilience strategies (Morrison and Allen 2007) in all young people. Its generation, development and feasibility is described at length elsewhere (McAllister et al 2008). Whilst there are other Australian mental health programs that take a whole of classroom approach (such as Mind Matters), some of the unique features of iCARE are that it:

- involves trained facilitators who run the groups in the class, rather than the classroom teachers;
- is a structured brief program consisting of six modules that trigger group discussion to enable young people to explore and develop the strengths and achievements of other young people, and themselves, so the repertoire of strategies will give them strength in challenging times that may be ahead in this turbulent life stage can be expanded; and
- it draws on material that are likely to be appealing but also challenging for young people – such as real-life stories, film clips, contemporary music, poetry, and discussion-based games.

Each of these resources is used in such a way that they reveal strengths and resources of someone else, but which can be discussed, developed, revised and perhaps taken up and used by participants in their future lives. In this way, iCARE is future-focused, strengths building and proactively develops mental health capabilities useful in life.

A central assumption of iCARE, which comes from the solutions focus, is that strengths and vulnerabilities are both likely to occur in all young people as they face the changes of adolescence (McAllister 2013). These strengths and vulnerabilities can be engagingly discussed by using narratives found in books and films, rather than in peoples' personal lives. This strategy is designed to create a safe environment - the group an opportunity to be analytical about what could work or not work in young peoples' lives, without slipping into personal difficulties, and issues that could be upsetting (Tsevat et al 2015). The idea, based in the solutions orientation, is that positive aspects are foregrounded, and deficiencies or challenges are discussed but not indulged (Sharry 2007).

Another key distinguishing component in the approach is that while the mental health clinicians trained in the solutions focus implement the program for an hour each week over six weeks with 13-14 year old students, they do so in a way that co-opts the support and involvement of teaching staff. In this way, solution focused communication approaches can be modelled by the facilitator, developed by teachers and shared. To relate effectively facilitators and teachers need to appreciate their distinct skills and that both sets of expertise will be needed to help this program work effectively within a large classroom. Further, having trained mental health professionals facilitate the program ensures the availability of support and referral should it be required if sensitive topics are raised by students, and assures the school that safety will be maintained and risks minimised.

Participating teachers bring a formal authority to the classroom, knowledge of behaviour management, and a personal knowledge of the strengths and limitations of individual students. iCARE facilitators and teachers work together to manage the tension between the strength based model of iCARE and the at times formal authoritative style of engagement embedded in school culture (Pounder 1998).

Hoagwood et al (2010, p16) have stated there is "still relatively little guidance available to researchers interested in increasing the level of collaboration within their research studies." Consequently, we aimed to examine the components of early collaboration that have proven to be facilitators and barriers to the development of iCARE and efforts to evaluate its efficacy in order to contribute to research methods that strengthen and promote interdisciplinary collaboration.

LITERATURE REVIEW

Collaboration is a term that is often used interchangeably with team work (Garrett 2005). It is a practice that can tend to be over-simplified and taken-for-granted. Whilst collaboration could simply be viewed as a mutually beneficial relationship (Mattessich et al 2001) others see collaboration as more dynamic, a journey without a clear destination where methods and styles evolve, based on cumulative and unfolding discoveries (Hoagwood et al 2010; Haythornthwaite 2006; Denis and Lomas 2003). Establishment of shared goals is seen to be important, and Kagan (1991) and others (Denis and Lomas 2003; Wood and Gray 1991) emphasise the centrality of sharing of power, resources and authority.

The benefits of collaborations are well documented. These include the facilitation of knowledge transfer, enhanced creativity, and access to broader networks (Carey et al 2009; Wiggins 2008; Loan-Clarke and Preston 2000). However, collaboration within and between institutions is difficult and challenging (Carey et al 2009; Wiggins 2008). Fullan (1993) also speaks of collaboration as hard work and operating in the world of ideas where existing practices are examined critically and where better alternatives are sought. Robinson (2005) addresses in detail a number of challenges related to what he refers to as the Five P's – people; professional cultures; policies; politics and practicalities. Carey et al (2009) speaks of collaboration being hindered by institutional politics, echoing Robinson (2005) and further identifies historical relations, perception of competition and other tensions including finance, resources and maintaining momentum as potential hindrances.

The Need for Collaborative Research in Youth Mental Health

Alberto and Herth (2009) describe a collaborative imperative within health care and that the art of collaborating is generally seen as a central component of successful professional activity. In relation to collaboration with schools, as far back as the mid 1990's it was recognised that strong partnerships were critical to ensuring that effective prevention and early intervention strategies were well received and to ensuring their ongoing sustainability (Galbraith et al 1996). This recognition is strongly reflected in major collaborative school-based research reports including KidsMatter (Slee et al 2009), CASEL (Payton et al 2008), PATHS (Kusche and Greenberg 1994; Greenberg and Kusche;1998, 1997, 1993) and SEAL (Humphrey et al 2010) that have as their focus the social and emotional well-being of students.

However, Mastro and Jalloh (2005) refer to a perception of resistance between schools and the communities within which they exist, going so far as to say that *"schools alone cannot meet all needs – social emotional, physical and academic, yet they stand as gatekeepers for access to youth..."* (p1). Despite this perception, there is also growing evidence that successful collaboration between school and community groups has resulted in improved academic and social/emotional outcomes for youth (Slee et al 2009; Mastro and Jalloh 2005).

Why programs for adolescents benefit from a collaborative approach

The mental health and wellbeing of young people is at the forefront of mental health policy in Australia and evidence is growing for the value of collaborative and integrated service systems to address the needs of young people, especially those aged 12 to 25 years (Rickwood et al 2011). Adolescence is a challenging life transition characterised by physical, psychological and social change that can impact on health and well-being. Mental health is fundamental to good health and to life enjoyment and a resource for life (Sturgeon 2007).

During this time, young people need to be introduced to the concept of positive mental health – so they appreciate that paying attention to existing and potential strengths can be an asset to them in taking on challenges optimistically and enthusiastically (Barry 2013). This is a much larger vision than simply illness prevention, though this is important.

In adopting a population-based mental health promotion approach, every young person and not just at-risk youth, become the focus for enhancing strengths and social competencies. Programs which target young people and provide a solid foundation of resilience offer the best hope of improving their mental health (Weare and Nind 2011). In line with this, there is now a worldwide movement to take a solution-focused, rather than problem-focused, approach to enacting changes in individuals and groups; an approach that has produced exceptional results in many disciplines (McAllister et al 2008; Mahlberg and Sjoblom 2005).

In an initial feasibility study, interviews with twelve school nurses determined both the need for the iCARE program and support among mental health staff for its implementation (McAllister et al 2010). Pilot data also suggest positive outcomes for youth who complete the program, including improved knowledge regarding self-harm, improved problem solving skills and a general enjoyment of the solution-focused approach inherent in the program (McAllister et al 2010). However, barriers to implementation, including securing support of school leaders, were also of concern to those likely to adopt the program (McAllister et al 2010). De Leo and Heller (2004) reported a reluctance to allow *any* material related to suicidal behaviours to be given to students. Yet as Barry (2013) states, the most appropriate location for these mental health promotion programs to take place is in the contexts and settings where young people live their lives. To overcome this key barrier requires trust from school staff that health professionals will be careful, safe and productive. This is only achieved with ongoing collaboration that fosters familiarity, trust and mutual respect (Weare and Nind 2011).

Collaboration in action: the iCARE program

In Tasmania, Australia, early collaborative processes involved re-partnership in 2011, with a large all girls public school. The iCARE program was delivered across six weeks to a Year 9 class (23 students) with the purpose of examining the program's relevance and validity in a whole of classroom setting. The school had previously been involved in 2010, in a small (eight students) group pilot research project involving iCARE and thus the beginnings of a foundation for a trusting relationship existed. Qualitative evaluative data was obtained from the students both pre- and post the 2011 program and the school Principal and iCARE teacher were interviewed at program completion. In 2014, a further pilot across two Year 9 classes (22-25 students) was implemented at the same all girls school and across two Year 9 classes at a private coeducational high school, a total of 90 students. Qualitative evaluative data was again obtained from the students both pre- and post the pilot program and the four iCARE teachers were interviewed at program completion.

Remaining open and inviting of all perspectives, whilst ensuring that clear leadership exists to maintain integrity of purpose, has enabled the current effort to realise what Pounder (1998) suggests is a strong foundation for effective collaboration. Shared reflections from stakeholders illuminates aspects about this collaborative experience.

THE STUDY

A qualitative exploratory study was designed to answer the following research question: *How did key school stakeholders perceive the process of being involved in the iCARE Research Project?* Ethical clearance for all project pilots was obtained by the Tasmanian Human Research Ethics Committee and Education Department as well as the relevant University ethics committees.

METHOD

In 2011 and 2014 two researchers interviewed the school principal and a teacher involved in delivering iCARE to elicit views on how the program was perceived by school leaders. They used an inductive approach to questions, but beginning broadly and then following up with focused questions (Braun and Clarke 2006). The principal and teacher were asked to comment on why the school supported the introduction of iCARE, to provide suggestions for improvement and what more could be done to facilitate student well-being. The teacher was also asked to provide observations on iCARE, including observed changes and engagement among students and relevance of the program.

Researchers took field notes through the course of the interviews, which lasted approximately one hour for each interviewee. This attempt to co-construct knowledge fits with the participatory paradigm (Hoagwood et al 2010).

Data analysis

Data from the 2011 and 2014 interviews were subjected to realist thematic analysis following the guidelines of Braun and Clarke (2006). That is, the analysis focused on experiences, meanings and the reality of participants. Initial themes were developed from the interview notes, and notes re-read to verify, merge or re-code the identified themes. The six phases of analysis described by Braun and Clarke (2006) were used to identify themes from the interview data – familiarising yourself with the data; generating initial codes; searching for themes; reviewing themes; defining and naming themes; and producing findings.

FINDINGS

Three broad themes were identified from the interviews: 1) meeting school priorities, 2) balancing need and resources, and 3) the importance of involving school staff. The following is an account of each theme combined with a brief engagement with the literature, post analysis.

Meeting school priorities

Both the school principals and the teachers commented that iCARE fit well within the school curriculum, and the strategic priorities of both the school and the broader education sector. They viewed social and emotional learning as being part of the development of young people, and argued it should be inherent in the school curriculum. These responses are encouraging given that when school administrators view schools as part of, and not separate from a larger community, the successful partnerships are likely to follow (Mastro and Jalloh 2005).

> *Projects like iCARE line up with our business of educating girls. Becoming involved in iCARE fits with my social consciousness, with the social consciousness of the school and the school curriculum does not really deal with emotional/social issues in an in-depth manner. (Mary, Principal, 2011)*
>
> *Programs such as iCARE would be essential in providing schools with the necessary skills to become more strengths based especially in a whole-of-school approach. (Peter, Teacher, 2011)*

In these ways, stakeholders indicated confidence in the iCARE program. Collaboration as a construct is multifaceted and a very context-bound concept (Hoagwood et al 2010). It was vital in the early stages of the partnership with the School to align the iCARE Program with the school curriculum. In early meetings with the Principal and Health and Wellbeing coordinator the strength-based and solution focused approaches as a key feature of iCARE were emphasised. The early meetings with the program facilitators, one of whom was also lead iCARE researcher in Tasmania, were also characterised by a desire to move the conversations from being problem driven to being vision driven (National Network for Collaboration in Alberto and Herth 2009).

Early collaborative efforts with school staff were occurring within a context of existing embedded practices and it is important to acknowledge right from the start the negotiation of and co-evolution of practices. Haythornthwaite (2006) identifies one of the challenges to interdisciplinary collaborative work, in this instance, between mental health professionals and high school teachers, as “bridging practices”. It was beneficial to be clear about how iCARE would align itself with the existing school culture which has been described as the atmosphere or climate of the school but is also about a set of norms and values which provide a focus for everyone about what is important (Jerald 2006). The schools already valued the importance of empowering the young girls in the school and developing resilience and coping.

iCARE, like other programs could have influence or be obstructed by the hidden curriculum. The hidden curriculum, that which teaches but remains implicit within the school culture, is shaped by social forces to satisfy hidden agendas including serving the needs of society (Wren 1999). Youth mental health and a concern of schools about youth self- injury and suicide is, one could assert a major driving force for including or excluding learning experiences that address such issues (Green 2007). In promoting the iCARE Program it was necessary to acknowledge this context and be prepared to discuss how this aspect of the program would be supported.

Balancing need and resources

The principals and teachers of both schools were clear that there was a need for a program such as iCARE and expressed the view that geerally there is a lack of resources to effectively incorporate social and emotional learning programs into schools.

> *There is a huge need for inquiry-based approaches and iCARE and programs like it would help to meet that need. (Mary, Principal, 2011)*
>
> *Our expertise is around the pedagogy of teaching… so the content [emotional/psychological strategies], go to the experts. (James, Acting Principal, 2014)*
>
> *There is a need for a mental health infrastructure in schools. Where programs such as iCARE raise awareness around stress, coping etc there is a parallel need for support. Schools are under-resourced as far as emotional/psychological supports. (Mary, Principal, 2011)*

In line with this, the involvement of trained mental health professionals to deliver the program was viewed not only as a way to minimise burden on schools, but as indicative of a true collaboration between schools and mental health professionals.

> *The professional learning program needs to develop between the school and mental health professionals and other key stakeholders…[there is a] crucial necessity of collaborative partnerships between mental health professionals and teachers. (Mary, Principal, 2011)*
>
> *I’d probably re think about maybe getting more involved in some of the presenting itself…how that could then be where it’s a combined, collaborative thing. And I’m not just the supervising teacher… but because it is so – like, it’s quite confronting, some of the [iCARE] issues, it definitely I think needs to be a collaboration. (James, Acting Principal, 2014)*

Prior to iCARE commencing in the classroom, the facilitators initiated conversations about perceived and real needs and resources with the Principal and Health and Wellbeing coordinators. This required sensitive negotiation and goal clarification. The development of shared goals that are acceptable to both researchers and key stakeholders is necessary for productive collaborative effort and further, requires a melding of perspectives and priorities (Hoagwood et al 2010). The iCARE facilitators as researchers needed to work together with the school staff to implement a program that would deliver desired school curriculum outcomes, work with existing school resources and keep students safe and contained in the process.

Several features of schools identified by Pounder (1998) needed to be considered in organising for collaborative negotiation and the fit of iCARE. For example, schools are often characterised by stimulus-overload. In the day-to-day life of schools, teachers and principals are subject to numerous short multiple interactions with many individuals. Time is scarce. iCARE facilitators needed to demonstrate an appreciation of and respect for the tight schedules for both teachers and students. Teachers from both schools spoke on the difficulty with fitting the program into the curriculum and the possibility of having a shorter or more integrated program.

> *...for our school to invest in a six, eight-week program is a huge investment out of their time. (James, Acting principal, 2014)*
>
> *So while we couldn't run a six week block again because of other elements that are involved in the curriculum, we could look at ...some elements of the iCARE program that we could perhaps integrate into our teaching .... (Henry, Teacher, 2014)*

Interprofessional negotiations were characterised by mutual respect and with the intent to share knowledge, power and decision-making. Power can be shared in unique ways (Hoagwood et al 2010). The resources and needs that were the focus of discussions and described by some as challenges to successful collaboration (Mastro and Jalloh 2005) were space, time, scheduling, staffing roles, school rituals and more tangible resources such as art and craft materials required by the iCARE Program. Issues such as partnership capability, limits, expectations in relation to needs and resources often require ongoing discussion and exploration to develop and maintain collaborative partnerships (Burley 2003).

Involving school staff

The involvement of school staff in the delivery of iCARE was seen as a strength of the program. Not only did this provide an opportunity for up-skilling school staff, but involving staff familiar with school routines, and with individual students, allowed for a more structured environment in which to deliver iCARE. The authority provided by the teacher ensured the facilitators were respected and able to deliver the program with minimal disruption.

Through the interviews it became evident that the success of school-based programs depends on good communication with school leaders. The first contact with the school was with the school Principal. Chapman et al (2005, p9-10) notes that *'...the attitudes and skills of head teachers are clearly crucial, particularly in terms of both promoting and resourcing collaboration [which] ...has to be led, facilitated and supported over time ."* The leadership provided by the Principal and the teacher coordinator of health and well-being was crucial to the initial collaborative success of the iCARE project in Tasmania.

> *[It is] essential to have the Principal and Vice Principal involved. They must be cognizant of the knowledge and skills that teachers are exposed to and this must be seen to be valued by the school culture as a whole. (Mary, Principal, 2011)*

A teacher noted that his involvement with iCARE really helped him to better understand the whole notion of being strength-based.

> *At the beginning of the program I had a lot to sort out in my head regarding this. But iCARE opened up the scope of what I thought- skeleton keys; coping strategies. You can actually give kids the tools, not just stock answers! (Peter, Teacher, 2011)*

Teachers and facilitators believed there was benefit in clarifying the roles of each other at the earliest opportunity because it can prevent problems occurring later.

The following quote is illustrative of a teacher reflecting on his role in the classroom-based iCARE program.

> *A couple of times I got frustrated with the students cause I didn't think they were …doing as they should all the time, so sometimes I was unsure if I should go in and say something and really do my teacher bit, which is what I'd normally do if I was by myself, but then I didn't want to tread on your toes also. (James, Teacher, 2014)*

The process of working with a school teacher in the classroom was not without its challenges. The distinctiveness that each discipline brings to the collaboration is reported as the single most commonly identified barrier to effective multidisciplinary work (Robinson 2005). The different professional cultures of for example, teaching and health care work, can bring unique approaches to language and time-management, overall orientation and expectations and standards (Robinson 2005). Table 1 provides a summary of the key enabling factors for good collaboration that are addressed in the three overarching themes previously described.

Table 1: Key facilitating factors of good school-based collaboration and program success

1.	An understanding by program facilitators of the unique needs and processes of the school, especially an appreciation of school scheduling
2.	Early confident, informed communication with leaders, especially the School Principal(s)
3.	Support for a program that was perceived to have a good curriculum fit, especially with the health and well-being aspect of the curriculum
4.	Program facilitators acknowledging and respecting the expertise of the teachers
5.	Teachers valuing the iCARE facilitator's skills in tackling and reframing confronting topics such as self-harm
6.	Power sharing and team work between teachers and iCARE facilitators who draw on their different yet complimentary roles and skills in delivering the program to achieve youth mental health promotion
7.	Early clarification of teacher and facilitator roles to prevent problems arising from any aspect of program delivery

Other authors have commented similarly on the key importance of these themes (Humphrey et al 2010; Slee et al 2009; Durlak and Dupre 2008; Greenberg et al 2005). In particular, program sustainability is dependant on the school's commitment to the program, and the key teachers' energy to drive the program forward.

Early Engagement with School: Trust and Respect

In addition to these identified themes from school staff interviews and subsequent analysis, the iCARE facilitators became increasingly conscious of the centrality of trust and respect in the early engagement with the school and indeed in maintaining and sustaining that trust and respect over the years. Our team has maintained contact with people within the schools and this has maintained trust and also openness to future research.

These recommendations for establishing trust and respect in the early stages of collaborative engagement with Principal and lead teachers have been discerned from this evaluation and are strongly supported by the literature (Hoagwood et al 2010; Carey et al 2009; Wiggins 2008; Robinson 2005; Denis and Lomas 2003).

CONCLUSION

Research and systematic improvements in a multidisciplinary issue such as mental health promotion requires collaboration. For it to be effective, collaboration requires ongoing commitment to the process. This paper has explained the successful processes we identified in a collaborative research project involving teachers, child and youth mental health practitioners and academic researchers. Elaborating on the active elements may be useful in working out how to sustain engagement and enhance the sustainability of the working relationship between these three groups. Because these three groups have varied skill sets, training, and perspectives on youth learning and wellbeing, ongoing collaboration may also herald the development of new models to approach challenges and implement programs for youth mental health.

Sustainable collaboration depends on the establishment of ongoing, meaningful partnerships. How these partnerships are commenced is crucial. Further, collaborative research once begun, needs to be nurtured, sustained, and evaluated over time. Not only are collaborative research efforts labour intensive for all stakeholders but they require a level of communication and sharing of power and the development of relevant and effective youth based services.

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Accessibility and outcomes from a rural diabetes nurse-educator led self-management program

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KEY WORDS

access, diabetes nurse educator, diabetes self-management, health outcomes, rural, primary health care

ABSTRACT

Objective

To investigate factors associated with access to, and health outcomes of, a diabetes nurse-educator led self-management program for rural Australians with diabetes.

Design

Retrospective cohort study

Setting

A rural community-health service with a dispersed catchment of 10,000 population.

Subjects

Clients diagnosed with type 2 diabetes mellitus and referred to the program between April 2008 and December 2012.

Intervention

A diabetes self-management program comprising an initial assessment, a group education session, and 3, 6, and 12 month clinical reviews.

Main outcome measures

Program attendance after referral; and achievement of management goals for HbA1c, BMI, total cholesterol, quality of life and psychological distress.

Results

Ninety-four percent (n=219/232) of referred clients attended at least once. Multivariate logistic regression showed that attending at least once was significantly associated with living within 25km of the service. Non-smokers/former smokers, general practitioner-referred clients and those with diabetes management plans were significantly more likely to attend three or more sessions. At 12 months clients showed significant improvements in cholesterol, BMI, quality of life and psychological distress.

Conclusion

This study demonstrates that diabetes nurse-educator led self-management programs which adapt to their rural contexts – including geographically dispersed catchment populations and resource constraints – provide highly accessible services meeting the needs of most. Nevertheless, some groups (cigarette smokers, those living furthest from the service) may remain marginalised and less able to access services. Improvements in health outcomes for these clients may require further adaptation of models of care to better target their health care needs.

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INTRODUCTION

Diabetes is a significant global problem. Prevalence among adults is estimated to be 9% and in 2013 it was the 7th leading cause of death (Vos et al 2015; World Health Organization 2014). In Australia, 5.4% of adults have diabetes, and of these 85-90% have type 2 diabetes mellitus (T2DM) (Australian Institute of Health and Welfare 2012; Australian Bureau of Statistics Microdata 2011-2012). The prevalence of T2DM and its associated complications is significantly higher in rural and remote areas and the complications of poor control of T2DM are well known and frequently life-threatening (Australian Institute of Health and Welfare 2008).

Nurses working in rural areas play a key role supporting the management of T2DM, particularly where local staff and healthcare resources are limited. Systematic reviews report that diabetes self-management (DSM) programs improve diabetes knowledge, its management and positively influence health outcomes (Colagiuri et al 2009). However, most of the evidence is based on DSM programs undertaken by specialist-teams in metropolitan settings. In contrast, the evidence-base on the accessibility of DSM programs in rural areas is limited. In rural and remote locations a range of issues affect whether an individual with diabetes accesses appropriate care for their chronic disease. Important dimensions of health service accessibility vary amongst individuals and the contexts in which they live. Nevertheless, health workforce shortages, proximity to health services, the way in which the care is organised, acceptability of the services offered, awareness of what services are available and the affordability of care may each impact on health service utilisation (Russell et al 2013). Similarly, evidence regarding the health outcomes that can be achieved by clients attending rural DSM programs, which have necessarily been adapted to meet population health care needs because of spatial accessibility (availability and proximity) issues, is also limited.

This paper addresses these research gaps, investigating factors associated with participation in a diabetes nurse-educator led self-management program which aimed to increase access to local diabetes support, education and management for rural Australian clients with T2DM. Further, this study investigates the significance of changes in health outcomes (glycosylated haemoglobin (HbA1c), total cholesterol, BMI, quality of life and psychological distress) for individual clients and factors associated with whether or not HbA1c management goals were achieved.

METHOD

Setting

The setting for this study is a community health service located more than 200 kilometres from the nearest major city, Melbourne. The health service provides acute, aged and primary health care services to a catchment population of 10,000.

Participants

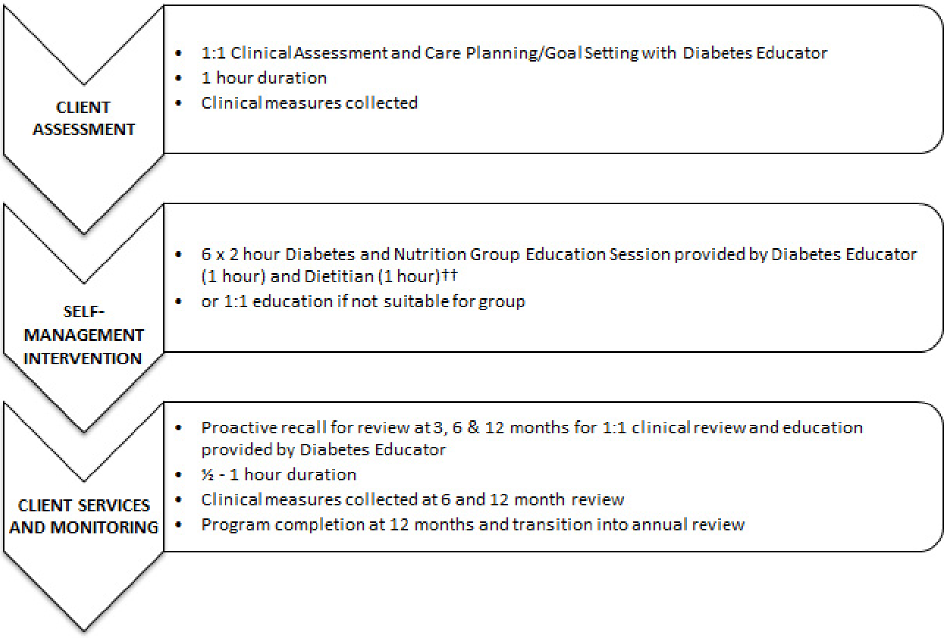
Participants were clients diagnosed with T2DM, according to the National Health and Medical Research Council criteria (National Health & Medical Research Council 2001), and referred to the program by GPs or other health practitioners.

Intervention

The intervention was based on the Victorian Department of Human Services (DHS) DSM program model of care (see figure 1). The program comprised five sessions in total: initial client assessment, an education session, and proactive recalls at 3, 6 and 12 months. While it is recommended that allied health staff, such as a podiatrist, staff the program in this locality of allied health workforce shortages, a diabetes nurse-educator led the program.

Instead of the recommended six weekly 2-hour group education sessions, the program was adapted to comprise one 2-hour group education. This structure was determined based on the limited availability of staff and resources, and to minimise patient travel which was thought to be a barrier to participation in this rural setting. The 2-hour group education session was facilitated by the diabetes nurse-educator and dietitian.

Figure 1: Model of Care – Diabetes Self-Management Program for newly diagnosed Type 2 Diabetes†



- 1:1 Clinical Assessment and Care Planning/Goal Setting with Diabetes Educator
- 1 hour duration
- Clinical measures collected

- 6 x 2 hour Diabetes and Nutrition Group Education Session provided by Diabetes Educator (1 hour) and Dietitian (1 hour)††
- or 1:1 education if not suitable for group

- Proactive recall for review at 3, 6 & 12 months for 1:1 clinical review and education provided by Diabetes Educator
- ½ - 1 hour duration
- Clinical measures collected at 6 and 12 month review
- Program completion at 12 months and transition into annual review

† *Source:* Adapted from Victorian Government Department of Human Services, Diabetes self-management Guidelines for providing services to people newly diagnosed with Type 2 diabetes, Melbourne, Victoria: DHS, 2007.

†† Adapted to 1 x 2 hour education session in this setting

Data collection, measures and analysis

Data were extracted from health records of clients referred to the DSM program between April 2008 and December 2012. A tailored data extraction tool was designed and refined following pilot testing on 20 records.

Program attendance was measured according to the number of sessions clients attended. Two binary outcome variables were created; 1) indicating whether clients attended none, compared with at least one of the 5 sessions and 2) indicating whether clients attended 3 or more sessions compared with attending only 1 or 2 sessions.

Demographic predictor variables included age, gender, English language country of birth, employment status, health care card status, receiving government benefits and living arrangements. Distance between the client's home and the health service was calculated using Google maps and categorised (≤5, 5-25, ≥25 kms). Clinical predictor variables included referral source, existence of a care plan, smoking status, treatment with oral hypoglycaemic drugs, presence of chronic pain and number of co-existing chronic diseases.

Achievement of diabetes management goals was measured by assessing individual-level changes in clinical indicators between initial assessment and 12 month review. Indicators included HbA1c, total cholesterol, BMI, psychological distress (K10) and utility scores for health-related quality of life (AQoL4D) (Hawthorne et al 2013; Kessler et al 2002). K10 scores range from 1-50. AQoL4D measures health-related quality of life across dimensions of illness, independent living, social relationships and psychological wellbeing (Hawthorne et al 2013). Management goals were selected based on the Victorian state guidelines for diabetes management in community health settings (Australian Institute for Primary Care & Ageing 2012). Cut-off values for these were based on WHO and national guidelines (Primary Health Care Research and Information Service 2012; Australian Institute of Health and Welfare 2009; World Health Organization 2000).

Statistical analyses were conducted using Stata/IC 11.2 (StataCorp LP, College Station, Texas, USA). Multivariate logistic regression models tested associations between demographic/clinical indicators and 1) the attendance outcome variables and 2) achieving HbA1c management goals. Variables significant at $p<0.25$ in bivariate analysis were included in the initial multivariate models, and retained in the final model if significant at $p<0.05$. Missing data were handled by list-wise deletion. McNemar's test was used to test whether there were significant differences in the proportion of participants achieving improvements compared to those with deteriorations in their diabetes management goals.

ETHICAL APPROVAL

The study was approved by Monash University Human Ethics Research Committee (No. 2012001953).

FINDINGS

Program access

Between April 2008 and December 2012, 232 clients were referred (94% by GPs and 6% by other health professionals) to the program. Of these clients, 219 (94%) attended at least once, while 190 (82%) attended 3 or more sessions. The characteristics of referred clients are shown in table 1. Clients had a mean age of 62 years (SD = 12 years). While most clients lived near the service (median distance 4.4 km), 20% lived more than 25 kilometres away.

Bivariate logistic regression revealed that attending the program at least once was significantly associated with increased distance from the health service ($p<0.05$). Increasing age and having a care plan were significant at $p<0.25$ and were included in a multiple logistic regression model. Non-significant variables excluded from the model were gender, referral source, and being on oral hypoglycaemic medications at the time of referral. The only significant variable remaining after stepwise multiple logistic regression was the distance that the client lived from the health service. Clients living within 5 km of the service were more than five times more likely to attend at least once compared to clients living more than 25 km away.

Factors found to be significantly ($p<0.05$) associated with attendance at three or more sessions via bivariate testing included being a non-smoker, having no asthma or chronic obstructive pulmonary disease, having a GP referral and a diabetes care plan. These variables, and variables significant at the $p<0.25$ level (English speaking country of birth, receipt of a government pension, being a health care card holder and the number of chronic diseases) were included in a multivariate model. The distance from the health service was not significantly associated with attendance at three or more sessions ($p>0.25$) and was not included. The multivariate model showed that being a non-smoker/former smoker, not having a chronic respiratory condition, having a GP referral and a diabetes care plan were significant predictors of attendance at three or more sessions (table 2).

Table 1: Self-reported characteristics of clients upon referral to DSM Program

	n	%
Gender		
Male	130	56.0
Female	102	44.0
Employment status		
Employed	77	35.3
Not employed	141	64.7
Low Income-Health Care Card and/or Gov't payment		
No HCC/Gov't payment	72	31.4
HCC/Gov't payment	157	68.6
Living Status		
Lives alone	46	20.4
Does not live alone	180	79.6
Number of chronic conditions present		
0	54	23.3
1	109	47.0
2+	68	29.7
History of Cardiovascular Disease	153	66.2
History of Mental Illness	46	19.9
Health rating at intake		
Excellent/Very good	53	24.1
Good	103	46.8
Fair/Poor	64	29.1
Smoking status		
Current smoker	46	21.0
Non/Ex-smoker	173	79.0
Medical Management method		
Nutrition	148	63.8
Oral Hypoglycaemic Agent	84	36.2

Table 2: Multiple logistic regression model for clients attending 3 or more diabetes self-management sessions

Reference	Variable	Odds Ratio	95% confidence interval	p value
Current cigarette smoker	Non-smoker or former cigarette smoker	7.8	2.7 – 22.0	<0.001
Asthma or chronic obstructive pulmonary disease	No asthma or chronic obstructive pulmonary disease	4.6	1.5 – 14.2	0.009
Referred by other type of health professional	Referred by General practitioner	6.0	1.3 – 28.7	0.024
No care plan	Care plan	3.5	1.1 – 11.0	0.029
After missing data:		n=170, PseudoR^2=0.232		

Health outcomes

At 12 months, statistically significantly greater proportions of participants achieved improvements rather than deteriorations in diabetes management goals for cholesterol and BMI and in quality of life and psychological distress (table 3). HbA1c results at 12 months were available for 86 participants. Of these, 17 clients (20%) did not achieve HbA1c diabetes management goals, recording levels greater than 7.0%. Factors significantly associated with HbA1c>7.0 at 12 months in bivariate logistic regression ($p<0.05$) included age, English speaking country of birth, HbA1c≤7.0 at initial assessment, neuropathic feet changes at initial assessment, more chronic conditions and hypertension. HbA1c≤7.0 at initial assessment and diagnosed hypertension when referred remained as significant predictors of meeting diabetes management goals for HbA1c in the final model (table 4).

Table 3: Proportion of participants achieving diabetes management goals from assessment to 12 months †

OUTCOME VARIABLE	Diabetes management goals	n pairs	Total number of discordant pairs	Number of discordant pairs showing improvement in management goal	McNemar's chi^2 ¶ statistic	p
HbA1c	≤7% and >7)	64	16	11	2.25	0.134
Total cholesterol	<4 and ≥4 mmol/L	62	17	16	13.24	<0.001
BMI	<30 and ≥30 kg/m2	127	16	14	9.00	0.003
K10 Score	<22 and ≥22	125	7	7	Not appropriate	0.016
AQoL4D Utilities Score	<0.71 and ≥0.71	116	63	49	19.44	<0.001

† Follow up data (at 12 months) was available for n=86 participants

Exact p value calculated using binomial distribution

Table 4: Multiple logistic regression model for clients meeting diabetes management goals for HbA1c

Variable	**Reference**	**Odds Ratio**	**95% confidence interval**	**p value**
HbA1c≤7.0 at assessment	HbA1c>7.0	6.5	1.7 - 24.9	0.007
Has diagnosed hypertension	No	5.1	1.3 – 19.9	0.017
After missing data:		n=64, PseudoR^2=0.226		

DISCUSSION

This study indicates that diabetes nurse-led DSM programs in rural areas are well accessed and associated with significant improvements in a number of aspects of individual clients' health. Importantly, improvements occurred in client quality of life and in mental health and wellbeing, which, while not being specific for diabetes, are nevertheless important outcomes.

Many of DSM program clients faced considerable socio-economic disadvantage. The study population comprised two thirds on low incomes, one third of whom were dealing with multiple chronic conditions, and 20% of whom were living with mental illness. Each of these factors not only has the potential to inhibit health service use but also may be associated with poorer health outcomes more generally (Arcury et al 2005). This study suggests that the diabetes nurse-educator led program is not only adequately accessible for vulnerable population subgroups but is associated with meaningful health benefits beyond those related specifically to their diabetes. Nevertheless, clients who were cigarette smokers were less likely to attend three or more sessions compared with non-smokers/former smokers. This suggests that more specific targeting of clients who are cigarette smokers may be needed.

It is likely that accessibility was influenced by the Victorian DHS DSM program design which allows variations in the Models of Care offered by health services. This flexibility in how health services allocate the DSM program funding enabled the health service to tailor delivery to meet the needs of most clients. In this instance, by offering a single group education session which reduced travel burden on clients. Despite these adaptations, distance (living more than 25km away) remains a significant reason for not attending the DSM program, even though it is known that residents of sparsely-populated rural communities are more willing to travel for health care (McGrail et al 2015). While the DSM program offered clients the option for telephone reviews as an alternative to face-to-face consultations, referred clients may be unaware of this possibility until they attend at least an initial assessment. Possible solutions include ensuring that potential and referred clients are aware that services can be delivered via telephone consultations, and offering alternative models of service delivery, such as outreach or other modalities of telehealth, for less proximate clients. A further group of clients who may similarly benefit from being offered alternative models of service delivery that improve accessibility are those with multiple chronic diseases, who otherwise are less likely to attend three or more sessions.

This study showed that the capacity for the diabetes nurse-educator led program to achieve clinical goals for HbA1c is linked to clinical indicators at program commencement, particularly a lower HbA1c at initial assessment and diagnosed hypertension. It is not surprising that patients who had well-controlled diabetes before attending the DSM program also had well-controlled diabetes 12 months later. It also might suggest that diabetes nurse-educator led programs are likely to be more effective in populations with mild to moderate well-controlled diabetes to start with, than in populations with more severe and poorly controlled diabetes. It is not clear from this study why there is an association between diagnosed hypertension and diabetes control at 12 months. One possible mechanism is that patients being managed for hypertension by their GPs may be receiving more regular diabetes care overall and are therefore more likely to have well-managed disease.

This study was limited to a single rural community. Whilst DHS funded multiple sites to implement DSM programs, cross-site comparisons were not possible and there was no control group. As a result it isn’t possible to determine whether the improvements noted in clinical outcomes may have occurred anyway (Travaglia and Debono 2009). Further, some of the client pathology results were missing from file notes and this limited the use of regression methods to analyse associations with clinical outcomes. Finally, Victorian Government management guidelines in community health settings identify total cholesterol as a single relevant indicator of lipid control in clients with diabetes. As a result, full lipid profiles of clients are not routinely recorded by programs such as this, so clinically important changes in the lipid profiles of participants related to other lipid components such as the HDL/LDL ratio could not be identified.

These limitations notwithstanding, this research nonetheless demonstrates the significance of geographical accessibility to health services for rural populations managing chronic diseases such as T2DM. It also highlights the importance of several clinical factors (cigarette smoking and having multiple chronic diseases) that are associated with reduced utilisation of the diabetes self-management program.

CONCLUSIONS

This study suggests that diabetes nurse-educator led DSM programs in rural settings that are carefully tailored to meet community and client needs using available resources can be accessible to most and effective at improving diabetes management. This study has identified where further targeting of at-risk populations and program adaptation is needed to encourage attendance – in this instance by smokers, those with multiple chronic diseases and those living further away.

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A paediatric nurses' journal club: developing the critical appraisal skills to turn research into practice

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KEYWORDS

nursing, journal club, critical appraisal, survey, paediatrics, confidence

ABSTRACT

Objectives
The aim of this study was to determine if implementation of a regular journal club improves critical appraisal confidence and facilitates integrating research literature into nursing practice.

Design
A survey was distributed to all paediatric nurses across two wards who had potentially attended the journal club in the previous two years.

Setting
This small scale study was undertaken at a northern Australian hospital.

Sample
The surveys were distributed to 58 nurses from the two paediatric wards and 33 of them responded but only 29 of these had attended the journal club leaving 29 surveys to be analysed for this study.

Results
The majority of responses to the survey questions were positive. When statistically analysed by Pearson's correlation, four variables showed a strong association: increased confidence with interpreting research literature, developing critical appraisal skills, the sharing of knowledge and integrating evidence-based practice into nurses' workplace.

A number of changes in practice have occurred as a direct result of the journal club.

Conclusion
The results from this study support the benefits of utilising nursing journal clubs to promote clinical practice that is informed by research evidence.

INTRODUCTION

Health professionals are required to continually assess their clinical practice to provide the best patient care. Evidence-based practice provides a structure for finding and evaluating the latest current research evidence and integrating it into daily clinical care. This is fundamental to optimising patient outcomes (Profetto-McGrathet al 2010).

Keeping clinically current in the nursing profession has become more important in recent years, especially with increasing research being published to support changes in practice. Honey and Baker (2011) identified a clear need for healthcare professionals to be more research aware in order to meet the requirements of professional registration and to deliver patient care that is informed by evidence. There are a number of strategies that can be used to achieve these standards. One of these strategies is to initiate and integrate a regular journal club into the professional development time of the workplace environment.

This paper outlines a study that was conducted to explore the impact of one such hospital-based journal club. The project aimed to assess whether implementation of a regular journal club improves critical appraisal confidence and facilitates integrating research literature into nursing practice.

BACKGROUND

Literature

Journal clubs in the medical profession have been running for well over 100 years (Lachance 2014). Nursing journal clubs are a more recent event as nursing pushed to become more professional in the 1980s and 1990s (St. Pierre 2005). There is no existing standard method for gaining the most educational benefit from a journal club. Member contribution appears to be a key factor to facilitating meaningful discussion (Nesbitt and Barton 2014) as well as having a motivated group leader (Deenadayalanet al 2008).

A journal club can be defined as a group of individuals who meet regularly to discuss and critically evaluate recent research articles in the academic literature. This environment provides a connection or 'bridging the gap' between the best research and application to clinical practice (Bilodeau et al 2011; Stallingset al 2011; Goodfellow 2004), thereby identifying a common underlying philosophy for sharing of current knowledge to improve patient care (Deenadaylan et al 2008).

Review articles have discussed the effectiveness of journal clubs and report on studies that found a significant impact on at least one learning outcome measure (Deenadaylan et al 2008). There is growing evidence that journal clubs are a successful way to improve confidence, research awareness and knowledge (Lachance 2014; Honey and Baker 2011). The application of this knowledge may then increase the nurses' confidence in clinical practice and pave the way for evidence-based practice.

The benefits of a hospital-based journal club include promoting a better understanding of the research process and improving the ability to critically appraise journal articles (Mattila et al 2013; Steenbeek et al 2009). Further advantages include creating a supportive environment for discussion (Nesbitt 2013) and identifying topics for further research (Hughes 2010). The structured use of a critical appraisal tool to determine the quality of the study and a set of guidelines for critiquing research is a common feature of successful journal clubs (Dirschl et al 2003).

Acquiring the confidence to critically appraise journal articles has been studied. One study (Mukherjee et al 2006) surveyed participants attending a multidisciplinary pilot study journal club, reporting a priori and post hoc results. Before journal club attendance, 22% of participants felt confident appraising the research. Following attendance at the journal club sessions, 78% of participants felt confident, showing a marked improvement in this attribute.

Annually in Australia, nurses register with the Health Practitioner Regulation Agency and confirm that they comply with competencies set out by the Nursing and Midwifery Board of Australia (NMBA). These competencies state that the Registered Nurse needs to use best available evidence and nursing expertise in the provision of nursing care and that they demonstrate analytical skills to access and evaluate health information and research (NMBA 2006). Nurses can work on achieving these competencies with the support and encouragement of attending a regular professional journal club.

This review of the literature has revealed that investigations into the benefits of nursing journal clubs mostly consist of descriptive studies, literature reviews or instructions on 'How to run a Journal Club'. Therefore, this research project addresses a gap in the literature that focuses on identification of correlational associations between variables to increase nurses' confidence in critiquing research to facilitate evidence-based practice.

The Monthly Journal Club

A monthly journal club was commenced in 2012 to support and encourage the paediatric nurses at a northern Australian hospital to engage in evidence-based practice, ensuring practice was current. The main aim at the time was to improve patient outcomes in the paediatric unit. The development of a working relationship between the Paediatric Clinical Nurse Educator and the Clinical Librarian began in September 2011 when the Librarian presented an Evidence-Based Practice for Health Professionals class. Discussions commenced to initiate a journal club and the Educator and Librarian have continued to collaborate to lead the group. The liaison and communication underpinning their leadership has been beneficial to the promotion and attendance at the monthly sessions.

Another crucial element of this journal club's success was attributed to the Educator encouraging nursing staff to participate. The journal club sessions were informal, supportive and friendly. The sessions were held monthly for one hour in the early afternoon (to maximise attendance from two crossover shifts on the wards). Numbers of staff attending the monthly journal club in the two years leading up to the survey ranged from five to 17. Nursing staff involved in the paediatric journal club consisted of a vast mix of backgrounds with baseline skills that included hospital-trained staff, overseas nurses for whom English was a second language, postgraduate and recently qualified new graduate nurses.

The Educator organised a different speaker each month to give a short presentation about an article. Journal club topics were chosen using either recent clinical cases, questions arising from current practice or recent articles of interest. Topics discussed included: fasting times on paediatric wards, oral sucrose for paediatric pain, acute rheumatic fever, falls in hospital, bedside handover and bronchiolitis.

The Librarian contributed to the journal club by searching for relevant research articles and presenting information on methods for interpreting research study findings. The Librarian also attended the monthly sessions to support discussions around the critical analysis of results. A webpage was created as part of the Library's Paediatric Subject Guide to link to the articles and presentations.

Before commencing the journal club, the Educator and Librarian discussed the importance of using a simple critical appraisal tool (a checklist with analysis questions) for interpreting the research article during each meeting. A number of tools were reviewed for use during the journal club sessions but it was felt important to develop a user-friendly and simple critical appraisal tool that suited this group's needs. The Librarian developed a simple one page checklist.

Time restraints and shift work resulted in staff not always reading the allocated article prior to the meeting. However, they were still encouraged to attend and become involved in discussions. Following a short presentation, the nurses were given the opportunity to read and ask questions about the article and they discussed issues surrounding application to practice.

METHODS

This study was undertaken using a quantitative correlational approach. The sample population comprised of nurses from two paediatric wards (a total of 58 staff) who had potentially attended one or more journal club meetings. An online survey was used to collect responses. The survey instrument was written and developed using the web-based Survey Monkey questionnaire that the nurses could access via a link. The survey consisted of 11 questions. Two were background questions which focused on the respondent's nursing category and the number of years of nursing experience. The next three questions focused on whether or not the respondent had attended one or more journal club meetings. The survey ended here for those who had not attended. Four questions were statements requiring a response on a five point Likert scale from strongly agree to strongly disagree. The last two questions were qualitative open-ended to explore the views of respondents and to gather recommendations for future journal club meeting improvements.

The link to the survey was distributed via email and from a survey icon on the Health Library's Paediatrics Journal Club webpage. The survey was able to be accessed for six weeks in August and September, 2014. The data collected were de-identified and consent was implied once the survey was completed and submitted.

Statistical analysis was performed in Microsoft Excel and Statistical Package for Social Sciences (SPSS) Version 21 for Windows. Initially, the response data for the survey questions were converted to numeric scores from the Likert scale. Cronbach's alpha was calculated on all questions to determine reliability for this sample of nurses. Cronbach's alpha (α) is a measure of internal consistency or split half reliability (Field 2013). It is usually calculated for each variable and will be 1 if all items are the same and 0 if none of them are related. Satisfactory values are between 0.7 and 0.8 (Bland and Altman 1997). Pearson's correlation coefficient (r) is measured to determine the relationship between two variables. There is a strong relationship if this coefficient is between 0.6 and 0.9 (Moule 2015). The researchers in this study wanted to determine if variables were associated with each other. For example, does developing critical appraisal skills enhance practising evidence-based practice?

Ethics approval was obtained from the Northern Territory Department of Health and Menzies School of Health Research Human Research Ethics Committee.

RESULTS

Demographics

The surveys were distributed to 58 nurses from the paediatric wards and 33 responded, a response rate of 57%. Twenty-nine completed surveys were analysed. The four incomplete surveys were participants who had not attended any of the journal club meetings. Respondents who had not attended any of the meetings only answered the first four questions. Demographic data are represented in table 1.

Table 1: Demographic Data of Participants

Demographic Variables	n	%
Nurse Classification		
New Graduate	3	9
Registered Nurse	24	73
Educator	3	9
Manager	3	9
TOTAL	**33**	**100**
Nursing Experience (years)		
Less than one	5	15
One to five	8	24
Five to ten	5	15
Over ten	15	46
TOTAL	**33**	**100**

FINDINGS

The participants were asked how often they had attended a journal club session, 12 of the respondents (41%) had been three or more times, whereas 11 had been once and six had been twice.

Four questions of the survey were Likert scale rating questions requiring one of five responses ranging from strongly agree to strongly disagree. The majority of responses to all four questions were positive (see table 2).

Nearly three-quarters of respondents (n=21) either strongly agreed or agreed that attending journal club had increased their confidence with critically appraising journal articles. The vast majority (97%) of respondents (n = 28) agreed or strongly agreed that attending the journal club facilitated sharing of knowledge and interaction between nurses. After attending one or more journal club sessions, 97% of respondents (n=28) agreed or strongly agreed that discussion in these sessions enabled them to think about ways they could change practice on the ward. Also, the majority (93%) of respondents (n = 27) either agreed or strongly agreed that attending the journal club sessions were a useful tool to promote evidence-based practice in the workplace.

Table 2: Descriptive data of benefits of attending journal club

Statement	Strongly Agree n(%)	Agree n(%)	Neither Agree nor Disagree n(%)	Disagree n(%)	Strongly Disagree n(%)	Total answered question n(%)
Attending journal club has improved my confidence in critically appraising journal articles	8(27.5)	13(45)	8(27.5)	0(0)	0(0)	29(100)
Journal club facilitates the sharing of knowledge and interaction between nurses	10(34.5)	18(62)	1(3.5)	0(0)	0(0)	29(100)
Journal club discussions have enabled me to reflect on ways I can change practice on the ward	9(31)	19(65.5)	1(3.5)	0(0)	0(0)	29(100)
Journal club is a useful tool to promote evidence-based practice in the workplace	10(34.5)	17(58.6)	2(6.9)	0(0)	0(0)	29(100)

When calculated using Cronbach's alpha, these four questions had values of 0.733, 0.807, 0.739 and 0.759 respectively. These results yielded good reliability considering the small sample size.

Pearson's correlation coefficient (r) was also calculated to determine the strength of association between the four questions (variables). There was a positive association between all the variables (see table 3).

Table 3: Correlational data of benefits of attending journal club

	Facilitates sharing of knowledge	Discussions enabled me to reflect on change in practice	Tool to promote evidence-based practice in workplace
Confidence Critical Appraisal	.698**	.627**	.639**
Facilitates sharing of knowledge	1	.690**	.727**
Discussions enabled me to reflect on change in practice	.690**	1	.663**
Tool to promote evidence-based practice in workplace	.727**	.663**	1

** Correlation is significant at the p < 0.01 level (2-tailed)

DISCUSSION

Confidence with Critical Appraisal

This study investigated a number of factors relating to participation in a paediatric journal club. A key component was the ability to appraise research articles, a skill that is developed continuously with practice. Critical appraisal provides a framework for systematically clarifying the strengths and weaknesses of a research study to determine validity and application of the findings (Young and Solomon 2009). It is vital for assimilation of research into practice (Rycroft-Malone and Bucknall 2010).

The interpretation of research study results appears to be a barrier for many nurses as they "struggle to understand research studies and find reading and critiquing the content intimidating" (Gloeckner and Robinson 2010, p267). One of the key findings in this study was that confidence in critical appraisal was positively associated with discussions enabling a change in practice (r = .627, p<0.01) so that regular, ongoing discussions about evidence-based research articles in the workplace may ameliorate nurses' apprehension in the future.

Sharing Knowledge

The finding that facilitating sharing of knowledge was positively associated with using the journal club as a tool to promote evidence-based practice in the workplace (r = .727, p<0.01) is supported by other studies that also recommend knowledge sharing in a journal club setting as a way of stimulating evidence-based practice in patient care (Nesbitt and Barton 2014; Maaskant et al 2013).

An integral part of the success of a journal club is identifying leaders to coordinate and assist the participants with the knowledge sharing in the sessions. The leaders may not guide the discussion each time but retain responsibility for promoting the meetings, distributing articles in advance and establishing the format for discussion (Luby et al 2006). The leadership shown by the Educator and Librarian may relate to the finding that facilitating sharing of knowledge was positively associated with discussions enabling reflection about change of practice (r = .690, p<0.01).

Application to Clinical Practice

The aim when commencing this journal club in 2012 was to improve patient outcomes in the Paediatric Unit. Therefore, discussing how the research literature could fit into local practice has been a significant part of the monthly journal club meetings. Results from this study found that discussions enabling reflection about change in practice was positively associated with using the journal club as a tool to promote evidence-based practice in the workplace (r = .663, p<0.01).

Practice changes that have occurred as a direct result of this journal club include: the development of a falls prevention and management guideline, a working group to discuss procedure fasting times, a new visual child-friendly pain scale and updating procedures for medication safety.

The findings from this study suggest that participation in a journal club has a favourable effect on a number of aspects that can potentially improve nursing practice. The paediatric journal club meetings have now been ongoing for a period of four years.

Limitations

Even though the sample size of this study was small, results still yielded statistically significant findings providing evidence that larger studies in this area are worth pursuing.

CONCLUSION

This journal club study highlights the positive correlation between being part of a regular journal club and developing critical appraisal skills, the confidence with interpreting research literature, the sharing of knowledge and integrating evidence-based practice into nurses' workplace.

Despite the small sample size, this research contributes to the evidence that nurses developing these skills enables reflection on clinical practice and also influences possible changes in patient care.

It is important for health professionals working in a hospital setting to take responsibility for their own learning by professional development activities such as reading and appraising the published research in their field as well as keeping up to date with general topics in evidence-based practice. This can be more successfully achieved with the support and promotion of a regular journal club.

RECOMMENDATIONS

Regular participation in a journal club can facilitate reflection on clinical practice and the integration of research into patient care.

Using a simple critical appraisal tool and having committed leaders plays an important role in the success of a journal club

Nurse Educators are encouraged to include a monthly journal club in the professional development time on their wards

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Managing medical service delivery gaps in a socially disadvantaged rural community: a Nurse Practitioner led clinic

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KEY WORDS

Nurse Practitioner; Primary care; Primary health care; Consumer satisfaction

ABSTRACT

Objective

The aim of this pilot project was to investigate how Nurse Practitioners (NP) manage medical service delivery gaps in a socio-disadvantaged rural Victorian region.

Design

A cross-sectional study utilising data from patient consultations that took place at the Nurse Practitioner Community Clinic (NPCC) over six months in 2013 and patient satisfaction survey.

Setting

The NPCC is a rural clinic servicing a rural population in Victoria.

Subjects

629 patients.

Main outcome measures

Numbers of patients; presentations; age; gender; postcode; reason for encounter; consultation length; availability of General Practitioner (GP); consultation activities and follow up; NP Medicare Benefits Scheme (MBS) item number rebate; and equivalent GP MBS item number rebates.

Results

Over 50% of patients were female; 60% aged over 45 years. Patients had 2.6 encounters with the NPCC; over 50% lasting between 10 and 20 minutes. Approximately half the revenue of that claimed in equivalent GP encounters. Common reasons for attendance were symptoms and complaints (37.2%) and attendance was viewed as convenient and accessible, despite having a regular GP (47.8%). Fifty six Patients responded to a satisfaction survey and indicated they were satisfied with the service would use the service again and would recommend it.

Conclusions

The NPCC provided an accessible service that met patients' needs in a rural community. The study provides evidence that NPs can provide medical management in areas where medical service delivery gaps exist. However, there was a significant discrepancy between funding reimbursements for services provided at the NPCC and those provided by GPs.

INTRODUCTION

Nurse Practitioners (NP) have been authorised and licenced to practise in Australia since December 2000 (Dunn et al 2010). Since 2010, they have had provider and prescriber rights under the Medicare Benefit Scheme (MBS) and Pharmaceutical Benefits Scheme (PBS). By December 2013, 1,000 NPs were endorsed in Australia. In a survey of Australian adults Parker et al (2014) found that 87% were willing to see a Nurse Practitioner regarding their primary care needs. In addition, it is widely accepted that a shortage of doctors in rural areas requires innovative solutions, beyond recruiting overseas trained doctors and training more local doctors. One such solution is the development of the Nurse Practitioner (NP) service (Kamalakanthan and Jackson 2009). There is, however, a lack of research regarding the provision of NP services, particularly to rural communities within Australia.

A search of the literature utilised keywords of ‘Nurse Practitioner’, ‘Rural’, ‘Primary Care’, ‘Primary Health Care’ and were combined using the Boolean operator ‘and’. The databases used were CINAHL, Medline and Psycinfo. The time period researched was from January 2000 to July 2015. There were 105 articles, however most studies were conducted in Canada, United States of America or United Kingdom. There were two publications from New Zealand and only five studies in Australia.

The discourses related to the legislative and policy frameworks governing NP practice have been investigated in two studies (Harvey 2011; Turner et al 2007). These studies suggest that despite the rhetoric about autonomous practice, NPs are still cast in the role of care givers rather than care providers. This lack of clarity is further evidenced in a study by Parker et al (2013) using seven focus groups across Australia, which found health care consumers were confused about the roles of NPs compared to doctors and other nurses. There were no studies found that clarified the roles of NPs in rural Australia and there were no studies found that evaluated the work of rural NPs in Australia. Poghosyan et al (2012) recommended NPs actively engage in publishing the productivity of clinical service delivery, addressing workforce shortages and recognising that NPs can add value to health service and contribute to reducing health costs by incorporating their full scope of practice.

A pilot project established under an Australian Commonwealth Department of Health and Aging (DOHA) to improve access to primary care services for older people developed a Nurse Practitioner Community Clinic (NPCC) for a disadvantaged rural population in southern coastal Victoria. The clinic opened to the public servicing all age groups in June 2012. Local reports indicate the communities in the region are considered socially and geographically disadvantaged with significant primary health service gaps (Aspex Consulting 2010; Vinson 2007). Prior to the establishment of the NPCC, the residents of this community had no access to GP services within a twenty-five kilometre radius, very few GP services offered a MBS Bulk Billing service (meaning patients paid the full cost of the service at the consultation, before they were partially reimbursed by Medicare), there was limited access to nursing and allied health services and limited access to public transport. The NPCC was staffed by two nurse practitioners working 1.4 effective full time (EFT) for a period of two years.

This study reviewed the NPCC over a six month period to examine the characteristics of patients attending; the types of encounters; the NPCC Medicare rebates compared to General Practitioners (GP) for the same items; and the level of patient preference and satisfaction.

METHOD

Existing data collected by the NPCC and a survey of patients to determine service satisfaction and preferences for service over a six month period in 2013 formed the basis of this study. A cost analysis of service provision was undertaken to determine the Medical Benefits Scheme cost differential between NP and standard medical services.

Clinic Consultation Data

An existing data set, collected in relation to consultations in the clinic, was mined and the data was de-identified and entered in to an Excel spreadsheet. The data included numbers of patients; number of presentations; age; gender; postcode; main reason for encounter; length of consultation; availability of regular GP; activities during consultation and follow up; NP MBS item number rebate equivalent GP MBS item number rebates; and cost of consumables utilised for sustainability purposes however this final category of data was not sufficiently complete to include in analysis.

Satisfaction Survey

Satisfaction surveys were distributed periodically and returned by mail anonymously. The satisfaction survey included five (5) Likert scale response questions related to service satisfaction, 12 limited response questions regarding service intentions and one (1) open ended response question. Survey data was entered into another Excel spreadsheet by the receptionist of the NPCC.

Ethical review was exempted by Monash University Research Ethics Committee (CF14/3795 - 2014001988) on the basis that the study involved an existing record containing only non-identifiable data. The study was also approved by the Regional Health Service overseeing the NPCC.

De-identified clinic consultation and survey data were provided to the Monash University authors, independent of the clinic and health service, for analysis. Numeric data was summarised using numbers and percentages. Qualitative responses to the survey were transcribed verbatim to a single document and the data read repeatedly searching for patterns. This allowed the grouping of data excerpts into themes which were then described.

FINDINGS

During the study period there were a total of 649 patients who presented to the NPCC, of which 57.9% were female. The majority of patients represented the older age groups with more than 60% aged 45 years and above. There were 341 new patients attending the NPCC during the study period (table 1).

The most common reasons why people chose to attend the NPCC were that despite having a GP, the NP was convenient and accessible (47.8%) or the patient was happy to receive shared care between the NP and GP (11.9%) or their specialists (4.5%). However, a number of people indicated that they attended the NPCC because they were dissatisfied with GPs (26.5%) or had no regular GP (9.4%) (table 2).

Table 1: Demographic characteristics (n = 649)

	n	(%)
Gender		
Male	273	(42.1)
Female	376	(57.9)
Age category ()		
< I year	12	(1.8)
1-4 years	16	(2.5)
5-14 years	57	(8.8)
15-24 years	51	(7.9)
25-44 years	98	(15.1)
45-64 years	200	(30.8)
65-74 years	139	(21.4)
> 75 years	76	(11.7)
New patient		
Yes	341	(52.5)

Table 2: Reasons for choice of Nurse practitioner (n = 649)

	n	(%)
NP convenient and accessible, has regular GP	310	(47.8)
Prefers NP Clinic to GP wants share care to GP; Can't afford doctors, does not like GPs, happy with NP clinic; refuses to go to GP	172	(26.5)
Shared care with GP, happy with NP service, NP clinic has good service	77	(11.9)
NP convenient and get same day appt; no regular GP	56	(8.6)
Shared care with specialists, happy with NP clinic	29	(4.5)
No regular GP	5	(0.8)

There were 1,677 encounters during the study period with the average of 2.6 encounters per patient (table 3). In over 35% of encounters a prescription for medication was provided. The length of encounter was recorded for 1,621 encounters. More than 50% of the encounters were of between10 and 20 minutes duration, rebated at a rate of $17.85 per consultation compared to the rebate for GPs of $37.05 per consultation. This represents a difference of $17.05 between rebates, which over six months and 958 consultations is a rebate difference between NP consultations and equivalent GP consultations of $16,333.90. For longer consultations of between 20-40 minutes (nearly 33% of consultations), the rebate for NPs is less than half that for GPs. The rebate income for the NPs during the six month period for these longer consultations was just over $18,000 but for equivalent GP consultations, it would have been $39,000 (table 3).

Table 3: Encounter number, duration and rebate

Number of encounters	**N = 1,677**			
	Mean	***Median***	***Range***	
No. of encounters per patient	2.6	1	1-28	
	n	**%**		
Received a prescription during encounter	614	(36.6)		
Length of encounter (where pt. present)	**N = 1621**			
	n	***(%)***	***NP Rebate***	***MBS rebate***
< 10 mins	59	(3.6)	$8.70	$16.95
10 - 20 mins	948	(58.5)	$17.85	$37.05
20 – 40 mins	544	(33.6)	$33.80	$71.70
> 40 mins	70	(4.3)	$49.80	$105.55

Nurse Practitioner encounters were categorised using the International Classification of Primary Care – Version 2 (ICPC-2) (Britt et al 2014). The three most common reasons for encounters were for symptoms and complaints (37.2%); diagnostic, screening and prevention (26.3%) and medications (including prescriptions), treatments and procedures (24.8%). Table 4 outlines the primary reasons for encounters.

Table 4: Primary reason/s for encounter (n = 1,658*)

	n	**%**
Symptoms and complaints	616	(37.2)
Diagnostic, screening and prevention	436	(26.3)
Medications (includes prescriptions - 279), treatments and procedures	412	(24.8)
Test results	149	(9.0)
Referrals	52	(3.1)
Administrative	58	(3.5)

*Denominator varies due to missing values; Respondent may have more than one reason for encounter (total percentage > 100%).

The variance of prescriptions issued between the table 3 – 614 and table 4 – 279 results as table 4 represents the primary reason for the encounter rather than the result of the encounter.

The NPCC had a satisfaction survey that patients could participate anonymously and voluntarily in order to provide feedback for the NPCC over a two week study period. A total of 56 patient satisfaction surveys were returned during the study period. Of these patients, 87.5% had visited the NPCC more than once. All these respondents indicated they would see the NP again for a similar need and would recommend the NPCC to others. A total of 60% of patients waited no more than five minutes after their appointment time to see the NP. All were happy with the length of the consultation and the information they received from the NP and all felt the NP was thorough. In response to the question “How has the NPCC benefited you?”, the most common responses were the location of the NPCC in their local community reduced travel time, costs and inconvenience; appointments were available when needed; the staff were knowledgeable, provided information and a service of quality; and the staff were warm, caring and provided a personal service.

DISCUSSION

In this study, the work of a rural NP clinic has been quantified, showing the breadth of activities in encounters of 649 patients over a period of six months. The satisfaction survey returned by 56 patients contributed further details to the study. The results also highlighted the funding difference provided by Government Rebate to NP services in comparison to GP services. A national survey of General Practice activity between 2013-2014 (Britt et al 2014), revealed the gender distribution of female patients was predominant at 56.6% of consultations, similar to this study. In addition, the age distribution of infants attending consultations was similar with nearly 2% infants. This study included a significantly higher number of consultations with patients over the age of 65 years with 15.1% in the national survey compared to 41.5% in our study being over the age of 60 years. This may reflect the vulnerability of the population in this area compared to the national average. Britt et al (2014) reports the older population are more likely to attend general practice and have increased frequency and need for additional encounters associated to their chronic conditions and multiple comorbidities. Parker et al (2009) reflected on the necessity for the uptake of NPs in the primary care sector due to the ageing population and increasing health demands due to chronic disease. They suggested that NPs could significantly address the workforce issue and add value to the primary care sector (Parker et al 2009). In addition, prior to the commencement of the NPCC, residents in two townships in the area had to travel more than 25 kilometres to obtain rudimentary medical care. Additionally, these two townships have a high rate for disability and sickness (South Coast Primary Care Partnership 2012). The main conditions contributing to the relatively poor health status of residents in study area were chronic conditions of liver disease; chronic respiratory disorders attributed to asthma and chronic obstructive pulmonary disease (COPD); diabetes and a higher rate of malignant cancers and cardiovascular disease than the Victorian State average (Aspex Consulting 2010). Studies (Ryan and Rahman 2012; Martin, 2000) suggest that health consumers often disregard routine health care checks until their health deviates from their normal. Further, the consequences are significantly worse for those consumers who have a low socio-economic background, live in an underserviced area, have little access to public transport and have an out-of-pocket expense to pay when presenting to the medical profession (Ryan and Rahman 2012; Martin 2000).

NPs and GPs in Australia have a Provider Identification Number to obtain reimbursement for care provided from the MBS. Payments under the MBS received for the same four consultation time item numbers vary significantly between NPs and GPs. At the time of the clinic operation in 2013, a NP was reimbursed a Medicare rebate range from $8.70 - $49.90 depending on the time of consultation, whilst a GP rebate ranged from $16.95 - $105.55. NPs earned less than 50% rebate benefit compared to GPs (RACGP 2014).

Another major point of difference between this study and the national survey is the mean length of time of the consultations. Since 2004-2005, the mean length of consultation for GPs has decreased to 14.8 minutes, and the median length was 13 minutes in 2013-2014 (Britt et al 2014). In our study, 58.5% of our consultations lasted between 10 – 20 minutes, and 33.6% were between 20 – 40 minutes in relation to the claiming of MBS time consultation items. Whilst the figures have not been extrapolated exactly to indicate the mean or median length of consultations, this data is consistent with other literature indicating NPs provide longer consultation time with the health consumer (Keleher et al 2009). NPs provide a wellness model that objectively targets improving consumers' health and wellbeing knowledge by recommending physical exercise, cultivating healthier nutritional regimes, encouraging a reduction in smoking and alcohol intake as well as opening discussions about the impact of lifestyle on chronic disease (Keleher et al 2009). The relationship, along with the ability to engage in meaningful communication and attentiveness between the NP and the health consumer, improves comprehensive care, enhancing the health consumer's knowledge and compliance and giving rise to ultimate satisfaction, often accompanied by improved health outcomes (Ryan and Rahman 2012; Keleher et al 2009). Longer NP consultations allows patients to discuss their needs which may be beneficial to their health outcome; as opposed to the patient having to make several appointments with a GP due to the time pressures on GP practice of imposing time limitations in order to see greater numbers (Ryan and Rahman 2012).

While the national survey (Britt et al 2014) indicated there has been a decrease in consultation length since the 2004-2005 data, the claiming of chronic disease management items, health assessment and GP mental health care have all significantly increased. Disparity arises where GPs in Australia have the ability to be reimbursed for numerous clinical procedures and incentive payments whereas NPs, having the same scope to undertake and perform these procedure, do not obtain reimbursement for the same items from the MBS.

This study demonstrated that NPs add direct clinical benefits through reducing the accessibility gap in areas of need and providing cost effective care in a timely manner to improve health outcomes. This has been recognised by others to reduce the burden on other health care institutions, reducing hospital admissions and length of stay through recognised earlier interventions (Poghosyan et al 2012; Ryan and Rahman 2012; Bauer 2010).

A major limitation of this study in being able to compare the data to the Britt et al (2014) survey is that the data base was set up for purposes other than this pilot project. In this study, the NP data only recorded the main reason for the encounter and did not record the number of issues addressed during the consultation despite often being faced with multiple reasons within the encounter. Also not recorded was the actual diagnosis from any of the consultations within this data. In the Britt et al study (2014), 70.9% of problems concluded with at least one medication or treatment given; 62.1% of encounters resulted in at least one medication prescribed, supplied or advised; 9.8% of problems led to referrals; and at least one investigation was requested in 19.1% of cases. In our study, only the main encounter was recorded, and in this regard a direct comparison the Britt et al (2014) study cannot be made.

NPs are able to provide a high level of medical care and when working in collaboration with a range of other health professionals, the health consumer benefits by access to timely efficient care that helps address the increasing demand for primary care (Poghosyan et al 2012; Middleton et al 2007).

The Britt et al study (2014) indicated a decrease in home visits which has implications for the older person wishing to be managed at home rather than in institutional care. Britt et al (2014) reported that a total of 2.6% of all MBS items combined for Residential Aged Care Facilities, institutions and home visits were claimed, providing an opportunity for NPs to service this cohort of patients, though it was not a component of the NPCC role. Keleher et al (2009) recognised that there has to be a dynamic restructure if Australia is to reduce the burden of cost of the health sector by switching care from institutions to home and community based facilities. The provision of ambulatory primary health care, provided by NPs and delivered within community-based facilities, enabled timely efficient health outcomes, potentially reducing hospital presentations and in turn reducing costs to the health sector (Ryan and Rahman 2012; Bauer 2010; Keleher et al 2009; Horrocks et al 2002).

The funding of NPs prevents them from operating to the full extent of their authorisation. In countries such as the United States of America, NPs are granted a Provider Identification Number which ensures they receive a greater access to Government medical benefit schemes than their Australian counterparts, with benefit rates of 85% from their MBS, helping ensure sustainability for the services NPs deliver (Poghoysan et al 2012).

It is no longer the case that only medical practitioners are qualified to offer differential diagnosis, investigate, diagnose and treat the health consumer, indicating that there is a role and need for NPs across Australia (Ortiz et al 2010). Our study showed that 26.5% of people attended the NPCC because they were dissatisfied with GPs, and the overall satisfaction levels of the NPCC patients who completed the satisfaction survey were positive. This concurs with the common theme revealed from several articles in the primary health care sector indicating the equivalency between NPs and doctors, showing that patient satisfaction and appreciation was higher for NP services (Ryan & Rahman 2012; Ortiz et al 2010; Hayes 2007; Horrocks et al 2002). Nurse Practitioners often detected more physical complaints through providing longer consultations; offering supplementary advice on self-care; health promotion with proactive management; and utilising active listening and communication skills thus building a greater affinity with the health consumer (Ryan and Rahman 2012; Ortiz et al 2010; Hayes 2007; Horrocks et al 2002).

Less satisfaction and lack of care is greater in areas where resources are lacking, particularly in underserviced areas with elements of high disadvantage (Ryan and Rahman 2012). Hayes (2007) indicated the health consumers when seen by a NP were more likely to implement and follow the care plan interventions as trust and rapport were established as a result of patients valuing the NPs contribution. This combined with the short access times to the NPCC contributed to increased access and satisfaction from the community, also found in our study.

Parker et al (2013) found Nurse Practitioners in primary care were recognised and accepted by health consumers to provide routine consultations and manage uncomplicated chronic conditions in Australia. Several articles recognised there is a real need in Australia to have NPs acknowledged for the health care they provide, as they have the ability to increase quality of life for the wider population, with similar or sometimes better health outcomes, increasing satisfaction for the health sector and providing significant Government savings in the area of health (Bauer 2010; Horrocks et al 2002).

RECOMMENDATIONS

This study has demonstrated the sustainability for NPs in Australia is difficult due to several reimbursement differences awarded by the Australian Government. Despite the significant contribution NPs are able to make to rural communities, without further research into the equitable access of fund reimbursements, they will be unable to affect health policy, economic and workforce issues as their role was envisaged (Mills et al 2011; Bauer 2010). The MBS system should be revised to include reimbursement amounts for NPs that are fair and realistic, reflecting their service provision and ensuring sustainability and longevity for NPs in the primary health care sector (Bauer 2010; Middleton et al 2007).

The role of NPs in rural communities remains under-investigated. Further research needs to be undertaken to analyse these roles and understand the relationship of NPs to GPs in small communities.

CONCLUSION

The NPCC in this study demonstrated an innovative and flexible service to a small rural area, which was valued by the patients using the service. Despite this, the Government reimbursement of services is at least 50% less than similar services provided by General Practitioners. Appropriate funding of Nurse Practitioners in Australia is essential for the development and economic sustainability of new models of primary health care, particularly for vulnerable, more isolated populations.

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Literature review: Why do we continue to lose our nurses?

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KEY WORDS

Nurses, literature review, nursing shortage, nursing attrition, shortage, ageing workforce, retention

ABSTRACT

Objective
To decrypt what determining factors contribute to nurses leaving the clinical facet of the profession.

Primary argument
Nurses encompass the largest professional constituent of the health care workforce in most countries, resulting in the impact of a shortage of these professionals, as immense. A projection in the shortage of nurses is upon us, and the margin in the reduction of these health professionals is thought to be worse than any of the preceding cyclical reductions. More than half of the nursing profession feel they are underpaid and overworked, resulting in the likelihood of patient's needs not being met, significantly increasing. Lengthy hours, quality of working environments, lack of leadership and the ageing population and workforce, can all be seen as influential factors, in which have the potential to leave this profession in a situation of calamity.

Conclusion
In light of the predicted global demand for nurses over the next decade, the departure and retirement of the existing nursing workforce will potentially result in the loss of significant and treasured experience and organisational knowledge, weakening the capacity and capability of the nursing profession.

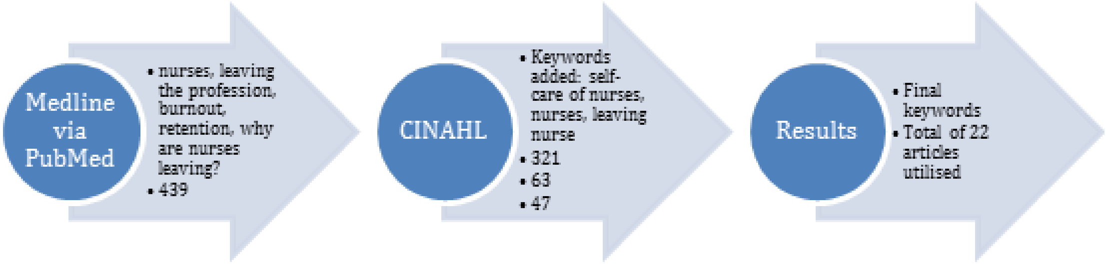
INTRODUCTION

Nursing has frequently been referred to as vital to the safe and humane provision of healthcare and services to our populations (Scott et al 2014). Nursing originated as a vocation, and is still immortalised in the mind of the public, with the selfless caring of Florence Nightingale (Currie and Carr-Hill 2013). Further opinions mirror the vocational label of nursing, referring to nurses as humane practitioners, whom focus on the psychosocial, spiritual and physical needs of individuals. The modern era of nursing steers away from this caring nature of our nursing ancestry, to an ever-increasing technical age of the profession. The use of clinical judgement, technical data and technology in general, have created the expectation and need for nurses to prove their technical competence in the twenty first century. The modern day clinically and technically skilled nurse is expected to marry these modern expectations of the industry, with the vocational needs held dearest to those we assist (Scott et al 2014).

METHOD

Shortages in the nursing profession have been widely documented but often ill-defined (Buchan et al 2015). Reference to this shortage is commonly referred to as a 'looming' problem, rather than a current issue, requiring contemporary and effective action. Many countries are facing the jinx of an ageing population needing to be cared for by an ageing workforce and it has been said that by 2025, it is anticipated Australia will have a shortage of 109,000 nurses (Faithfull-Byrne and Cross 2015). This clashing of existences will see a shortfall of 9 million nurses by 2030 (World Health Organization 2016). With 41.6 being the average age of nurses in Australia and a predicted 36% of nursing positions being left vacant by 2020 in the United States of America alone, the next few decades are crucial in escaping the collapse of the nursing faculty in health care (Wright and Bretthauer 2010; Wickett et al 2003).

In order to undertake this literature review a search of three electronic databases took place over a two month period: CINAHL (Cumulative Index for Nursing and Allied Health Literature), PubMed and Medline via PubMed. All searches were done in English and the following keywords and phrases were utilised in the search of each database: 'nurses', 'leaving the profession', 'burnout', 'retention' and 'why are nurses leaving?' These keywords and phrases were used to determine the causes of nurses when reducing their hours in the workplace, or to leave the profession totally. With the assistance of smartext in Medline via PubMed, 439 articles were yielded from the phrase 'why are nurses leaving?' Topics such as self-care and resilience arose, prompting addition of these keywords when searching the CINAHL database. A preferred database, CINAHL was able to yield 321 full text articles from 'self-care of nurses' and 63 articles from 'nurses' and 'leaving nursing'. After determining that 47 of the returned articles from this search were relevant to supporting the presented question, I focused on the methodological processes to narrow my analysis further. Grounded theories and exploratory design were two methods of greatest appeal, as there was a desire to find research that incorporated both qualitative and quantitative outcomes. A well-grounded picture of the current situation was required regarding the constructed question which could refine and establish research priorities. Semi-structured interviews played a sizeable part in this investigative process centred round social science. A semi-structured interview process enabled authors to incorporate new ideas throughout the course of discussion. Interviewed and surveyed groups varied from moderate to large in size with a preference for larger groups in order to allow for optimal accuracy of data. It is from these search methods that I was able to narrow my focus to 22 articles, confirming the availability of a surplus of information on this topic, heightening convictions that this is a worthwhile aspect of the profession to explore.



RESULTS

Literature suggests that the shortage of nursing professionals has been a known and ongoing crisis worldwide for the past decade. Numerous efforts have gone into the recruitment of nurses, resulting in an annual increase rate of 9.8%, higher than the projected demand growth rate of 2.12% (Buchan et al 2015; Bureau of Labor Statistics 2011 cited in Chan et al 2013; National Council of State Boards of Nursing 2010). Having achieved such positive results in the recruitment of nurses the real challenge may exist in the retention of these newly obtained nurses, once they are in the clinical nursing environment. When determining why nurses leave the profession it seems beneficial to determine why they entered it in the first place. The literature on reasons for entering the nursing profession is abundantly clear with a constant parallel concluding that individuals who enter nursing have a deep and professional commitment to patients. Choosing a career in nursing is based on a desire to provide care in a time of need and/or crisis. Some entrants claim to be answering a 'calling', and that they could not imagine doing anything else (Eley et al 2010; Hill 2009; Kovner et al 2007). With one central desire shared by a large group of individuals in such a large industry what could go or have gone amiss to prevent these individual's from continuing to answer this calling.

Research suggests a multitude of reasons for nurses leaving the profession, with multiple groups and sub-groups of identified issues. MacKusick and Minick (2010) state that an estimated 30%-50% of all new nurses elect either to change positions or leave nursing completely within the first three years of clinical practice. Amongst all age groups, nearly 40% of nurses working full-time have taken a leave of absence from the profession, and the proportion of part-time nurses doing the same increases to 70%. In the early to mid-twentieth century nursing was a life mission with nurses' career paths noted for their longevity. In this, the twenty first-century, a nurses' career length is thought to be five years or less with an estimated 2.5 million nurses not actively practising. Furthermore, dropout rates for new graduate nurses are accelerating with as many as 60% leaving their first job within the first year (Hodges et al 2004; Gulack 1983). With such alarming statistics of departure in the industry discovering why we are losing these valuable individuals is paramount.

Due to the overwhelming amount of literature available on the issue of nurses leaving the profession it was thought necessary to begin the review of reasons broadly before delving into the most commonly identified issues detailed by the authors. Chan et al (2013) performed a systematic literature review of the shortage in the nursing profession and why members had the intention to leave. Chan et al (2013) highlighted two major categories of reason: Organisational Factors and Individual Factors. Organisation factors influencing the exit from the nursing profession include: work environment; culture; commitment; work demands and social support. Structural empowerment is used to revitalise an organisation's structure. This is said to bring about access to information, resources, support and opportunities to develop and empower nurses. A positive relationship between a revitalised organisational structure and job satisfaction was identified. If a work environment was seen to be deteriorating, with a lack of support from an organisational level, nurses were more likely to leave (Macken and Hyrkas 2014). The set of values, beliefs and behaviour patterns which forms the identity of an organisation is aimed at helping to shape employees behaviours. If inconsistencies arise in an organisation's culture, nurses are likely to see their organisation as unable to assist in fulfilling their self-goals, resulting in retreat. Commitment can be closely linked to the culture of an organisation.

If a nurse cannot identify with an organisation's values and beliefs, and does not see evidence of execution of same, then nurses' attitude towards the organisation will be tainted, leading to disconnection. Work demands also play a part in determining whether nurses stay or go, as young nurses in particular do not want to work night shift or weekends, and other, more senior nurses, saw these times as the only period they had to spend with their families (Ihlenfeld 2004). Nurses with higher patient loads were more likely to report an intention to leave, as this resulted in exhaustion, lack of time for reflection and discussion amongst colleagues (Chan et al 2013). Finally, from an organisational perspective Chan et al (2013) found that nurses, who are socially supported from supervisors and co-workers, reported a higher level of intent to stay. A low quality of teamwork is associated with intention to leave, as nurses can feel that hospital administrator's side with doctors, focusing more on financial duties and do not respect nurses, or their opinions (Macken and Hyrkas 2014; Ihlenfeld 2004).

The second broadly mentioned category from Chan et al (2013) is the aforementioned Individual Factors comprising of: job satisfaction; demographic factors and burnout. Greishaber et al (1995) defines job satisfaction as the favourableness or unfavourableness with which employees view their work. Numerous studies have identified that low job satisfaction is associated with a greater intention to leave, and for nurses the dissatisfaction stemmed from the inability to provide high-quality care to their patients. Nurses' perceptions of their work environment are predominantly centred on ward practice, co-worker relationships, staffing and resources, professionalism and management (Martin 2015). Choi et al (2013) found there is significant negative association between nurses self-indicated level of job satisfaction and intention to exit the profession, with 44.5% of nurses reporting being dissatisfied with their jobs, and more than 60% of this group stating they had thought about resigning from their current positions.

By steering the direction of this topic to demographics, literature was more challenging to come by. Chan et al (2013) covers this most thoroughly suggesting that age, gender, marital status, type of shift worked, number of years in nursing, number of years in current position, type of clinical unit and level of education, all identified as demographic influences. Nursing is a rapidly ageing and female-dominated workforce. Currently the average Australian nurse is 41.6 years of age, with this number expected to increase over the next decade. This is reflected on an international scale with the average age of nurses in Denmark, Finland, Ireland, New Zealand, Sweden, the United States of America and the United Kingdom, ranging from 42-47 years of age (Buchan et al 2015) and the United States of America estimating that 40%, or between 500,000-600,000, of their nursing workforce are over the age of 50 (McMenamin 2014; Gabrielle et al 2008).

Ever-increasing acuity and workloads, coupled with an ageing workforce, presents the threat of a significant drop out from the nursing profession which is potentially unavoidable. Nurses aged 45 years old or older are members of the profession who are more likely to stay whereas nurses between the ages of 25-35 years old are more likely to 'move on', in search of more regular and sociable hours (Chan et al 2013). It has been found that male nurses have a greater intention to leave than female nurses due to a greater desire for career progression and issues surrounding monetary compensation. Money has been referred to as perhaps one of the greatest influences impacting the mobility of nurses. The money that nurses receive is not enough based on the educational qualifications required and expected of them, and many nurses themselves feel they are underpaid (Stodart 2015; Chan et al 2013; Chandra 2003). With the rises in cost of living ever-present the role that monetary compensation plays in career choice of an individual becomes increasingly dominant. From a survey of nurses who have left the profession and of high school students considering which career path to choose the following statements consecutively resulted: "I make better pay and have better benefits in another profession", and "I can make more money doing something else" (Ihlenfeld 2004).

Irrevocably, one of the most recurrently documented, and perhaps most troubling reasons for nurses intention to leave the profession, is due to burnout. Burnout was first recognised as a psychological concept in the 1970s, defined as emotional exhaustion, depersonalisation and a reduction in perceived personal accomplishment. Different studies have shown that nurses display high levels of emotional exhaustion, thought to arise from a prolonged discrepancy between what the individual gives and receives in the workplace, with diminutive praise (Macken and Hyrkas 2014; Garcia and Calvo 2012; Fearon and Nicol 2011). Burnout has been shown to arise from physical and psychological stress factors characteristic of the hospital environment. Such as: excess work generated by the growing demand for hospital care, excessively long working days, constant changes in working conditions, the conflict between nursing care priorities, and management or financial priorities that can lead to stressful organisational atmospheres (Macken and Hyrkas 2014; Garcia and Calvo 2012).

Burnout in the workplace results in increased financial costs, regarding sickness and staff turnover, whilst also reducing the quality of care. Of all the professions, nurses have been shown to experience higher levels of occupational stress and burnout, which is of great concern, considering the nature and responsibilities involved in their work. This increased level of stress can lead to failure to recognise patient distress with potentially disastrous consequences (Stewart and Terry 2014). For nurses meaningful relationships with their patients is a major factor in their ongoing commitment to their work. The humanistic ideal requires nurses to develop deep personal and interpersonal understanding and sensitivity to provide effective care. In order to establish these relationships it is necessary for nurses to be capable of emotional engagement. Nurses suffering symptoms of burnout will be disengaged and literature suggests this would be indicative of suffering from ‘compassion fatigue’ (Fourer et al 2013).

In an exploratory study of 142 female nurses conducted by Ruggerio (2003), 53.7% were identified to be suffering from chronic fatigue, 34.8% displayed traits of anxiety and 44.8% with total mood disturbances. A review by the Department of Health on the health and wellbeing of National Health Service staff found that more than one quarter of staff absence was due to stress, depression and anxiety (Fearon and Nicol 2011). From this abundance of literature reviewed and data collected investment in resilience, wellbeing and self-care programs for nurses are becoming increasingly essential. The psychological wellbeing of nurses is important for several reasons. With such disorders as anxiety, depression and compassion fatigue heavily linked to our profession, this could perhaps be the largest precursor for nurses exiting the workforce. Nurses who exhibit changes to their psychological wellbeing are more likely to resign from their position, or may alternatively be forced to reduce their employment fraction (Drury et al 2014). With approximately half of all Australian nurses working on a part-time basis this could perhaps be the direction in which our industry is headed (Jamieson et al 2008). Motivations to become a part-time nurse included the need to preserve health because of the impact of shift work, work intensification and ageing, financial considerations, the need to be able to manage multiple life roles and attempting to gain some level of ‘control’ in one’s life (Jamieson et al 2008).

DISCUSSION

With such phrases as “I just couldn’t take it anymore”, “nursing is too much”, and “if you are doing a good job, it is mentally as well as physically exhausting and demanding” (MacKusick and Minick 2010; Ihlenfeld 2004), it comes as no surprise that part-time employment and total withdrawal is increasingly present in the nursing profession. This review of the literature has further highlighted the need to make nurses a central focus in the healthcare industry. Statistically speaking, with most nurses being able to relate to the majority of issues raised the care of nurses as individuals and as a group, appears to have fallen by the way side. The image of a nurse has changed from that of a “caring and calm” healthcare professional, to a “caring but stressed” healthcare professional. With high stress, low monetary compensation and unachievable workloads often associated with the nursing profession, we may not require an answer to the question of: why are nurses leaving? But perhaps find ourselves asking the question: why are they not entering this profession in the first place? (McMurtrie et al 2014; Chandra 2003).

RECOMMENDATIONS

- A reduction in workloads for nurses. Allowing nurses to undertake a more realistic workload, will boost job satisfaction and lessen fatigue, encouraging nurses to stay in the profession longer.
- Assurance of strength in support and guidance, within leaders in the profession of nursing. Accomplishment of this could be achieved through a more stringent selection process, when recruiting leaders and managers within the nursing profession.
- Less focus on the financial limitations and targets of the nursing and healthcare profession, and a more central emphasis on the mission and values from which the profession evolved. Preservation of the 'soul' of the industry will inspire feelings of compassion and empathy within nurses, making patients feel 'cared' for, as opposed to 'looked after'.
- More support for the older and more experienced nurse, in order to maintain and perhaps revive the values of nursing. The provision and retention of these nurses will allow for more opportunities for junior and novice nurses to seek suitable mentors. This will allow novice nurses to have the option of being mentored by a leader or by a senior clinician, depending on their chosen pathway.
- Further promotion of the nursing profession and all it has to offer to individuals. Attention must also be paid to those contemplating entering the profession in order for the profession to have individuals to retain.

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