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Patient views of over 75 years health assessments in general practice

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KEY WORDS

Health assessment, general practice, prevention, patient survey

ABSTRACT

Objective

To gain an understanding of the value and timeframe of health assessments (HA) from the perspective of the patient.

Design

A self-completed questionnaire for patients who had undergone an over 75 years HA in a 12 month period excluding patients in residential or hospital care.

Setting

General practice patient group in a regional Queensland town.

Subjects

65 general practice patients with a response rate of 45.1% (65/144). The respondents were 67.7% (44/65) female and 30.8% (20/65) male with one gender (1.5%) not recorded.

Main outcome measure

Whether patients found the over 75 HAs beneficial, and whether they considered the annual timeframe for HAs appropriate.

Results

The majority of respondents 77% (47/61) indicated that their most recent HA was beneficial even though few respondents had a new health concern identified at this HA. A majority (82.5%, 52/63) also supported the current time frame of annual HAs, although 12.7% (8/63) thought once every 2 years was acceptable.

Conclusion

The findings confirm the benefits of health assessments in providing timely treatment for new health concerns and allaying anxiety in the elderly patients of this practice.

INTRODUCTION

Health assessments (HAs) for over 75 year olds were introduced by the Australian Government Department of Health and Ageing in 1999 to support general practitioners (GPs) in the provision of coordinated primary health care. All people aged 75 years and over, or 55 years for Aboriginal and Torres Strait Islander people, who are living in the community or in hostel level aged care accommodation are eligible for a HA. The assessment is undertaken by the GP or a combination of the GP and practice nurse, and attracts a Medicare benefit.

The content of the HA is based on the RACGP Guidelines for preventive activities in General Practice (Royal Australian College of General Practitioners 2009). Previous evaluations have shown varying uptake and impacts from these assessments, depending on the outcomes studied (Chan, Amoroso, and Harris 2008; O'Halloran et al 2006; Williams et al 2007). A randomised controlled trial of health assessments in the elderly, conducted elsewhere in Australia, showed no reduction in mortality, but some improvements in self rated health (Newbury, Marley, and Beilby 2001).

A review of elderly HAs in primary care recommended using practice nurses to support the process (Gray and Newbury 2004). Practice nurses (PNs) have been shown to possess the organisational and clinical skills required to undertake an assessment such as the over 75 HA (Walker 2006).

This study was undertaken within one general practice's patient group to allow the practice to gain an understanding of the value of HAs from the perspective of the patient. It aimed to show whether the patients found the HAs beneficial, and whether they considered the annual timeframe for HAs appropriate. In this study practice nurses and GPs jointly undertake HAs either in the practice or the patient's home, or sometimes both.

The study followed on from research undertaken within several general practices in north Queensland, using clinical audits and GP surveys. The previous study showed that patients completing over 75 years HAs had more recorded preventive interventions than those receiving usual care. HAs were considered by participating GPs to be useful in finding unrecognised clinical and social problems (Cheffins et al 2010).

METHOD

A questionnaire was developed to obtain patients' opinions on the over 75 HA. In this questionnaire the term "health check" was used as this is more familiar to patients than "health assessment".

A pilot survey of five patients was undertaken initially to refine the questionnaire and gain a preliminary indication of patients' interest in the research. The pilot group all considered the HA beneficial, and agreed that they would have another HA when invited by the practice.

For the main study, patients who had undergone an over 75 years HA in the period from August 2009 to July 2010 were identified from the practice's billing software. Patients were sent a structured questionnaire in the post to their listed home address. The questionnaire comprised 15 questions with set response options and 5 of these included open questions for individual comments. An explanatory letter signed by the practice nurse and GP inviting patients to participate, information sheet and reply paid envelope were enclosed.

The total number of patients originally identified was 165. The five patients who had participated in the pilot study were excluded. Four patients were known to be deceased and three were excluded as they had moved into residential care.

For time and feasibility reasons, it was decided to limit the number surveyed to 150, by including patients who had the most recent HAs. However, by the time the mail-out was arranged another three patients had moved into residential care, one was deceased and two were in hospital. The final number of questionnaires

sent out was 144. They were all posted at the same time, with a requested return date three weeks later. No reminders were issued.

Frequency analyses of responses were undertaken using Statistical Package for the Social Sciences (SPSS). Replies to open questions were thematically grouped by the practice research nurse and research worker and collated to provide ranking of similar responses.

Ethical approval for the study was granted by the James Cook University Human Research Ethics Committee (approval number H3649).

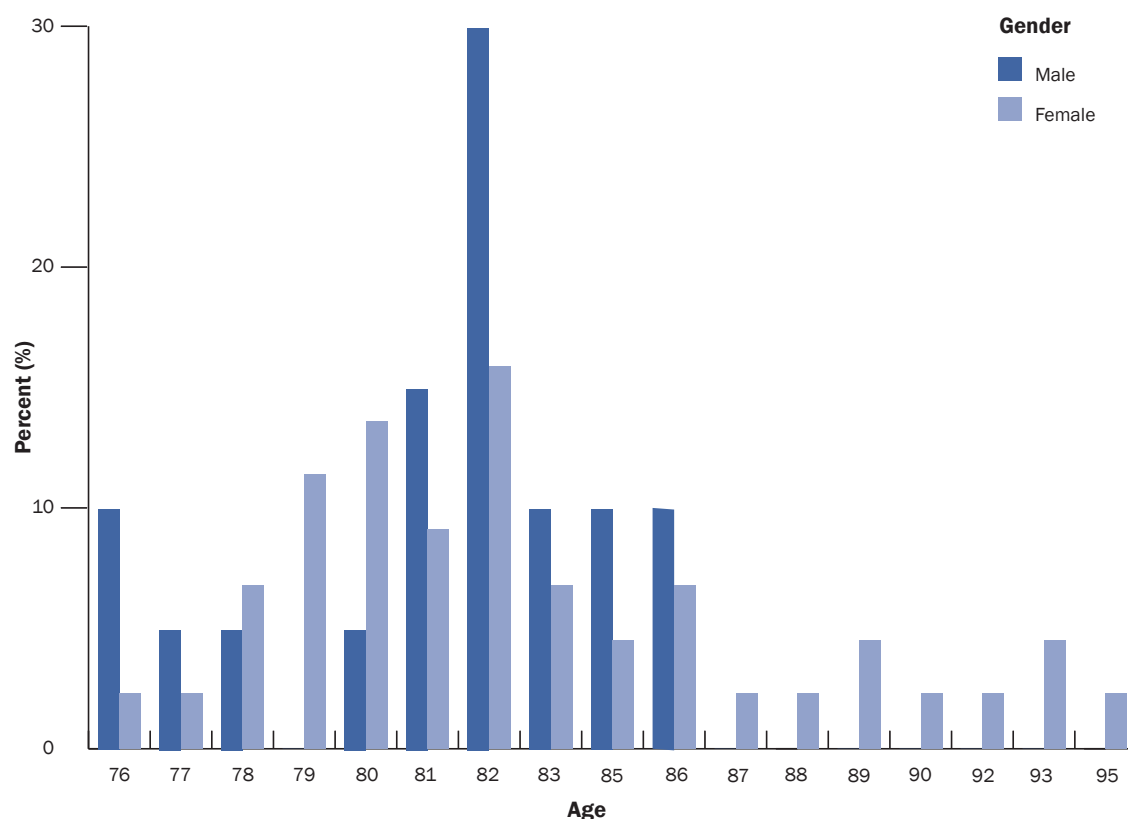
FINDINGS

A total of 66 responses were received along with two marked “return to sender”. One respondent stated they had not had an over 75 HA and were excluded from the analysis giving a response rate of 45.1% (65/144).

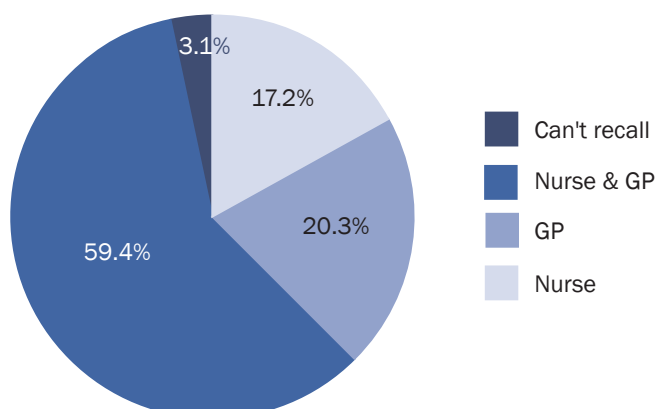
The gender distribution of the mail out was 71.5% (103/144) female and 28.5% (41/144) male. 67.7% (44/65) of the respondents were female and 30.8% (20/65) male with one gender (1.5%) not recorded. A higher proportion of males (48.8%, 20/41) than females (42.7%, 44/103) replied to the survey.

There were a similar number of respondents living alone (44.3%, 27/61) as living with a partner (47.5%, 29/61). The median age was 82 years although there were no male respondents over 86 years (see Figure 1). Two thirds of respondents (66.2%, 43/65) had undergone two or more HAs.

Figure 1: Respondents' age by gender (%)



The majority of HAs were performed jointly by a nurse and GP (59.4%, 38/64) (see Figure 2) and most were done at the practice (87.3%, 55/63). This was the preferred location for HAs (85.7%, 54/63). The minority who had their HA done at home (7.9%, 5/63) or a combination of home/surgery (6.3%, 4/63) indicated that they would prefer this for future HAs.

Figure 2: Practice staff that completed respondents most recent over 75 HA (%)

Interestingly 77% (47/61) of respondents indicated that their most recent HA was beneficial even though few respondents had a new health concern identified at this HA. Those respondents who stated a new health concern was identified (13.8%, 8/58), and a few who were “unsure” (6.9%, 4/58), said a new health concern was usually identified by the GP (50.0%, 6/12).

The most commonly reported benefits of HAs were reassurance and allaying anxiety (see Table 1). Identifying new health problems and information about available services were also seen as benefits. Only 6.6% (4/61) replied that the most recent health check was not beneficial and of these only one gave a reason for their answer as follows:

“Under constant supervision by Dr”

Respondent # 60

Table 1: Respondent reasons for their answer to the question “Did you find your most recent health check beneficial for you?”

Themes of answers for benefit of HA	Responses
Peace of mind/ know how you are/helpful	15
Find out what help available	4
Identify new problems	4
Able to maintain health	3
Information useful for other doctors	3
Health check done at home (unable to drive)	2
Overcomes confusion about treatment	2
Other	2

There were a variety of new health problems identified by the most recent HA as shown in Box 1.

Box 1: New problems identified during the health assessment

Didn't realise suffering from anxiety/depression
 Cholesterol was up
 Not active enough as regards exercise
 Heart failure
 Both hands operated for carpal tunnel
 Warts on back, later removed
 Some stairs have no railing
 Incontinent, weight loss, heart problems

Initiation of home care services and home modifications, medication review, counselling, and referral to allied health professionals were some of the 10 new services recommended during the health assessment.

A high majority of respondents (93.7%, 59/63) thought that HAs should be offered to everyone over 75 years for reasons given in Table 2 and two of these commented they should be offered to all over 70 years.

Table 2: Respondent reasons for their answer to the question “Do you think health checks should be offered to everyone over 75 years?”

Themes of answers for acceptability of HA	Responses
Could be an unknown problem that needs attention	13
Keeps you informed and confident about your health	9
New problems occur as growing older	5
Extra checks on older patients are good	4
In case need more help at home	4
Check of new and existing problems, overall check-up	3
Chance to talk about problems and ask for help	2
Reminds carers to check their own health	2
Should offer to all aged 70 years and over	2
Carry information with me, useful for other Doctors	2
Other	9

A majority (82.5%, 52/63) supported the current time frame of annual HAs, although 12.7% (8/63) thought once every 2 years was acceptable. Nearly all respondents (96.8%, 61/63) indicated they would have another HA when invited.

General comments provided at the end of the questionnaire reflect the overall view that health checks are reassuring for older people.

“People over 75 can lose their confidence; they can be frightened of falling. They can talk to the nurses about this and other things that worry them”

Respondent # 59

“I think if everybody over 75 had these health checks there might not be so many elderly people with complaints that could have been dealt with earlier”

Respondent # 48

“Having the health check makes me feel safer as I have the information with me so can give the other doctors the information immediately”

Respondent # 23

“Such checks are beneficial to all the elderly. I wonder why they could not be commenced at the age of 70 years”

Respondent # 53

DISCUSSION

The major limitations of the study are its confinement to one practice in a regional centre, the response rate of 45.1%, and the gender bias towards women (67.7%). However, there was an even spread between those living alone and those living with a partner, and the majority of respondents had more than one health assessment on which to base their opinions.

The findings support previous research conducted in north Queensland that found GPs thought the over 75 years HA was beneficial in identifying unrecognised clinical and social issues (Cheffins et al 2010). In this study most patients also believe over 75 HAs are beneficial and should continue to be offered. They are strongly inclined to have further HAs when invited. These findings provide important positive feedback to practice nurses who invest considerable clinical skills and time to the HA process.

Reassurance is an important outcome for patients, despite a relatively modest detection rate of new health problems. The comments made about the reason to have a HA include references to finding unknown problems and feeling more confident about one's health.

The problems that respondents reported being identified at their HA are varied (Box 1) and the GP survey in the previous study (Cheffins et al 2010) reported some similar issues (incontinence, unsafe housing). The previous study also referred to a range of medical issues such as immunisation, drug interactions and dementia. It is possible that patients in this study may not have recalled the more clinical aspects of their HA, particularly those who were unsure if a new health concern had been identified.

CONCLUSIONS

The findings of this study confirm the benefits of HAs in providing timely treatment for new health concerns and allaying anxiety in the elderly. HAs done in collaboration between the GP and practice nurse can maintain patients' optimum level of health, provide preventive care, and assist them to live as safely and independently as possible. We recommend that HAs continue to be offered annually to all those aged 75 years and older as both GPs and patients find them to be of benefit. HAs are an appropriate use of practice nurse time in addressing the health care needs of an ageing population.

REFERENCES

- Chan, A., C. Amoroso, and M. Harris. 2008. New 45-49 year health checks: GP uptake of MBS item 717. *Australian Family Physician*, 37(9):765-768.
- Cheffins, T., M. Spillman, C. Heal, D. Kimber, M. Brittain, and M. Lees. 2010. Evaluating the use of Enhanced Primary Care Health Assessments by general practices in north Queensland. *Australian Journal of Primary Health*, 16(3):221-223.
- Gray, L. C., and J. W. Newbury. 2004. Health assessment of elderly patients. *Australian Family Physician*, 33(10):757-777.
- Newbury, J.W., J.E. Marley, and J.J. Beilby. 2001. A randomised controlled trial of the outcome of health assessment of people aged 75 years and over. *Medical Journal of Australia*, 175(2):104-107.
- O'Halloran, J., A. Ng, H. Britt, and J. Charles. 2006. EPC encounters in Australian general practice. *Australian Family Physician*, 35(1/2):8-10.
- Royal Australian College of General Practitioners. 2009. *Guidelines for preventive activities in general practice*. Melbourne: RACGP.
- Walker, Lynne. 2006. Practice nurses - Working smarter in general practices. *Australian Family Physician*, 35(1/2):20-22.
- Williams, I., L. O'Doherty, G. Mitchell, and K. Williams. 2007. Identifying unmet needs in older patients: Nurse-GP collaboration in general practice. *Australian Family Physician*, 36(9):772-776.

Sleep in residential aged care: A review of the literature

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KEY WORDS

Nursing home, insomnia, sleeping pills, napping, sleeping disorder, sleeping disturbance

ABSTRACT

Objective

Sleep is necessary for good health at all stages of life. This literature review aims to identify evidence-based strategies to improve sleep in residential care, and offer recommendations for further research.

Design

A literature search was conducted for articles published between April 2003 and May 2010 and 34 papers were reviewed. These were classified according to the National Health and Medical Research Council's (NHMRC) 2005-2007 pilot program of additional levels of evidence.

Setting

Residential aged care

Primary argument

Strategies for improving sleep were described and evaluated in the 34 papers reviewed. These included pharmacological therapies, cognitive behavioural therapy, light therapy, various alternative therapies and multi-factorial interventions. There are no clear guidelines for effective and safe sleep promotion interventions in residential aged care.

Conclusions

Given the prevalence of sleep disorders amongst older people in residential care, there is a clear need for further research to enable guidelines to be developed.

INTRODUCTION

Sleep is necessary for good health at all stages of life. Generally, some changes in sleep can be considered part of normal ageing; however, normal changes should not cause personal dissatisfaction with quantity or quality of sleep (Tafaro et al 2007). In addition to their negative influence on perceived quality of life, sleep disturbances in older people can be problematic because of safety concerns, increased risk of falls and injury, and harm caused to bedroom partners and carers (Conn and Madan 2006). Sleep disruption is often a reason for residential care placement (Pollak and Perlick 1991), and in residential care, poor resident sleep is often associated with disruptive behaviours and psychological distress (Voyer 2006).

This literature review aims to identify evidence-based strategies to improve sleep in residential care, and offer recommendations for further research.

Sleep disturbances in older populations are common. Examples of primary sleep disorders common in older people include sleep apnoea, periodic limb movement disorder, circadian rhythm disorders, and primary insomnia. No large-scale epidemiologic studies of the prevalence of primary sleep disorders in residential care have been conducted (Martin 2008). Pain, depression, polypharmacy, environmental disturbances, chronic diseases, and nocturia are common causes of secondary sleep disorders in older adults (Garcia 2008).

For older adults living in residential care there are additional contributors to sleep disturbances. Environmental factors such as noise from staff and other residents, inappropriate lighting and temperature, and nighttime nursing care can disturb sleep (Ancoli-Israel et al 1989). Additionally, excessive time spent napping and in bed during the day, very early bedtimes, low levels of physical activity, low levels of bright light exposure during the day, pain and medications have all been cited as contributory to sleep disturbance (Conn and Madan 2006; St. George et al 2009).

Design

An initial review was undertaken by members of the authorship team in 2008 and reported to the Victorian Department of Human Services (Dowson et al 2008). This review extends the 2008 report and includes international research relating to sleep in residential care, published between April 2003 and May 2010. Haesler systematically reviewed literature published between 1993 and 2003 in 2004. This review sought to extend rather than replicate Haesler's work (2004).

Pubmed databases were searched for relevant English language articles limited to humans aged 65 years and over. The key words used included care home, nursing home, residential home, residential facilities, residential care, residential aged care, permanent care, long term care, resident(s), assisted living facilities, group homes, halfway houses, homes for the aged, intermediate care facilities, skilled nursing facilities and sleep, sleep medication, benzodiazepines; and sleep in combination with:

- acupuncture
- aromatherapy
- daytime napping
- diet
- environment
- exercise
- herbal
- light therapy
- music therapy
- naturopathy
- nighttime routine
- relaxation

Relevant articles were selected from the abstracts.

The literature was reviewed using the Australian National Health and Medical Research Council's (NHMRC) 2005-2007 pilot program of additional levels of evidence and grades for recommendations for developers of guidelines (National Health and Medical Research Council (NHMRC) 2005). In summary, 34 published papers were reviewed, of which none met the criteria for NHMRC Level I, 13 were Level II, two were Level III-2, five were Level III-3, and six were Level IV. In addition, eight literature reviews that could not be classified using this system were reviewed. This paper provides a summary of the evidence derived from these papers.

RESULTS

Strategies to Improve Sleep

Most medical literature on strategies to improve sleep for older people refers to conventional pharmacologic strategies, and cognitive behavioural therapy. Other management strategies found in the literature include acupuncture, aromatherapy, exercise, light therapy, music therapy, naturopathy, improved nighttime nursing care, and multifactorial interventions.

Pharmacological therapy

The National Institute of Health State-of-the-Science Conference on Insomnia concluded that there is no systematic evidence supporting the effectiveness of antihistamines, antidepressants, antipsychotics, or anticonvulsants in the treatment of insomnia (Cooke and Ancoli-Israel 2006).

In a double-blind RCT a sample of 30 older residents with dementia taking antipsychotic medications for non-psychotic symptoms were randomly assigned to withdrawal or control groups (Ruths et al 2004). Actigraphy showed significantly lower average sleep efficiency after withdrawal and increased nighttime activity that did not reach significance. Importantly, the withdrawal in this study was not gradual. In 2008, Ruths et al conducted a randomised placebo controlled trial on the impact of stopping long-term antipsychotic drug treatment on behavioural and psychological symptoms of dementia in nursing home patients (Ruths 2008). At three months post-study 33% of intervention participants and 22% of delayed intervention participants had not resumed antipsychotic treatment. Furthermore, they found ceasing antipsychotics did not significantly impact sleep.

Greco et al (2004) published a study on sleep and the use of psychoactive medications in residential care with residents who were unable to get into and out of bed without assistance. The study used wrist actigraphy and confirmed the disrupted nature of sleep in residential care previously reported. They reported that 65% of residents were routinely taking one or more psychoactive medications, similar to other reported studies (Holmquist 2005). The most commonly prescribed psychoactive medications were antidepressants. There were no differences between those taking psychoactive medications and those not in number of minutes asleep, percent of time in bed asleep, and number of awakenings. Antidepressants or the use of psychoactive medications reported to cause sedation were not associated with significantly better sleep quality.

As the recent literature shows, there are limited benefits in pharmacological treatments for sleep disturbance and some worrying side effects (Fonad et al 2009; Wagner et al 2004), confirming Haesler's (2004) recommendation to use sleep medications with caution in long-term residential care recipients.

The literature supports not initiating use of pharmacological treatments for sleep disturbances in residential care where possible, and attempting slow withdrawal in long-term users. Any use of pharmacological treatments for sleep disturbances should be short-term and intermittent and the effects closely monitored and documented (Locca et al 2008).

Cognitive Behavioural Therapy

Cognitive behavioural therapy (CBT) is an umbrella term that refers to non-pharmacological strategies that aim to challenge and change dysfunctional thoughts, emotions and behaviours. There have been several successful RCTs demonstrating that CBT and the various strategies it entails are effective in improving several sleep parameters in the short and long-term (Joshi 2008).

No studies in residential care have been published, perhaps due to the clear limitations of this approach with residents with deteriorating cognition. Some residents however would have the ability to understand and follow CBT strategies, and caregivers could potentially guide some behaviours of others.

Light Therapy

Light therapy appears promising because it is well established that circadian rhythms are influenced by light exposure (Brawley 2009). Bright light may contribute to better sleep via an increased homeostatic factor brought about by relative sleep restriction during the day (Fetveit 2005). There is, however, no consensus on the optimum treatment protocol. Most studies administer light via an artificial light box instead of natural exposure, but intensity, time of day, and duration of treatment vary between studies making it difficult to compare results.

Recent studies suggest some potential benefits from light therapy, but results have still not been sufficiently robust to conclusively demonstrate benefits. A Cochrane review with stringent inclusion criteria (Forbes et al 2004) excluded most studies, and concluded that none provided adequate evidence of the effectiveness of light therapy in managing sleep, behaviour or mood.

Nonetheless, Dowling et al (2005) reported a placebo RCT in two large long-term care skilled nursing facilities. Forty-six residents with Alzheimer's disease were exposed to one hour of bright light (more than 2500 lux) Monday to Friday for ten weeks. The results indicated significant improvements in residents with aberrant rest-activity rhythm, but no overall improvement in measures of sleep or rest-activity rhythms in the intervention group as a whole. The authors recommended studies to assess whether daily (including weekends) and longer duration of light exposure could produce more robust effects.

Ouslander et al (2006) applied a number of intervention measures to keep residents out of bed in the daytime, along with evening bright light exposure, but the results were not significant. In another large RCT, bright light ceiling fixtures were mounted in common living areas in six residential care facilities and found a significant 2% increase in total sleep duration (Riemersma-van der Lek et al 2008).

Fetveit et al (2003) reported a two-week treatment period of 11 residents with dementia. Study participants were exposed to two hours of morning light (6000 – 8000 lux). This resulted in a significant reduction in daytime nap duration (but not frequency) as recorded in nursing staff diaries. The other positive result was a 23-minute delay in resident bedtime during the treatment period. The small sample size and absence of a placebo group limit the interpretation of this data. However, monitoring of sleep patterns at 4, 8, 12 and 16 weeks after treatment termination indicated that all variables gradually returned to pre-treatment levels. Given there were reported positive effects remaining after 12 weeks, there is a basis for extending the washout period in future crossover-designed studies (Fetveit 2004).

Exposure to natural outdoor light is another potential intervention to improve sleep. Gammack and Burke (2009) conducted a small controlled trial of morning outdoor light exposure and reported modest improvements in sleep latency, sleep disturbance and sleep indices scores.

Exercise and activity

Volicer et al (2006) implemented a continuous activity program with 90 residents in long-term care dementia units. Improvements in sleep were reported only when additional staff were available to run the program.

Manjunath and Telles (2005) published a RCT looking at the effects of yoga sessions on self-reported sleep of 69 adults in a residential home in India. The yoga group undertook 60 minute yoga sessions six days a week. The yoga group reported a significant decrease in time taken to fall asleep at three and six months, an increase in total number of hours of sleep at six months and an increase in feeling rested in the morning after six months. No significant changes were reported in the wait-list group or in an intervention group given a herbal preparation.

Using a quasi-experimental protocol a simplified tai chi exercise program was introduced to cognitively alert and mobile residents of a long-term residential care facility (Chen et al 2007). The residents reported improvements in sleep at six months, which were maintained at twelve months.

Haesler (2004) concluded that daytime physical and recreational activity programs in isolation are unlikely to significantly improve sleep. As there has been very little research conducted with older adults in residential care since Haesler's review, her findings cannot yet be challenged.

Melatonin

Melatonin is a naturally occurring hormone involved in regulating circadian rhythms and promoting sleep. In a literature review completed by Pandi-Perumal et al (2005), they concluded melatonin can improve sleep with minimal side effects in people who have diminished production of endogenous melatonin. Diminished production of endogenous melatonin is common in people with Alzheimer's disease and melatonin treatment has been found to improve early evening agitation and cognitive impairment (Pandi-Perumal et al 2005; Asayama et al 2003).

Two other studies, however, failed to demonstrate significant objective benefits for people with probable Alzheimer's disease taking melatonin supplements compared to placebo control groups (Gehrman 2009; Singer et al 2003). Singer did, however, report finding subjective improvements according to carer reports (Singer et al 2003).

A large RCT conducted in 12 residential care facilities found that melatonin led to significant improvements in sleep onset latency, sleep duration and uninterrupted periods of sleep, but was also associated with adverse effects on mood and level of withdrawn behaviour (Riemersma-van der Lek et al 2008). Combining melatonin with bright light therapy, however, ameliorated the negative effects on mood. Furthermore, a different RCT with residents with probable Alzheimer's disease discovered combining melatonin and bright light treatment produced significant improvements in reducing daytime sleep, increasing daytime activity and improving the day-to-night sleep ratio. The combined treatment, however, did not produce significant improvements in nighttime sleep variables (Dowling 2008).

Ramelteon

Melatonin receptor agonists may be more effective than melatonin due to longer half-lives. One of these melatonin receptor agonists, ramelteon, may be useful for chronic insomnia (Pandi-Perumal et al 2005), although application for marketing authorisation in Europe was refused in 2008 because the manufacturer failed to demonstrate the benefits of ramelteon outweighed the risks. Currently it is the only substance approved for the treatment of insomnia in the USA that is not classified as a controlled substance (Mini et al 2007).

It has been recommended that rigorous research amongst older people in residential care is required to determine whether ramelteon is safe and effective amongst this population (Shimazaka and Martin 2007).

Valerian

Valerian is a herb that comes in two forms – alcohol and aqueous (sesquiterpenes). It is commonly used as a herbal remedy for alleviating sleep problems. In particular, the aqueous type is considered to have a sedative effect (Shimazaka and Martin 2007). There are few studies on the efficacy of valerian in older adults and none in long-term care settings (Shimazaka and Martin 2007).

Other alternative therapies

There has been one small quasi-experimental study reporting benefits of the herb yi-gan san on sleep in residents with dementia (Shinno et al 2008). Other alternative therapies that may have some benefit are music therapy (Skingley and Vella-Burrows 2010), aromatherapy (Soden et al 2004) and acupuncture (Suen et al 2002). These therapies need to be rigorously tested with older adults living in residential care before recommendations can be made. Given the ease of implementation and potential benefits of these therapies, further research is warranted.

Multifactorial Interventions

Haesler (2004) concluded that using a variety of sleep promotion interventions is more likely to be effective than using one isolated intervention in residential care. Other experts also suggest simultaneous multifactorial interventions are more likely to achieve significant improvements in sleep in residential care (Martin 2008; Dowling 2008).

Alessi et al (2005) conducted a RCT in four care facilities with 108 participants. The trial included efforts to reduce daytime time in bed, 30 minutes or more of sunlight exposure per day, increased physical activity, structured bedtime routine, and efforts to decrease nighttime light and noise. The intervention was conducted over five days and nights, and the follow-up measures collected on the final three days and nights. The results indicated a modest decrease in mean duration of nighttime awakenings in the intervention participants. No significant effect on percentage of nighttime sleep, and number of nighttime awakenings was found. There was a significant decrease in daytime sleep in the intervention group, and an increase in participation in social and physical activities and social conversation.

A second multifactorial study was conducted in four pairs of residential care facilities (Ouslander et al 2006). The facilities were randomised such that one facility in each pair undertook the intervention while the other served as a control; subsequently, the control facilities undertook the intervention. One hundred and sixty participants undertook the intervention, 77 in the immediate intervention and 83 in the delayed intervention. The intervention undertaken included daytime physical activity, attempts to keep participants out of bed in the daytime, evening bright light exposure, structured bedtime routine, nighttime care routines to minimise sleep disruptions, and nighttime noise reduction strategies. The intervention took place for 17 days and nights, with the follow up data collected for the last seven days and nights. There were no significant differences in primary wrist actigraph sleep measures between the intervention and control groups or pre and post intervention.

Both studies of multifactorial interventions failed to demonstrate significant improvements in nighttime sleep. There are a number of proposed reasons why significant improvements were not observed. Treating specific sleep disorders and medical factors known to influence sleep, such as depression, were not part of either intervention. The interventions occurred over five and seventeen days and nights, and longer interventions may be required in residential care. More intensive activity interventions may be required to affect sleep. In both studies the strategies used to reduce nighttime noise and disruption were not sufficient and remained at disruptive levels. It was also suggested that interventions must do more than reduce daytime sleep to have a positive influence on nighttime sleep (Ouslander et al 2006).

CONCLUSIONS

In the years 2003-2010 there were 34 published English language articles regarding sleep in residential aged care, but further work is required to identify effective and safe sleep promotion interventions.

Interventions demonstrating promise in residential care settings include light therapy, exercise, melatonin treatment and multifactorial interventions; however, outcomes and protocols have been inconsistent. Further research is required to identify optimal treatments, and rigorous testing to verify beneficial outcomes is required.

Research in residential care into the safety and efficacy of cognitive behavioural therapy, ramelteon, valerian, yi-gan san, music therapy, aromatherapy and acupuncture is missing. As these interventions have demonstrated promise in community settings, further research should be undertaken.

The latest literature suggests medications for sleep should not be used as a substitute for addressing underlying causes of sleep disturbance and should be used with extreme caution. Long-acting benzodiazepines should be avoided because of their potential to harm. More research on the effects of tapered withdrawals from long-term benzodiazepine use in residential care, and the efficacy and risks of using non-benzodiazepine hypnotics in residential care, is required.

It is more likely that multifactorial interventions will improve sleep in residential care more than any single intervention in isolation. Effective durations, mixes and intensities of interventions are yet to be determined, and will likely vary for each individual, given the diversity of sleep disturbance causes. After a proper individual assessment and treatment for underlying causes, a targeted multifactorial approach is likely to be most effective.

REFERENCES

- Alessi, C.A., Martin, J.L., Webber, A.P., Kim, E.C., Harker, J.O., and Josephson, K.R. 2005. Randomized, controlled trial of a nonpharmacological intervention to improve abnormal sleep/wake patterns in nursing home residents. *Journal of the American Geriatrics Society*, 53(5):803-10.
- Ancoli-Israel, S., Parker, L., Sinaee, R., Fell, R.L., and Kripke, D.F. 1989. Sleep fragmentation in patients from a nursing home. *Journal of Gerontology*, 44(1):M18-21.
- Asayama, K., Yamadera, H., Ito, T., Suzuki, H., Kudo, Y., and Endo, S. 2003. Double blind study of melatonin effects on the sleep-wake rhythm, cognitive and non-cognitive functions in Alzheimer type dementia. *Journal of Nippon Medical School*, 70(4):334-41.
- Brawley, E.C. 2009. Enriching lighting design. *Neuro Rehabilitation*, 25(3):189-99.
- Chen, K., Li, C., Lin, J., Chen, W., Lin, H., and Wu, H. 2007. A feasible method to enhance and maintain the health of elderly living in long-term care facilities through long-term, simplified Tai Chi exercises. *Journal of Nursing Research*, 15(2):156-64.
- Conn, D., and Madan, R. 2006. Use of Sleep-Promoting Medications in Nursing Home Residents: Risks versus Benefits. *Current Opinion. Drugs and Aging*, 23(4):271-87.
- Cooke, J.R., and Ancoli-Israel, S. 2006. Sleep and its disorders in older adults. *The Psychiatric Clinics of North America*, 29(4):1077-93.
- Dowling, G.A., Burr, R.L., Van Someren, E.J.W., Hubbard, E.M., Luxenberg, J.S., Mastick, J., Cooper, B.A. 2008. Melatonin and bright-light treatment for rest-activity disruption in institutionalized patients with Alzheimer's disease. *Journal of the American Geriatrics Society*, 56(2):239-46.
- Dowling, G.A., Hubbard, E.M., Mastick, J., Luxenberg, J.S., Burr, R.L., and Van Someren, E.J. 2005. Effect of morning bright light treatment for rest-activity disruption in institutionalized patients with severe Alzheimer's disease. *International Psychogeriatrics*, 17(2):221-36.
- Dowson, L., Moore, K., Tinney, J., and Ledgerwood, K. 2008. *Sleep in residential care: A Literature Review*. Melbourne: Victorian Department of Human Services.
- Fetveit, A., Bjorvatn, B. 2004. The effects of bright-light therapy on actigraphical measured sleep last for several weeks post-treatment. A study in a nursing home population. *Journal of Sleep Research*, 13(2):153-8.
- Fetveit, A., Bjorvatn, B. 2005. Bright-light treatment reduces actigraphic-measured daytime sleep in nursing home patients with dementia: a pilot study. *American Journal of Geriatric Psychiatry*, 13(5):420-3.
- Fetveit, A., Skjerve, A., and Bjorvatn, B. 2003. Bright light treatment improves sleep in institutionalised elderly—an open trial. *International Journal of Geriatric Psychiatry*, 18(6):520-6.
- Fonad, E., Emami, A., Wahlin, T. B., Winblad, B., and Sandmark, H. 2009. Falls in somatic and dementia wards at Community Care Units. *Scandinavian Journal of Caring Sciences*, 23(1):2-10.
- Forbes, D., Morgan, D. G., Bangma, J., Peacock, S., Pelletier, N., and Adamson, J. 2004. *Light therapy for managing sleep, behaviour, and mood disturbances in dementia*. Cochrane Database of Systematic Reviews (Online) 2 (Cochrane Database Syst Rev. 2004;(2):CD003946.).

- Gammack, J.K., and Burke, J.M. 2009. Natural light exposure improves subjective sleep quality in nursing home residents. *Journal of the American Medical Directors Association*, 10(6):440-1.
- Garcia, A.D. 2008. The effect of chronic disorders on sleep in the elderly. *Clinics in Geriatric Medicine*, 24(1):27-38.
- Gehrman, P.R., Connor, D.J., Martin, J.L., Shochat, T., Corey-Bloom, J., Ancoli-Israel, S. 2009. Melatonin fails to improve sleep or agitation in double-blind randomized placebo-controlled trial of institutionalized patients with Alzheimer disease. *American Journal of Geriatric Psychiatry*, 17(2):166-9.
- Greco, K.E., Deaton, C., Kutner, M., Schnelle, J.F., and Ouslander, J.G. 2004. Psychoactive medications and actigraphically scored sleep quality in frail nursing home patients. *Journal of the American Medical Directors Association*, 5(4):223-7.
- Haesler, E.J. 2004. Effectiveness of strategies to manage sleep in residents of aged care facilities. *Joanna Briggs Institute*, 2:115-183.
- Holmquist, I.B., Svensson, B., Hoglund, P. 2005. Perceived anxiety, depression, and sleeping problems in relation to psychotropic drug use among elderly in assisted-living facilities. *European Journal of Clinical Pharmacology*, 61(3):215-24.
- Joshi, S. 2008. Nonpharmacologic therapy for insomnia in the elderly. *Clinics in Geriatric Medicine*, 24(1):107-19.
- Locca, J. F., Bula, C. L., and O., Bugnon. 2008. Pharmacological treatment of behavioral and psychological symptoms of dementia (BPSD) in nursing homes: development of practice recommendations in a Swiss canton. *Journal of the American Medical Directors Association*, 9(6):439-48.
- Manjunath, N.K., and Telles, S. 2005. Influence of Yoga and Ayurveda on self-rated sleep in a geriatric population. *The Indian Journal of Medical Research*, 121(5):683-90.
- Martin, J.L., Ancoli-Israel, S. 2008. Sleep disturbances in long-term care. *Clinics in Geriatric Medicine*, 24(1):39-50.
- Mini, L.J., Wang-Weigand, S., and Zhang, J. 2007. Self-reported efficacy and tolerability of ramelteon 8 mg in older adults experiencing severe sleep-onset difficulty. *American Journal of Geriatric Psychiatry*, 5(3):177-84.
- National Health and Medical Research Council (NHMRC). 2005. *NHMRC additional levels of evidence and grades for recommendations for developers of guidelines*. Pilot program 2005-2007
- Ouslander, J.G., Connell, B.R., Bliwise, D.L., Endeshaw, Y., Griffiths, P., and Schnelle, J.F. 2006. A nonpharmacological intervention to improve sleep in nursing home patients: results of a controlled clinical trial. *Journal of the American Geriatrics Society*, 54(1):38-47.
- Pandi-Perumal, S.R., Zisapel, N., Srinivasan, V., and Cardinali, D.P. 2005. Melatonin and sleep in aging population. *Experimental Gerontology*, 40(12):911-25.
- Pollak, C. P., and Perlick, D. 1991. Sleep problems and the institutionalization of the elderly. *Journal of Geriatric Psychiatry and Neurology*, 4(4):204-10.
- Riemersma-van der Lek, R.F., Swaab, D.F., Twisk, J., Hol, E.M., Hoogendijk, W.J., and Van Someren, E.J. 2008. Effect of bright light and melatonin on cognitive and noncognitive function in elderly residents of group care facilities: a randomized controlled trial. *Journal of the American Medical Association*, 299(22):2642-55.
- Ruths, S., Straand, J., Nygaard, H. A., Bjorvatn, B., and Pallesen, S. 2004. Effect of antipsychotic withdrawal on behavior and sleep/wake activity in nursing home residents with dementia: a randomized, placebo-controlled, double-blinded study. The Bergen District Nursing Home Study. *Journal of the American Geriatrics Society*, 52(10):1737-43.
- Ruths, S., Straand, J., Nygaard, H.A., Aarsland, D. 2008. Stopping antipsychotic drug therapy in demented nursing home patients: a randomized, placebo-controlled study—the Bergen District Nursing Home Study (BEDNURS). *International Journal of Geriatric Psychiatry*, 23(9):889-95.
- Shimazaka, M., and Martin, J.L. 2007. Do herbal agents have a place in the treatment of sleep problems in long-term care? *Journal of American Medical Directors Association*, 8(4):248-52.
- Shinno, H., Inami, Y., Inagaski, T., Nakamura, Y., and Horiguchi, J. 2008. Effect of Yi-Gan San on psychiatric symptoms and sleep structure of patients with behavioral and psychological symptoms of dementia. *Progress in Neuro-psychopharmacology Biological Psychiatry*, 32(3):881-5.
- Singer, C., Tractenberg, R.E., Kaye, J., Schafer, K., Gamst, A., Grundman, M., Thomas, R., and Thal, L.J.; Alzheimer's Disease Cooperative Study. 2003. A multicenter, placebo-controlled trial of melatonin for sleep disturbance in Alzheimer's disease. *Sleep*, 26(7):893-901.
- Skingley, A., and Vella-Burrows, T. 2010. Therapeutic effects of music and singing for older people. *Nursing Standard*, 24(19):35-41.
- Soden, K., Vincent, K., Craske, S., Lucas, C., and Ashley, S. 2004. A randomized controlled trial of aromatherapy massage in a hospice setting. *Palliative Medicine*, 18(2):87-92.
- St. George, R.J., Delbaere, K., Williams, P., and Lord, S.R. 2009. Sleep quality and falls in older people living in self- and assisted-care villages. *Gerontology*, 55(2):162-8.
- Suen, L.K., Wong, T.K., and Leung, A.W. 2002. Effectiveness of auricular therapy on sleep promotion in the elderly. *American Journal of Chinese Medicine*, 30(4):429-49.
- Tafaro, L., Cicconetti, P., Baratta, A., Brukner, N., Ettore, E., Marigliano, V., and Cacciafesta, M. 2007. Sleep quality of centenarians: Cognitive and survival implications. *Archives of Gerontology and Geriatrics*, 44S:385-389.
- Volicer, L., Simard, J., Pupa, J. H., Medrek, R., and Riordan, M. E. 2006. Effects of continuous activity programming on behavioral symptoms of dementia. *Journal of the American Medical Directors Association*, 7(7):426-31.
- Voyer, P., Verreault, R., Mengue, P.N., Morin, C.M. 2006. Prevalence of insomnia and its associated factors in elderly long-term care residents. *Archives of Gerontology and Geriatrics*, 42(1):1-20.
- Wagner, A.K., Zhang, F., Soumerai, S.B., Walker, A.M., Gurwitz, J.H., Glynn, R.J., and Ross-Degnan, D. 2004. Benzodiazepine use and hip fractures in the elderly: who is at greatest risk? *Archives of Internal Medicine*, 164(14):1567-72.

Job satisfaction of Australian nurses and midwives: A descriptive research study

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KEY WORDS

nurses, midwives, stress, job satisfaction, quantitative.

ABSTRACT

Objective

To assess factors linked with job satisfaction of Australian nurses and midwives.

Design

Descriptive survey.

Setting

Public hospital, aged care facility and community health centres.

Subjects

A total of 562 enrolled and registered nurses and midwives were selected by convenience sampling when they attended professional conferences. The return rate was 41.4 per cent. A sample size of 550 was used to calculate overall results for job satisfaction.

Main outcome measure

Factors contributing to nurses' and midwives' job satisfaction.

Results

The majority (96%) of this sample of nurses and midwives were moderately or highly satisfied with their work and this was not diminished by experiencing moderate amounts of work-related stress. Factors positively related to high levels of job satisfaction were 1) enjoying their current area of practice; 2) feeling well-suited to the particular type of work; 3) wanting to stay in their current area of practice; and 4) having no intention of leaving the profession.

Conclusion

For this group of professionally engaged nurses and midwives, enjoying their work and perceiving themselves as well-suited to it were the major contributory factors for job satisfaction. The finding that nurses and midwives are dealing with moderate effects of stress does not reflect as job dissatisfaction. This finding is important because it challenges existing belief that stress may be a cause of job dissatisfaction.

INTRODUCTION

Given the present critical shortage of nurses and midwives, it is imperative to explore how both nurses and midwives perceive their jobs, so that strategies might be identified to enhance the quality of their working lives and improve retention (Australian Institute of Health and Welfare, 2006). The purpose of this study is to provide information and insight into sources of stress for nurses and midwives, and the impact of these on their job satisfaction. Assessment of nurses' and midwives' job satisfaction is essential to address target areas of concern for workplace stress. Specifically, this paper asks – Ultimately, what are the factors linked with job satisfaction and how does this relate to staff stress levels? This could have a powerful effect on the already critical national nursing shortage but it might also have an effect on the retention of nurses and midwives, reducing the numbers leaving the profession.

RELEVANT LITERATURE

The literature indicated that nurses and midwives are experiencing significant stress and burnout. Other than a few studies, four focusing on Victorian nurses (Kent and Lavery 2007; Pinikahana and Happell 2004; Barrett and Yates 2002; O'Connor and Jeavons, 2002;) three focusing on mental health nurses (Taylor and Barling 2004; Humpel and Caputi 2001; Clinton et al 1995), two in Queensland (Spooner-Lane and Patton 2008; AIHW 2006) and one in Sydney focusing on violence and abuse from patients (Carstairs and Trenoska 2002), all other studies are based on nurses and midwives working in countries other than Australia. All of these stress and burnout studies used a variety of reliable and valid questionnaires including The Maslach (1986) Burnout Inventory and the Nursing Stress Scale (developed by Gray-Toft and Anderson 1981). The Maslach (1986) Burnout Inventory, which uses three separately scored subscales was a model for the five subscale questionnaire used for this study.

In recent years, the number of tools which have been developed by nurses that assess the workplace has increased (Rattray and Jones 2007). Hurrell, Nelson and Simmons (1998) reported that choosing a tool to measure stress poses a perplexing challenge. Edwards and Burnard (2003) report that there are several established reliable and valid measures for measuring stress outcomes and stressors but investigators feel there is a need to continue to develop new instruments. Lambert and Lambert (2001) recommend that more studies be undertaken in other countries as there is a plethora of studies in the United Kingdom and United States of America. On this basis alone, there is good reason to conduct more research focusing on stress and burnout issues relating to nurses and midwives working in Australia.

In Victoria, Healy and McKay (2000) using the Nursing Stress Scale found that even though most nurses in their study reported being satisfied in their present positions, 67 per cent had thought about leaving the nursing profession. Environmental stressors, including low staffing levels and excessive workloads, accounted for this. Improving working conditions for nurses and midwives might not only reduce stress levels but might also encourage nurses and midwives to stay in the profession (Healy and McKay 2000). Other studies have found that stress appears to be a major determinant of nurses' job dissatisfaction levels, and that increased stress levels in nurses leads to career dissatisfaction (Hoffman and Scott 2003; Delvaux et al 1988). These findings equate to Beaudoin and Edgar's (2003) and Healy and McKay's (2000) studies which found that those who were satisfied in their work were less stressed than those who were dissatisfied.

RELATED THEORY

The five main subscales used for the questionnaire were work environment, psychosocial effects of stress, job satisfaction, exhaustion, and pressure and motivation. This conceptual framework of this research project relates to the three major work theories: the Effort-Reward Imbalance (Vroom 1964), Karasek's (1979) Demand-Control Model and the Person-Fit Theory (Mansfield et al 1989). Table 1 displays a representation of how the themes, categories and subscales are linked within this conceptual framework.

METHOD

Development of questionnaire

The research process began with the development of a questionnaire based on a comprehensive literature review. A prior publication (Skinner et al 2007) describes a study that established validity and reliability of the questionnaire used in this current study. A convenience sample of a mixture of registered nurses and midwives working in different clinical arenas who attended professional conferences were used. As nurses and midwives who attend conferences are more likely to be more educated and motivated and possibly financially supported by their employer; the results cannot be generalised and therefore must be considered a limitation of this study. The sample was selected because of geographical accessibility. However, this limitation is offset by the large sample size ($N = 550$) and by the use of a valid and reliable tool. Ethics approval was obtained from the appropriate authorities. Sample size (a priori) and power (post hoc) were calculated using the relevant statistical parameters (Table 1).

Table 1: Sample Size and Power Calculations- 2-tailed

	Alpha level – probability	1 - beta level –power	Effect size	Sample size
A priori	0.05 (α)	0.8 ($1 - \beta$)	$r = 0.12$	540
Post hoc	0.05 (α)	0.81 ($1 - \beta$)	$r = 0.12$	562

Classification and coding legends for questionnaire

Relevant questions from the questionnaire were categorised into the following subscales: work environment, psychosocial stressors, issues of control, job satisfaction, exhaustion and individual responses. As identified in the literature, questions which related to a particular subscale were grouped accordingly. For the majority of the questions, individual responses to stress and burnout experiences were identified by using a rating scale which designated how often these occurred (Roberts and Taylor 1998). As part of a standard valid methodology, such scales comprise, in most cases, between five and ten points (Schneider et al 2003). The scales used as part of this research range from five and nine points.

Factor analysis

Factor analysis was calculated a priori for the pilot study and as a post hoc analysis to statistically define subgroups for the questionnaire. It is vital to report a priori the number of factors expected to emerge (Rattray and Jones 2007). Factor analysis was also calculated to establish construct validity for the questionnaire to confirm factorial validity of underlying attributes or different questions on a scale (Polit and Hungler 1997). Pervin (1996) states that factor analysis is exceedingly useful in determining groups or clusters of items or behaviours that go together. For each respondent, an individual subset of measures was included in an overall score to produce subscale results for the entire sample. Each individual's scores were added for those particular questions relating to that subscale and then this individual overall score was scored as low, moderate or high (Table 2). Percentages were then calculated for the entire sample of nurses and midwives for the subscale job satisfaction.

Table 2: Scoring Levels for Job Satisfaction Subscale

Level for job satisfaction subscale	Score
High satisfaction	0-6
Moderately satisfied	7-14
Dissatisfied	15-21
Overall score	0 to 21

Development of questionnaire's subscales using factor analysis

As in the pilot study (with some questions deleted and moved into different subscales), the first part of the questionnaire used for the main study included 37 questions relating to stress and burnout within the nursing and midwifery profession, which included questions about job satisfaction. There is a growing consensus about the need to measure the perceived frequency of incidence of stress-related episodes in the workplace or, in other words, the perceived frequency of occurrence and severity of stressful events in workplaces (Vagg and Spielberger 1999). The pilot study's results initiated the development of the relevant subscales. All subscales except job satisfaction were modified for the main study following factor analysis as only those questions which were reliable were used. Specific indices were used for the subscales (Table 3). These five subscales, provided a way of determining and assessing individual responses to stress and burnout workplace issues for respondents instead of an overall score from many variables within the questionnaire.

Table 3: Stress Subscales / Indices for Main Study

Major theme	Category	Subscale	Questions	Indices
Stress	Job compatibility	Job satisfaction-5-item scale	Being suited to the work	0-4
			Enjoying the type of work	0-4
		Overall score	Wanting to change area of practice	0-3
		0-21	Leave professional discipline	0-3
			Frequency of job dissatisfaction	0-7

QUESTIONNAIRE RETURN RATE AND DEMOGRAPHICS**Questionnaire return rate**

Response rates in research studies among health professionals are usually poor (Ng et al 1999). The return rate of 41.4 per cent for this study is comparable to other published research findings with large samples investigating stress and burnout, however it leaves undefined the impact of the issues under study on the 58.6 per cent of nurses and midwives in the original sample who did not respond to the questionnaire.

DEMOGRAPHICS - COMPARISON OF NATIONAL WORKFORCE WITH STUDY SAMPLE

Important to the findings of this research was the review of previous, similar studies and whether findings from this study seemed congruent or otherwise with the work of others. The following demographics were therefore pertinent in relation to discussion and analysis of levels of stress for nurses and midwives from this study (Table 4). The age range for this study was similar to national statistics. In 2005, the average age in this study was 45 years which was also similar to national statistics (43.2 years in 2004). The questionnaire identified that nurses and midwives in this study worked slightly more average (fulltime, part-time and casual) hours per week (34.5 hours) as compared with the national sample (33.1 hours) (AIHW 2006).

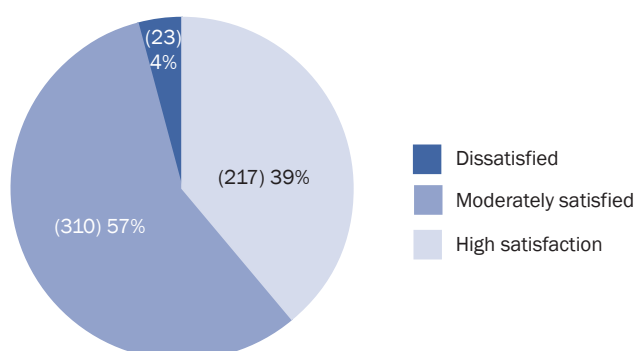
Table 4: Comparison of Age and Hours Worked Per Week Between Study and National Samples

Hours worked per week %						
Age %	<25	25-34	35-44	45+	Total %	Total number
<25	S = 0	S = 14.3	S = 71.4	S = 14.3	100	S = 7 1.3%
	N = 10.5	N = 14.3	N = 72.4	N = 2.7		N = 8,512 3.7%
25-34	S = 18.3	S = 18.3	S = 50	S = 13.3	100	S = 60 10.9%
	N = 29.4	N = 18.3	N = 49.1	N = 3.2		N = 47,958 21%
35-44	S = 34.1	S = 25.4	S = 30.1	S = 10.4	100	S = 173 31.5%
	N = 39.3	N = 21.8	N = 36.1	N = 2.8		N = 76, 556 33.5%
45-54	S = 18.7	S = 24	S = 46.9	S = 10.4	100	S = 241 43.9%
	N = 26.7	N = 25.1	N = 45	N = 3.1		N = 68,304 30%
55+	S = 13.2	S = 29.4	S = 42.6	S = 14.7	100	S = 68 12.4%
	N = 33.3	N = 23.8	N = 40.8	N = 2.1		N = 26,899 11.8%
Total %	S = 22.6	S = 24.4	S = 41.7	S = 11.3	100	S = 549 100%
	N = 31.7	N = 22	N = 43.4	N = 2.9		N = 228,230 100%

Legend = S = this study sample N = national sample

RESULTS

Figure 1 displays that the majority (96%) of this sample of nurses and midwives showed moderate to high job satisfaction levels and a small percentage (4%) were dissatisfied in their work. The decision was made to further explore this surprisingly large and positive perspective about job satisfaction by examining the differences between those who professed moderate satisfaction and those who described high satisfaction. The following four components evolved from factor analysis: perceptions of enjoying and being suited to the particular type of work are related to factors linked with job compatibility and satisfaction; and additionally, in wanting to change area of practice or leave the profession altogether.

Figure 1: Job Satisfaction (N=550)

Individual components for job satisfaction

- The majority (96%) of nurses and midwives indicated they think they are suited to the work they are doing either frequently, most of the time or always.
- The majority (94.8%) of this sample of nurses and midwives reported they are doing the kind of work they like either frequently, most of the time or always.
- Almost half (48.6%) of nurses and midwives in this sample did not want to change their area of practice. Almost half (48%) said 'yes' they did or sometimes did want to change their area of practice.

- The majority (55.2%) of nurses and midwives in this sample did not want to leave the professional discipline, although more than two-fifths (41.2%) of the sample said 'yes' they did or sometimes did want to leave. More nurses and midwives (55.2%) were certain they did not want to leave the professional discipline than the 48.6 per cent that were certain they did not want to change their area of practice.
- The majority (57.6%) of nurses and midwives reported they experienced job dissatisfaction at least once a month.
- Age was negatively associated with job dissatisfaction ($r = -.122$, $p < 0.01$)

DISCUSSION

Overall job satisfaction

The overall level of job satisfaction for this sample of nurses and midwives identified the majority (96%) showed moderate to high satisfaction levels and only a small percentage (4%) were dissatisfied in their job. Generally, the nurses and midwives in this study were satisfied with their work. It is important to note that other studies have also indicated positive job satisfaction (Billeter-Koponen and Freden 2005; Wheeler and Riding 1994). Interestingly, the majority (57.6%) of nurses and midwives reported that they experienced job dissatisfaction at least once a month. Job dissatisfaction is one of the leading causes of nurses leaving the profession (Edwards and Burnard 2003); however for this study high levels of frequent experiences of dissatisfaction were not apparent.

This study suggests that even though a large number of nurses and midwives described experiencing stress, somewhat paradoxically, they seem to be content with their work. The findings that nurses and midwives are dealing with moderate effects of stress do not reflect as job dissatisfaction, but as stress related to the workplace environment or their own psychosocial reactions and responses. It might also imply that nurses have developed coping strategies to deal with stressful situations, such as talking to or debriefing with other colleagues (Wong et al 2001).

Being suited to the work

The overwhelming majority (96%) of this study's respondents stated they frequently or more often thought they were suited to their work. This could be an explanation as to why the majority (96%) of this study's respondents are satisfied in their work. Stress-related conditions might be warning signs that there is a mismatch between certain individuals and their jobs (Toohey 1996).

Enjoying the type of work

The vast majority (94.8%) of this study of nurses and midwives stated they frequently or more often enjoyed their work. The inference that can be drawn from this is, even though indicating they experience moderate levels of stress, they remain in the profession as they basically enjoy their work. The NSW Nurses Association (2008) has recently presented a submission which identifies nurses remaining in the profession because of rewards gained from their caring professional work, although the NSWNA (2008) considered this might not be enough to retain nurses in the workforce over the long term. Further research in this area could clarify this interesting phenomenon.

Wanting to change the area of practice

Changing the area of practice has been seen as a specific solution to stress and this has been evident in previous research (McGrath et al., 2003). This study found that over one tenth (10.4%) did want to change their area of practice with nearly four-fifths (37.6%) sometimes wanting to change. Other nurse studies found similar results (Pinikahana and Happell 2004; McGrath et al 2003; McKenna et al 2003).

Wanting to leave the professional discipline

The majority (55.2%) of this study's respondents did not want to leave their professional discipline. This reinforces the view that, even though the nurses and midwives in this study seem to be dealing with stress issues, many do not wish to leave or change their workplace and / or professional choices. They might have also become accustomed to the stress they are experiencing, thinking it is the 'norm' for their workplace and/or profession.

Only a small proportion (7.6%) of this study's respondents wanted to leave the professional discipline. So, even though almost half (48%) of this sample of nurses and midwives did at least sometimes want to change their area of practice, the majority (55.2%) did not want to actually leave their professional discipline. This finding suggests they might simply need to change their current area of nursing or midwifery, rather than leave the profession entirely. The sizeable number who indicated they would consider a change in professional discipline could reflect the participants are fully aware of the very large number of professional opportunities available to nurses and midwives. This is an important finding.

Frequency of job dissatisfaction

Over one third (33.6%) of this study's respondents had at some time (no time frame stated) considered leaving the profession, implying a certain amount of job dissatisfaction, paralleling other studies (McGrath et al 2003; McKenna et al 2003; Olofsson et al 2003). It would seem unrealistic to expect respondents to never consider leaving their profession. The generally high level of job satisfaction indicated that respondents generally enjoyed their work and this needs to be considered when dealing with stress.

This study also found that being older was associated with job satisfaction, meaning that older nurses and midwives were more satisfied in their work than younger ones. This finding complements other results in this study, specifically that younger nurses and midwives were experiencing more stress than older ones. Older nurses were more likely to have experienced many work scenarios thus managing and understanding ambiguous or problematic work situations with certainty (Kent and Lavery 2007). The reasons for this seem poorly understood, hence another reason for the importance of this research.

CONCLUSION

Even though a large majority (94.8%) of these nurses and midwives frequently or more often enjoyed their work, a third of them considered leaving from time to time. It is evident from these results that for nurses and midwives enjoying their work is not enough to prevent them from thinking about seeking workplace change or leaving the profession entirely. Further exploratory, qualitative research could pursue this interesting and important dynamic.

The majority (96%) of this sample of nurses and midwives were moderately to highly satisfied with their work. Enjoying the work and perceiving themselves as suited to their particular type of work related to nurses' and midwives' job satisfaction. This finding is important and should help focus appropriate organisational and professional change strategies. Being younger was also associated with job dissatisfaction for this sample of nurses and midwives. Using this knowledge in creative and positive ways would seem to be a strategy of choice; mentoring programs and team building concepts would be useful. Better utilisation of more experienced, satisfied nurses in supportive, role modelling capacity would seem strategic.

It is evident that the nurses and midwives in this study, despite their descriptions and experiences of stress, continue to work in their profession as they enjoy what they do. Managers could escalate all efforts to foster and further develop collegial and respectful relationships in full appreciation of the outcomes of this research. Nurses and midwives currently working in the system need to be appropriately praised and rewarded by

senior management for their good work to enhance morale and camaraderie so that they feel they are being recognised and valued for the work they enjoy doing and for which they feel suited. This research identifies the very positive levels of enjoyment and satisfaction described by the nurses and midwives despite the acknowledged highly stressful work. Recognising and balancing these seemingly conflicting factors needs to be considered when developing appropriate supportive human resource work place strategies.

REFERENCES

- Australian Institute of Health and Welfare. 2006. *Nursing and midwifery labour force 2004*. Australian Institute of Health and Welfare: Canberra. No. HWL 38.
- Barrett, L. and Yates, P. 2002. Oncology/haematology nurses: a study of job satisfaction, burnout, and intention to leave the speciality. *Australian Health Review*, 25(3):109-119.
- Billeter-Koponen, S. and Freden, L. 2005. Long-term stress, burnout and patient-nurse relations: qualitative interview study about nurses' experiences. *Scandinavian Journal Of Caring Sciences*, 19(1):20-27.
- Beaudoin, L.E. and Edgar, L. 2003. Hassles: their importance to nurses' quality of work life. *Nursing Economics*, 21(3):106-113.
- Carstairs, J. and Trenoska, V. 2002. *The stress of being a nurse: abuse from patients and doctors new study shows*. Available online at <http://www.pr.mq.edu.au/events/index.asp?ItemID=747> (accessed 03.02.03).
- Clinton, M., Moyle, W., Weir, D. and Edwards, H. 1995. Perceptions of stressors and reported coping strategies in nurses caring for residents with Alzheimer's disease in a dementia unit. *Australian and New Zealand Journal of Mental Health Nursing*, 4:5-13.
- Delvaux, N., Razavi, D. and Farvacques, C. 1988. Cancer care - a stress for health professionals. *Social Science and Medicine*, 27(2):159-166.
- Edwards, D. and Burnard, P. 2003. A systematic review of stress and stress management interventions for mental health nurses. *Journal of Advanced Nursing*, 42(2):169-200.
- Gray-Toft, P. and Anderson, J. 1981. Stress amongst hospital nursing staff: its causes and effects. *Social Science and Medicine*, 15:639-647.
- Healy, C.M. and McKay, M.F. 2000. Nursing stress: the effects of coping strategies and job satisfaction in a sample of Australian nurses. *Journal of Advanced Nursing*, 31(3):681-688.
- Hoffman, A.J. and Scott, L.D. 2003. Role stress and career satisfaction among registered nurses by work shift patterns. *Journal of Nursing Administration*, 33(6):337-342.
- Humpel, N. and Caputi, P. 2001. Exploring the relationship between work stress, years of experience and emotional competency using a sample of Australian mental health nurses. *Journal of Psychiatric and Mental Health Nursing*, 8:399-403.
- Hurrell Jr, J. J., Nelson, D. L. and Simmons, B. L. 1998. Measuring Job Stressors and Strains: Where We Have Been, Where We Are, and Where We Need to Go. *Journal of Occupational Health Psychology*, 3(4):368-369.
- Karasek, R.A. 1979. Job demands, job decision latitude and mental strain: implications for job redesign. *Administrative Science Quarterly*, 24:284-306.
- Kent, P. and Lavery, J. 2007. Burnout in nursing. *Australian Journal of Advanced Nursing*, 24(3):43-48.
- Lambert, V.A. and Lambert, C.E. 2001. Literature review of role stress/strain on nurses: an international perspective. *Nursing Health Science*, 3(3):161-172.
- McGrath, A., Reid, N. and Boore, J. 2003. Occupational stress in nursing. *International Journal of Nursing Studies*, 40:555-565.
- McKenna, B.G., Smith, N.A., Poole, S.J. and Coverdale, J.H. 2003. Horizontal violence: experiences of Registered Nurses in their first year of practice. *Journal of Advanced Nursing*, 42(1):90-96.
- Mansfield, P.K., Yu, L.C., McCool, W., Vicary, J.R. and Packard, J.S. 1989. The job context index: a guide for improving the 'fit' between nurses and their work environment. *Journal of Advanced Nursing*, 14:501-508.
- Maslach, C. 1986. *Burnout - the cost of caring*. Prentice Hall Press: New York.
- Ng, V., Koh, D., Chan, G., Ong, H.Y., Chia, S.E. and Ong, C.N. 1999. Are salivary Immunoglobulin A and lysozyme biomarkers of stress among nurses? *Journal of Occupational and Environmental Medicine*, 41(10):920-927.
- NSW Nurses Association. 2008. May. Nurses hold system together. *The Lamp*, 65:25.
- O'Connor, J. and Jeavons, S. 2002. Perceived effectiveness of critical incident stress debriefing by Australian nurses. *Australian Journal of Advanced Nursing*, 20(4):22-29.
- Olofsson, B., Bengtsson, C. and Brink, E. 2003. Absence of response: a study of nurses' experience of stress in the workplace. *Journal of Nursing Management*, 11:351-358.
- Pervin, L.A. 1996. *The science of personality*. John Wiley & Sons, Inc: Toronto.
- Pinikahana, J. and Happell, B. 2004. Stress, burnout and job satisfaction in rural psychiatric nurses: a Victorian study. *Australian Journal of Rural Health*, 12:120-125.

- Polit, D.F. and Hungler, B.P. 1997. *Essentials of Nursing Research (4th edn)*. Lippincott: Philadelphia.
- Rattray, J. and Jones, M.C. 2007. Essential elements of questionnaire design and development. *Journal of Clinical Nursing*, 16:234-243.
- Roberts, K. and Taylor, B. 1998. *Nursing Research Processes: an Australian perspective*. Nelson: Melbourne.
- Schneider, Z., Elliott, D., LoBiondo-Wood, G. and Haber, J. 2003. *Nursing Research (2nd edn)*. Mosby: Sydney.
- Skinner, V., Agho, K., Lee White, T. and Harris, J. 2007. The development of a tool to assess levels of stress and burnout. *Australian Journal of Advanced Nursing*, 24(4):8-13.
- Spooner-Lane, R. and Patton, W. 2008. Determinants of burnout among public hospital nurses. *Australian Journal of Advanced Nursing*, 25(1):8-16.
- Taylor, B. and Barling, J. 2004. Identifying sources and effects of carer fatigue and burnout for mental health nurses: a qualitative approach. *International Journal of Mental Health Nursing*, 13:117-125.
- Toohy, J. 1996. *Psychiatric and behavioural disorders: workplace issues (No. Paper 4)*. Legal and Accounting Management Seminars Pty Ltd: Bondi Junction
- Vagg, P.R. and Spielberger, D. 1999. The Job Stress Survey: assessing perceived severity and frequency of occurrence of generic sources of stress in the workplace. *Journal of Occupational Health Psychology*, 4(3):288-292.
- Vroom, V.H. 1964. *Work and Motivation*. John Wiley & Sons: New York.
- Wheeler, H. and Riding, R. 1994. Occupational stress in general nurses and midwives. *British Journal of Nursing*, 3(10).
- Wong, D.F.K., Leung, S.S.K. and So, C.K. 2001. Differential impacts of coping strategies on the mental health of Chinese nurses in hospitals in Hong Kong. *International Journal of Nurse Practitioners*, 7(3):188-198.

Causes, reporting, and prevention of medication errors from a pediatric nurse perspective

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KEY WORDS

Medication errors, child, pediatric nursing, reporting

ABSTRACT

Objective

The aim of this study was to determine the perspective of pediatric nurses regarding the causes, reporting, and prevention of medication errors.

Design

A descriptive, cross-sectional study.

Setting

Nurses were selected from inpatient pediatric wards of 4 hospitals in Turkey.

Subjects

119 pediatric nurses agreed to participate in the research and completed semi-structured questionnaires. These data were collected and analyzed. The average age of the nurses was 24.7 ± 3.58 years; the majority was women (96.6%).

Results

Pediatric nurses stated that the most common causes of medication errors were long work hours (68.1%) and a high patient/nurse ratio (58.8%). Although the majority of nurses (88%) made use of a medication error notification system, many errors were not reported and nurses cited potential blaming of nurses in case of adverse outcome for the patient (52.95%), loss of trust (50.45%), and fear of disciplinary proceedings (42%) among the causes of lack of notification. With regard to avoidance, nurses most commonly cited the need for adequate information regarding the safe use of medications (45.4%).

Conclusions

This is the first study in Turkey to address the pediatric nurse perspective regarding medication errors. The results argue that there is a need for ongoing training of pediatric nurses concerning safe medication administration and that the causes and underreporting of medication errors warrant further investigation.

INTRODUCTION

Assuring patient safety is of highest priority for medical practitioners, and medical errors are one of the most common threats to patient safety (Prot et al 2005; Wong et al 2004). In addition to adverse economic consequences, medication errors, one of the most common types of medical errors, are also a source of morbidity and mortality (IOM 2000).

Medication error is defined as 'disregarding the status of forming a damage, or risk, any avoidable incidence to occur during the process from medication request to patient monitoring' (AAP 2003). According to the Institute of Medicine (IOM), 400,000 cases of avoidable patient injury due to medication errors take place annually in hospitals in USA. The cost of these errors amounts to at least \$3.5 billion (IOM 2006). In addition, between 44,000 and 98,000 hospital patients have been estimated to die annually as a result of medication errors (IOM 2000).

The incidence and potential for causing injury are significantly higher for medication errors among pediatric patients than for adult patients (The Joint Commission 2008; Fortescue et al, 2003; Kaushal et al 2001). Ferranti et al. (2008) have ascertained that the rate of pediatric medication errors is three-fold higher than in adults. This is thought to reflect both the physiological and developmental features of children as well as the lack of accurate medication dosages for pediatric patients (Stratton et al 2004; AAP 2003). The exact rate of medication errors differs according to the definitions and methods used in different studies (Engum and Brecler 2008). Stratton et al (2004) studied the rates of notification of medication errors by adult and pediatric nurses and reported that the frequency of medication errors was 14.8 per 1000 patient days in pediatric services but only 5.66 in adult services.

Multiple steps are involved in determining the type and dosage of medication to be administered. These include the primary prescription, the request for supply, receipt of this request, identification and retrieval of the material requested, and supply to the practitioner; administration and monitoring add further levels of complexity (Lucas 2004; Greengold et al 2003). Medication errors in pediatric patients can occur at any step in the process (Antonow et al 2000).

Medication errors in drug administration predominantly take place during prescribing, although errors commonly take place involving incorrect diagnosis, incorrect dosage, the wrong patient and incorrect drug selection (this latter most commonly in cases of known patient allergy to the prescribed drug) (Fijin et al 2002; Kaushal et al 2001).

Secondary medication errors are associated with inappropriate administration of the correct drug. These include errors of route of administration, dosage, timing, patient identity, failure to administer the drug, improper placement of infusion pumps, and absence of recording of drug administration (Tang et al 2007; Hronek and Bleich 2002; Ferner et al 2001). The most frequent errors of medication administration are failure to administer the drug and incorrect drug scheduling (Otero et al 2008; Tang et al 2007; Frey et al 2002; Ross et al 2000). Several factors contribute to the high rates of medication errors in pediatric patients. These include failure to read the prescription, distraction, high patient/nurse ratio, and the availability of drugs with a very similar name to the drug prescribed (Stratton et al 2004; Lefrak 2002).

Medication errors can occur both as a result of human mistakes as well as from systemic errors (AAP 2003) and this complicates effective monitoring of drug administration. It is however recommended that whenever a medication error has taken place the details of the mistake should be provided to the relevant supervisor, and such notification is important for understanding the causes of the errors and to allow steps to be taken to reduce such errors in the future (Fernald 2004).

Several studies have addressed the rates and causes of medication errors in adult patients, and these studies have often been based on reports from nursing staff (Wakefield et al 2001, Wakefield et al 1999). Nurses in particular are important in assessing such errors because they are generally in a position to notice medication errors at first hand, and can thereby take steps to reduce the risk of incorrect drug administration. Their special position is often reinforced by their professional knowledge concerning the medications administered as well as their responsibility for preparing and controlling the medications and for monitoring the effects of the treatment (O'shea 1999). However, few studies have examined medication errors from the perspective of pediatric nurses (Stratton et al 2004).

To the best of our knowledge this is the first study in Turkey that addresses medication errors from the perspective of pediatric nurses. The aim of this research was to review the causes of errors from the point of view of pediatric nurses, the factors affecting error notification, and their suggestions as to how to avoid such errors. A comprehensive overview of medication errors from a pediatric nursing perspective will help to develop procedures to reduce the rate of such errors and to put in place safeguards to improve child safety and increase the quality of care.

METHODS

Prior to initiating this research all necessary permissions were obtained from the hospitals and Institutional Ethics Committees concerned. The design was for a descriptive cross-sectional study; data collection was performed between January and December 2009. All nurses working in pediatric wards of four hospitals in different cities were invited to participate in the study. The target population comprised 165 nurses working day/night in pediatric wards. Of these, 124 volunteered to participate (75%). Sampling selection was not addressed. In a preliminary study five of these pediatric nurses were provided with draft versions of the questionnaires and were interviewed in detail; their suggestions and comments were taken into consideration in assembling the final version of the questionnaire. These five nurses were excluded from the full-scale study; the final study group therefore comprised 119 pediatric nurses.

The questionnaire was assembled based on previous forms employed to ascertain medication errors encountered by nurses servicing pediatric clinics (Kaushal et al 2009; Stratton et al 2004; Fontan et al 2003; Frey et al 2002; Wilson et al 2002; Alparslan and Erdemir 1997). The semi-structured form comprised a total of 22 questions, of which 11 recorded the socio-demographical features of the nurses. The remaining 11 questions addressed medication errors, the nurses' views on the causes of the errors, and their suggestions regarding notification, monitoring, and steps to avoid future medication errors.

The questionnaires were provided to the nurses for completion by researchers. Also, an envelope was supplied to provide privacy in completion of the questionnaire. Participants were also provided with a summary of the aims and scope of the research project and their written consent was obtained in all cases. During data collection and analysis all personal information concerning the participants remained confidential and this information was not used for any purpose unrelated to the research project itself.

In compiling and analyzing the data the Statistical Package for Social Sciences (SPSS) Version 12 was employed for descriptive analysis of the nurses' perspectives regarding medication errors and their demographics. All responses were separately and independently categorized by two researchers. In cases where the response type and/or rating differed between the two researchers adjudication was obtained from a senior investigator. The percent and frequency distributions of each variable and/or category were determined. The independent t test was used for data normally distributed. Statistical significance was set at $P < 0.05$.

FINDINGS

The average age of the participating nurses was 24.7 ± 3.58 years, and the majority of these were women (96.6%). 55.5% of the nurses were working in pediatric inpatient wards. More than half of the nurses (69.9%) stated that they had been working in a pediatric inpatient ward for 1–5 years. 52.1% of the nurses stated that they were caring for 1–5 patients per shift, more than half of the nurses (63%) stated that a typical shift involved continuous work for 48–50 hours (Table 1).

Table 1: Characteristics of the Nurses

Characteristics	n	%
Age		
18-25	69	58
26-33	50	42
Gender		
Female	115	96.6
Male	4	3.4
Ward		
Pediatric inpatient ward	66	55.5
Intensive care ward	53	44.5
Years of work experience		
Less than 1 year	43	36.1
1-5 years	76	69.9
Caring of patient number		
1-5 patients	62	52.1
6-10 patients	57	47.9
Working hours per week		
48-50 hours	75	63
51 hours and more	44	37
Total	119	100

As shown in Table 2, nurses' opinions regarding the primary causes of medication errors were predominantly long work hours (68.1%), a high patient/nurse ratio (58.8%), and unavailability of medications in dosages and forms appropriate for pediatric patients (56.3%).

Table 2: Nurses' Opinions Regarding the Primary Causes of Medication Errors (n=119)

Causes of Medication Errors	n*	%
Long work hours	81	68.1
High patient/nurse ratio	70	58.8
Unavailability of medications in dosages and forms appropriate for pediatric patients	67	56.3
Insufficient information about pediatric medication administration	59	49.6
Read the prescripts/orders inaccurately or incorrectly	46	38.7
Insufficient information about patient	19	16.0
Inadequate records about medication preparation and administration	18	15.1
Sending wrong medication and dosages from pharmacy	16	13.4
Inappropriate environment to prepare medications	13	11.0
Other**	9	7.6

* Participants gave more than one answer.

** Distraction and interruptions, medications were needed to administer immediately, inadequate information about interactions of medications

Only 88% of participants made use of a medication error notification system, and this was predominantly (71.4%) by means of verbal notification (Table 3).

Table 3: Nurses Opinions About Notifying Medication Errors (n=119)

Opinions About Notifying	n	%
Types of medication error notification *		
Written	85	71.4
Verbal	41	34.5
Use of a medication error notification system		
Sometimes	16	13.4
Usually	32	26.9
Always	57	47.9
No idea	14	11.8
Causes of medication errors not to notify *		
To be blamed if something happened to patient	63	52.9
To lose credibility of the team	60	50.4
To be punished	50	42
To lose credibility of the patient	49	41.2
To think that it will not remain confidential	43	36.1
To lose the job	41	34.5
To be labeled as incompetent by other nurses	40	33.6
To be unaware of obligating the notification	19	16
Not to know how to notify	17	14.0

* Participants gave more than one answer.

From the compiled results it was estimated that, overall, only 47.9% of medication errors were notified. Among the reasons given for not notifying errors, potential blaming of nurses was the most common response (52.9%). The rate of notification was significantly higher among intensive care nurses than among service nurses ($t = 5.98$; $P = 0.01$), and also among nurses looking after 1–5 patients ($t = 4.78$; $P = 0.01$) than for nurses caring for an average of 6–10 patients (Table 4). There were no statistically significant differences in notification rates according to age, years of work experience, or working hours ($P > 0.05$).

Table 4: Notification Situations of Nurses According to Their Characteristics (n=119)

Characteristics of Nurses	Written Notification			
	n*	%	t∞	p
Age				
18-25	47	55.3	0.76	0.44
26-33	38	44.7		
Ward				
Pediatric inpatient ward	37	43.5	5.98	0.01**
Intensive care ward	48	56.5		
Years of working experience				
Less than 1 year	30	35.3	0.45	0.64
1-5 years	55	64.7		
Caring of patient number				
1-5 patients	54	63.5	4.78	0.01**
6-10 patients	31	36.5		
Working hours per week				
48-50 hours	56	65.9	0.57	0.57
51 hours and more	29	34.1		

* Participants gave more than one answer.

** Significant at $p < 0.05$

∞ Group comparisons independent t-test.

Regarding avoidance of medication errors, a substantial proportion of nurses (45.4%) emphasized the importance of formal instructions accompanying medications that provide details of recommended use including typical dosage schedules, patient exclusions and potential adverse reactions (Table 5). This suggestion was followed by reducing the patient/nurse ratio (19.3%) and reducing work hours (16.8%) (Table 5).

Table 5: Pediatric Nurses Opinions Regarding Avoidance of Medication Errors (n=119)

Opinions for prevention	n*	%
Training about safety medication administration	54	45.4
Reducing patient/nurse ratio	23	19.3
Reducing work hours	20	16.8
Increasing the team communication	12	10.1
Taking the orders correctly and adequately	8	6.7
Arranging the environment	7	5.9
Providing appropriate dosages and forms for pediatric patients	6	5.0

* Participants gave more than one answer.

DISCUSSION

Medical errors, that prominently include errors associated with drug administration, are potentially avoidable. Nurses are in a special position regarding assurance of patient safety and avoiding medication errors, and their perspectives on patient safety warrant careful consideration. In the present study we compiled and analyzed the opinions of pediatric nurses regarding the causes of medication errors, the methods used for error notification, and on avoidance of such errors.

Nurses most commonly cited long working hours, high patient/nurse ratio, lack of appropriate guidelines for drug administration to pediatric patients, insufficient knowledge of the medication, and inaccurate or poor reading of prescriptions as the primary causes of medication errors by pediatric nurses. One half of the pediatric nurses sampled (50%) cited distraction as a major cause of medication errors, in addition to errors in recording the prescribed drugs and difficulties interpreting the handwriting of the prescribing practitioner. Nurses thereafter included the patient/nurse ratio (37%), the exact quantity/dosage of medication to be administered (35%) and the absence of a double-check of medications (28%) among the causes of medication errors (Stratton et al 2004).

In Lefrak's study (2002), insufficient communication with personnel, order-of-magnitude errors in numbers followed by multiple zeros or with fractional numbers, unreadable handwriting, distraction during preparation or administration of medications, availability of drugs with similar names, dosage assessment, and lack of knowledge were included in the causes of medication errors. In the studies of O'Brodovich and Rappaport (1991) and Wilson et al (2002), lack of dosage guidelines for pediatric patients and workload were singled out among the most common causes of medication errors. These findings are supported by the results of the present study. In another study, higher patient/nurse ratios and longer working hours adversely affected the working environment, leading to distraction, reduced quality of care, and medication errors (Beyea et al 2003; Worthington 2001). In addition, the availability of different preparations of the same drug combined with diverse formulations for pediatric and adult administration were reported to increase the risk of error (Payne et al 2007). Future studies addressing avoidance of errors in pediatric medicine should therefore focus on nurse workloads and on developing appropriate guidelines for the use of specific medications in a pediatric setting.

Notification of medication errors is important for error management and for reducing the possibility of future errors (Fernald 2004). In the present study we examined the methods and rates of medication error notification. Although in some cases notification of medication error was performed in writing, in the majority of cases notification was verbal. Importantly, our study indicates that only about one half of medication errors were subject to formal notification. However, rates of notification differed between different nurse groups, and intensive care nurses and nurses caring for 1–5 patients made notifications significantly more often than service nurses or nurses looking after 6–10 patients, respectively ($P < 0.05$ in both cases). Reduced patient/nurse ratios such as in intensive care units can therefore enhance primary care and improve reporting of medication errors. Although verbal notification remains an option in recording medication errors, it will be important to improve the rate of reporting by provision of clear guidelines regarding error notification supported where appropriate by in-service training provided by the institution.

Based on nurses' reports, failure to notify medication errors was common place. Reasons cited by pediatric nurses included the perceived likelihood that the nurse would be blamed in case of adverse outcome for the patient, possible loss of patient trust, and potential reprimand and/or disciplinary proceedings. In the study of Stratton et al (2004), accusation and fear of losing the trust of the patient were prominent causes cited for not notifying cases of medical error. In the studies of Marino et al (2000), Ross et al (2000) and Fernandez (2003) fear of adverse attitudes of their colleagues and/or managers were cited among the most common causes of lack of notification.

In accordance with other studies, nurses' views on steps to avoid future medication errors highlighted the need for additional information and/or guidelines regarding drug administration. Regular briefing of pediatric nurses on safe medication administration and proper training of newly engaged nurses have been suggested as routes to reduce medication errors (Prot et al 2005; Schneider et al 1998).

To date few studies have addressed the perspective of pediatric nurses regarding the causes of medication errors, notification rates, and potential strategies for avoidance. To the best of our knowledge this is the first study carried out on this topic in Turkey. Although the findings from the study cannot be generalized owing to its small size, this study will help to devise future research into the causes and medication errors and the development of potential avoidance strategies from the perspective of pediatric nurses.

CONCLUSION

The rate of medication errors is largely governed by human factors that, despite current developments in informatics and computer technology, are not easily amenable to monitoring. Errors in medication administration compromise patient safety and can increase morbidity and mortality. Pediatric patients are relatively vulnerable compared to adults, reflecting their incomplete physiological development, and children are therefore more likely to be adversely affected by medication errors. Pediatric nurses have a key role in monitoring, notifying and avoiding medication errors. The perspective of pediatric nurses regarding medication errors is therefore an important foundation point for developing strategies to avoid medication errors.

REFERENCES

- Alparslan, O. and Erdemir, F. 1997. Pediatrik servislerinde kullanılan antibiyotiklerin sulandırılması, saklanması ve hastaya verilmesi konusunda hemşirelerin bilgi ve uygulamalarının belirlenmesi (Determine the knowledge and practice of nurses on dilution, storage and administration of antibiotics in the pediatric departments). *Cumhuriyet Üniversitesi Dergisi Hemşirelik Yükseköğretim Dergisi* (Journal of Cumhuriyet University School of Nursing), 1(1):41-52.
- American Academy of Pediatrics (AAP). 2003. Prevention of medication errors in the pediatric inpatient setting. *Pediatrics*, 112:431-36.
- Antonow, J., Smith, A. and Silver, M. 2000. Medication error reporting: A survey of nursing staff. *Journal of Nursing Care Quality*, 15:42-48.
- Beyea, S.C., Hicks, R.W. and Becker, S.C. 2003. Medical errors in the OR – A secondary analysis of Medmarx. *AORN Journal*, 77:122,125–129,132-134.

- Engum, S.A. and Breckler, F.D. 2008. An evaluation of medication errors - The pediatric surgical service experience. *Journal of Pediatric Surgery*, 43:348-352.
- Fernald, D. 2004. Event Reporting to a primary care patient safety reporting system, A report from the ASIPS Collaborative. *Annals of Family Medicine*, 2(4):327-332.
- Ferner, R.E., Langford, N.J., Anton, C., Hutchings, A., Bateman, D.N. and Routledge, P.A. 2001. Random and systematic medication errors in routine clinical practice: A multicentre study of infusions, using acetylcysteine as an example. *British Journal of Clinical Pharmacology*, 52:573-577.
- Ferranti, J., Horvath, M., Cozart, H., Whitehurst, J., Eckstrand, J. 2008. Reevaluating the safety profile of pediatrics: A comparison of computerized adverse drug event surveillance and voluntary reporting in the pediatric environment. *Pediatrics*, 121:1201-1207.
- Fijin, R., Van den Bernt, P., Chow, M., DeBlacey, C., DeJong-Van den Berg, L. and Brouwers, J. 2002. Hospital prescribing errors: Epidemiological assessment of predictors. *British Journal of Clinical Pharmacology*, 53:326-331.
- Fontan, J.E., Maneglier, V., Nguyen, V.X., Loirat, C. and Brion F. 2003. Medication errors in hospitals: Computerized unit dose drug dispensing system versus ward stock distribution system. *Pharmacy World and Science*, 25:112-117.
- Fortescue, E.B., Kaushal, R., Landrigan, C.P., McKenna, K.J., Clapp, M.D. and Federico, F. 2003. Prioritizing strategies for preventing medication errors and adverse drug events in pediatric inpatients. *Pediatrics*, 111:722-29.
- Frey, B., Buettiker, E.V., Hug, E.M., Waldvogel, K., Gessler, E.P. and Ghelfi, E.D. 2002. Does critical incident reporting contribute to medication error prevention. *European Journal of Pediatrics*, 161:594-599.
- Greengold, N., Shane, R., Schneider, P., Flynn, E., Elashaff, J., Hoying, C., Barker, K. and Bolton, L.B. 2003. The impact of dedicated medication nurses on the medication administration error rate. *Archives of Internal Medicine*, 163:2359-2367.
- Hronek, C., Bleich, M.R. 2002. The less-than-perfect medication system: A systems approach to improvement. *Journal of Nursing Care Quality*, 16:17-22.
- Institute of Medicine (IOM). 2006. *Preventing medication errors: Quality chasm series, Committee on Identifying and Preventing Medication Errors*, in P. Aspden, J. Wolcott, J.L. Bootman, L.R. Cronenwett (ed). Academy Press: Washington DC.
- Institute of Medicine (IOM). 2000. *To err is human: Building a safer health system*, in L.T. Kohn, J.M. Corrigan, M.S. Donaldson (ed). National Academy Press: Washington DC.
- Kaushal, R., Bates, D.W., Landrigan, C., McKenna, K.J., Clapp, M.D. and Federico, F. 2001. Medication errors and adverse drug events in pediatric inpatients. *Journal of the American Medical Association*, 285:2114-2120.
- Lefrak, L. 2002. Moving towards safer practice: Reducing medication errors in neonatal care. *Journal of Perinatal and Neonatal Nurses*, 16:73-84.
- Lucas, A. 2004. Improving medication safety in a neonatal intensive care unit. *American Journal of Health System Pharmacy*, 61:33-37.
- Marino, B.L., Reinhardt, K., Eichelberger, W.J. and Steingard, R. 2000. Prevalence of errors in a pediatric hospital medication system: Implication for error proofing. *Outcomes Management for Nursing Practice*, 4(3):129-35.
- O'Brodovich, M. and Rappaport, P. 1991. A study pre and post unit dose conversion in a pediatric hospital. *Canadian Journal of Hospital Pharmacists*, 44(5):45-50.
- O'shea, E. 1999. Factors contributing to medication error: A literature review. *Journal of Clinical Nursing*, 8(5):496-503.
- Otero, P., Leyton, A., Mariani, G. and Ceriani, J. 2008. Medication errors in pediatric inpatients: Prevalence and results of a prevention program. *Pediatrics*, 22:737-743.
- Payne, C., Smith, C., Newkirk, L. and Hicks, R. 2007. Pediatric medication errors in the postanesthesia care unit: Analysis of MEDMARX data. *AORN Journal*, 85:731-740.
- Prot, S., Fontan, J.E., Alberti, C., Bourdon, E., Farnoux, C. and Macher, M.A. 2005. Drug administration errors and their determinants in pediatric inpatients. *International Journal of Health Care Quality*, 17:381-389.
- Ross, L.M., Wallace, J. and Paton, J.Y. 2000. Medication errors in a paediatric teaching hospital in the UK: Five years operational experience. *Archives of Disease in Childhood*, 83:492-497.
- Schneider, M.P., Cotting, J. and Pannatier, A. 1998. Evaluation of nurses' errors associated in the preparation and administration of medication in a pediatric intensive care unit. *Pharmacy World and Science*, 20:178-182.
- Stratton, K.M., Blegen, M.A., Pepper, G. and Vaughn, T. 2004. Reporting of medication errors by pediatric nurses. *Journal of Pediatric Nursing*, 19(6):385-392.
- Tang, F.I., Sheu, S.J., Yu, S., Wei, I.L. and Chen, C.H. 2007. Nurses relate the contributing factors involved in medication errors. *Journal of Clinical Nursing*, 16:447-457.
- The Joint Commission. 2004. *Preventing Pediatric Medication Errors*. Sentinel Event Alert. www.jointcommission.org/sentinel/alerts/sentinel_event/alert/sea_39.htm (Accessed 04.05.09).
- Wakefield, B.J., Blegen, M.A., Uden-Holdman, T., Vaughn, T., Chrischilles, E., and Wakefield, D.S. 2001. Organizational culture, continuous quality improvement and medication administration error reporting. *American Journal of Medical Quality*, 16:128-134.
- Wakefield, D.S., Wakefield, B.J., Uden-Holman, T., Borders, T., Blegen, M.A., and Vaughn, T. 1999. Understanding why medication administration errors may not be reported. *American Journal of Medical Quality*, 14:81-88.
- Wilson, T. and Sheikh, A. 2002. Enhancing Public Safety in Primary Care. *British Medical Journal*, 324:584-587.
- Wong, I.C., Ghaleb, M.A., Franklin, B.D. and Barber, N. 2004. Incidence and nature of dosing errors in pediatric medication: A systematic review. *Drug Safety*, 27:661-670.
- Worthington, K. 2001. The health risks of mandatory overtime. *American Journal of Nursing*, 101:96.

Places for nurse practitioners to flourish: Examining third sector primary care

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ABSTRACT

Objective

This paper examines and provides an example of the practice environments most likely to nurture nurse practitioner care delivery models and more fully realise the goals of the government's Primary Health Care Strategy.

Setting

Non-government third-sector primary care organisations flourished in New Zealand during a period of neoliberal reform in the 1990s. Because they tend to serve vulnerable populations on a non-profit basis, third sector organisations are not typical of owner-operator general practices, which have a for-profit business imperative.

Primary argument

Third sector primary care organisations are ideologically aligned to a core set of social justice values. They involve the community in management and governance structures, and the health professionals employed are salaried. High ratios of nurses to doctors are employed, and nurses work at an advanced level of practice with their patients. Decisions about the use of public funds are made with the community's health needs foremost. Significantly, nurses are able to advance and more fully contribute in ways that may not be so easily achieved amid share-holding practice owners.

Conclusion

The example of local investment in one third sector primary care provider illustrates that models of care other than the privately owned business model can better serve a high-needs and vulnerable population. With minimal structured and coordinated workforce development plans nationally, third sector organisations offer fertile ground in which nurse practitioners can flourish.

INTRODUCTION

In 2001 the New Zealand government introduced the Primary Health Care (PHC) Strategy, a new policy document that would restructure the publicly-funded primary care sector (Ministry of Health 2001). The Strategy was the first serious government attempt since the Social Security Act 1938 to address health disparities so evident in mortality statistics (Crampton et al 2000). The vision of the Strategy was for a different type of health service that would produce more equitable and long-term health outcomes in more cost-efficient ways (Ministry of Health 2001). Until this time, most general practitioners (GPs) operated on a small business, owner-operator, for-profit basis, funded by a mix of private co-payments and public money (Cumming et al 2005). The Strategy provided for the establishment of community trusts called Primary Health Organisations (PHOs) and were modelled on non-profit organisations operating in the third sector (King 2000).

The PHC Strategy brought a challenge to the traditional GP model of care delivery, with the expectation of more appropriate use of a multi-disciplinary workforce (Hill 2001). The Strategy has therefore been an important driver for the development of the nurse practitioner role. Nurse practitioners (NPs) are well-established in primary care in many countries, most notably the United States (on which the New Zealand model was developed), the United Kingdom and, more recently, Australia. However, the role has been slow to establish in New Zealand since its introduction in 2001. There are approximately 101 registered nurse practitioners who work across a variety of practice areas, 36 of whom work in primary care and only one or two in for-profit environments (Nursing Council of New Zealand 2012).

The aim of this paper is to highlight the characteristics of third sector primary care organisations and provide an example of the type of practice environment likely to nurture NP care delivery models. The paper starts with an overview of third sector organisation characteristics and how they came about in the context of primary care in New Zealand. Next are descriptions written by a GP and a NP about their experiences of working in third sector primary care organisations. Finally, an example is presented of an inner-city practice in New Zealand that has partnered with the local District Health Board to establish nurse practitioner positions in order to better serve a high-needs and vulnerable population.

DISCUSSION

Third sector organisations

The academic and research literature about third sector organisations suggests that a consistent definition with applicability across countries and contexts is contentious (Alcock and Kendall 2011). Broadly, third sector organisations are understood to be non-government and non-profit, making them distinct from both government and commercial enterprises. Non-distribution of profits to shareholders is a defining feature, as is a degree of volunteerism. They tend to function as gap-fillers in areas of state and market deficiencies, are growing in global significance, and bring an important balance to a mixed economy of government responsibilities and private business (Crampton et al 2001). Funding sources vary and are typically a mix of government funding, gifts and grants, and earned income. There is a wide spectrum of third sector activity; examples can be found in international aid, culture, recreation, social services, education, religion and health. Nearly 40 million people are employed in third sector organisations around the world, with the United States and Australia most heavily involved in health (Noya and Nativel 2003).

Core values common to the third sector include those of justice, equity, democracy, accountability, user engagement, and responsiveness to user feedback. There is invariably a commitment to the most marginalised in society (Taylor and Warburton 2003). When applied to a primary care context, these values and characteristics translate to an emphasis on social rather than commercial objectives. The community

is involved in management and governance structures, and the health professionals employed are salaried (Crampton 1999). These characteristics are not typical of owner-operator type general practices, which operate on commercial objectives and are managed by share-holding partners (Kumar 2004).

Third sector primary care has tended to develop in countries with significant barriers to access, especially for vulnerable populations (Crampton, Woodward, and Dowell 2001; Tennant et al 2006). In New Zealand, a variety of community-oriented third sector primary care centres began to flourish with the support of state funding during the neoliberal reforms of the 1990s. In particular, Maori, who are disproportionately represented in areas of high deprivation (see Ajwani et al 2003), sought greater autonomy over health care services and established tribally-based primary care initiatives in many sites around the country. The Ministry of Health was active in their support of these initiatives due to what Crampton et al (2001, p.12) describe as the 'sustained failure of the state and private sector to provide freely accessible services for low-income populations, rural communities and Maori populations'. Consistent with neoliberal practices, state support and finance for the development of tribally-based primary care services encouraged Maori communities to take responsibility for health care problems and attended to the neoliberal concern about special-interest group capture by facilitating entry of this new competitor to the health care market. Crampton (1999, p.15) viewed these third sector, tribally-based Maori health initiatives as 'one of the principal successes' of the reforms.

Primary health care in New Zealand

The health sector underwent further reform with a change of government in 1999. Under the New Zealand Public Health and Disability Act 2000, administrative responsibility for public health services is held by twenty geographically defined District Health Boards (DHBs). The boards each receive population-based funding for the provision of health and disability services inclusive of primary and secondary/tertiary level care in their area. The strategic direction of the sector has been set by the overarching New Zealand Health Strategy (Ministry of Health 2000) as well as a number of targeted strategies for specific areas, an example of which is the Primary Health Care Strategy (2001). Primary health care as defined in the Strategy refers to the Alma Ata Declaration (World Health Organization 1978) and embraces the wider determinants of health.

Structurally, the PHC Strategy provided for the establishment of non-profit community trusts called Primary Health Organisations, which were funded by DHBs for the provision of services that met local needs. Although modelled on the existing third sector services described, in reality, the collective groupings of privately owned general medical practices known as Independent Practitioner Associations simply re-branded as PHOs and employed a broader range of health professionals (Cumming et al 2005; Simon 2005). They took charge of governance, and in many cases, continued to operate competitively as private businesses (Morrissey 2003). The Strategy was viewed by many small scale proprietary businesses as an imposition on practice that would increase costs without increasing revenues (Crampton et al 2005).

PHOs are funded by a capitation system based on the number and ethnicity of people enrolled with the member GPs. The significance of capitation funding to nurses and nurse practitioners is 'the incentive for providers to use health professionals in different, more appropriate ways, as funding is not contingent upon doctors carrying out particular tasks' (Crampton 1999, p. 22).

The expected effect of the capitation incentive was for practice nurses to expand into more challenging roles. However, a recent New Zealand study by Hefford et al (2010) assessed the impact on practice profitability of nurse–doctor clinical task substitution and found profitability improved only in practices that charge similar co-payments for both nurse and doctor consultations. Third sector practices tend to have a policy of charging the same (low) fee regardless of provider, which in Hefford et al's financial modelling improves overall profitability and also expands the scope of nursing practice. The same cannot be said of for-profit practices,

where there is considerable fee disparity between nurse and doctor consultations, making it more worthwhile to the practice for a patient to see a doctor than a nurse (Hefford et al 2010). Third sector organisations not only provide environments supportive of advanced nursing roles, but the policy of charging the same fee regardless of provider is a financial incentive to make better use of nurses' skills.

Working in third sector primary care

The experience of a general practitioner who is employed in a third-sector primary care practice is described in the following excerpt from an article published in *New Zealand Doctor*:

I am a salaried employee of my workplace, along with 30 other staff from varied disciplines. The practice is an incorporated society and the community owns it... I do not carry the business risk. Neither do I profit from it... My income is independent of how many patients I see (apart from the obvious need for the practice to be viable). I relate to my workmates as equals not as employer-employee, and I think this is a significant contribution to being able to work as a multidisciplinary team. Teamwork is different when one person holds the ultimate control. I am in no way critical of my medical colleagues in privately owned practice. ... I do, however, disagree with the opinion that the only way to achieve quality primary care is by strengthening the doctor-centred, privately owned business at the expense of other models of care (Coppell 2006).

The GP's comments begin with a description of the workplace in which they are employed, and its characteristics match those of the third sector organisations previously described. That is, there are a variety of health professionals who are salaried employees, it is owned by the community and, as an incorporated society, may not associate for pecuniary gain (Incorporated Societies Act 1908). Without personal liability for business profitability, this GP maintains better care is achieved for patients because firstly, there is more time to spend with them and secondly, relationships with colleagues are not hindered by an employer-employee relationship, so teamwork is better.

Because they are already ideologically aligned with the Primary Health Care Strategy, there is little need for third sector organisations to re-arrange how they work. Decisions about the use of public funds are made with the community's health needs foremost, avoiding any one professional group profiting at the expense of the community, and distributing the power of decision-making among the team members. Power, of course, remains present, but is distributed in less obvious ways and allows nurses to advance and more fully contribute in ways that may not be so easily achieved amid share-holding practice owners. Coppell (2006) points out that the traditional model is not the only way to achieve quality primary care.

In another third sector primary care organisation, a nurse practitioner shares a similar experience to that of the GP. The following is an excerpt from a contribution to an informal email discussion group written by Paula Renouf, with a subject line of 'Nurses doing primary care'.¹

I have just had a wonderful year and a half working as a child and youth NP in a large busy primary care practice in South Auckland. Here's how it worked in a nutshell: a great experience (clinically). **The GPs, CHWs [child health workers], nurses and families can all see the benefits of my role/paradigm of practice, combo of solid primary care medicine with all the NP extras! Dx [diagnostic] testing?** No problem. **Prescribing?** Not an issue except for dealing with delay in independent access to full formulary – February 06. **Relationship with community pharmacists/hospital consultants for admissions?** Dynamic, helpful

¹ The original post was made to the College of Nurses Aotearoa discussion board. Minor formatting changes have been made to improve clarity. Permission to use the text was granted by the author.

and fun. **Competition with GPs?** Not even a concept in anyone's mind and I certainly have great respect for these superb GPs' skills and training medically... **Families thinking they are getting a 'less qualified' practitioner?** Not an issue, they love someone whose fundamental philosophy is to empower and strengthen, get them to find the solutions etc. but who can independently manage their conditions too. **Teamwork with medical staff?** Superb, regular peer group meetings, bidirectional referring/easy consultation. **Teamwork with practice nurses?** Good too (our roles are like the GP/NP role, complementary, a lot of cross over, but different) (July, 2006).

Renouf gives an account of the freedom in her practice and working relationships with colleagues and families (using words such as wonderful, great, dynamic, fun, love, empower, superb). She lists the contentious issues often encountered by nurse practitioners (highlighted in bold), addressing them in turn, and seems delighted to report she has not experienced difficulty in these areas. Importantly, her place of work is a tribally-based provider that operates on a non-profit basis and services the health needs of a 'maximally deprived' population. In this environment, she is positioned as a valued team member offering a paradigm of practice that is fundamentally empowering to clients and families. Clearly her practice pushes the boundaries of both nursing and medical discourses as she is legally empowered to engage in practices that are outside the normal purview of a nurse.

The potential for nurse practitioners in these environments (and other environments also), however, is limited by inflexible funding mechanisms and minimal structured and coordinated workforce implementation plans for nurse practitioners, despite the role's existence for over a decade (Carrier et al 2011). Until these barriers are addressed nationally, it falls to the health and disability market to determine employment or self-employment opportunities and for prospective NPs to pioneer new positions by garnering employer sponsorship, matching their particular area of expertise with health service goals.

An example of a community-owned, non-profit general practice that is providing opportunities for nurse practitioners is Te Aro Health Centre, a small inner-city health clinic that provides low-cost, high-quality, accessible health care for people who have low incomes and a high number of barriers to accessing health care services. The health centre is overseen by a community trust board comprising voluntary community representatives. Doctors, nurses and administration staff are paid a salary and in addition to DHB and PHO funding, some projects are funded by charitable organisations. Teamwork is evident in the way the work is managed, and egalitarian ideals are articulated by the staff.

It is in this environment that a joint project between the health centre and the local District Health Board began. The DHB's District Strategic Plan 2006–2012 identifies key priority areas for workforce development in primary care and for family-based/primary care nurse practitioners. Although the DHB is responsible for funding all public health and disability services in the region, the national funding formula for capitation funding of the health centre's very high-needs population is insufficient to meet the clinic's running costs, so new ways to provide services are of particular interest.

The joint project involved a credentialed family nurse practitioner from the United States working at the health centre in a NP candidate position under the sponsorship of the DHB. Although she has considerable experience working with vulnerable populations as a NP, her role at the health centre was in a candidate position until she obtained a New Zealand practising certificate in October 2011. At the time the health centre was well positioned to provide the supportive clinical environment that would lead to New Zealand registration as a NP, and in return, the clinic would benefit from her extensive expertise. During her tenure as a NP candidate, another NZ registered NP was appointed as the clinic's leader, sharing her time between clinical and managerial responsibilities.

With two NPs on staff the health centre became a nurse-led clinic. All patients are assessed by a registered nurse (RN) in the first instance using a holistic nursing model of assessment and then referred to the most appropriately prepared professional in the team. That person, be it a RN, a mental health nurse, a NP or a GP, is responsible for assessing, planning, implementing and evaluating the effectiveness of interventions initiated. The expertise of others in the team and the wider health community are called on when and as needed. Diagnostic tests, prescriptions and referrals to specialists are arranged and followed-up on by NPs or GPs. The advantage of a nurse-led model is that the financial viability of the health centre is maintained when the available professional resource is maximised, and for the patient, when their level of need is matched to the expertise available at the clinic. Trend data on patient outcomes appears to be improving under this model and there are plans to formally evaluate this nurse-led approach to care in the coming year.

CONCLUSION

An expectation of the PHC Strategy (2001) was that nurses at all levels would expand into more challenging roles. With minimal structured and coordinated workforce development plans, the number of NPs working in primary care settings has remained low. The experiences of a general practitioner and a nurse practitioner each working in third sector organisations illustrate the non-profit philosophy of their primary care practice environments, which led to an openness to alternative models of care provision that are supportive of advanced practice roles for nurses.

The need to find new ways to provide services for Te Aro Health Centre fitted well with the workforce development plans of the local DHB. Supporting a NP candidate into a role that would best utilise her skills was a good fit with the strategic plan, as was the appointment of another NP as the clinic leader. Aside from the capacity to initially fund the role themselves, the third sector characteristics of the health centre overcame many of the barriers to employing nurse practitioners. With minimal structured and coordinated workforce development plans in place nationally, third sector organisations offer fertile ground in which nurse practitioners can flourish.

REFERENCES

- Ajwani, S., Blakely, T., Robson, B., Tobias, M., and Bonne, M. 2003. *Decades of disparity: Ethnic mortality trends in New Zealand, 1980-1999*. Ministry of Health & University of Otago: Wellington.
- Alcock, P., and Kendall, J. 2011. Constituting the third sector: Processes of decontestation and contention under the UK Labour governments in England *Voluntas: International Journal of Voluntary & Nonprofit Organizations*, 22 (1):DOI: 10.1007/s11266-010-9178-9.
- Capital & Coast District Health Board. 2006 - 2012. *District Strategic Plan*. <http://www.ccdhb.org.nz/aboutus/dsp/FINAL%20DSP%20ALL%20v2.pdf> (accessed 25.5.12).
- Carrier, J., Boddy, J., and Budge, C. 2011. Rural nurse to nurse practitioner: An ad hoc process. *Journal of Primary Health Care*, 3(1):23-28.
- Coppell, V. 2006. The same but then different. Viewpoint. *New Zealand Doctor*, January 25:4.
- Crampton, P. 1999. *Third sector primary health care: A report prepared for the National Health Committee*. Wellington: National Health Committee.
- Crampton, P., Davis, P., and Lay-Yee, R. 2005. Primary care teams: New Zealand's experience with community-governed non-profit primary care. *Health Policy*, 72(2):233 - 243.
- Crampton, P., Salmond, C., Blakely, T., and Howden-Chapman, P. 2000. Socioeconomic inequalities in health: How big is the problem and what can be done? *Pacific Health Dialog*, 7(1):94 - 98.
- Crampton, P., Woodward, A., and Dowell, A. 2001. The role of the third sector in providing primary care services: Theoretical and policy issues. *Social Policy Journal of New Zealand*, December(17):1-21.
- Cumming, J., Raymont, A., Gribben, B., Horsburgh, M., Kent, B., McDonald, J., Mays, N., and Smith, J. 2005. *Evaluation of the implementation and intermediate outcomes of the Primary Health Care Strategy: First report*. Health Services Research Centre, Victoria University of Wellington: Wellington.
- Hefford, M., Cumming, J., Finlayson, M., Raymont, A., Love, T., and van Essen, E. 2010. *Practice nurse cost benefit analysis: Report to the Ministry of Health*. Ministry of Health: Wellington.
- Hill, S. 2001. Tariana Turia enrages diehard ProCare boss. Conference report. *New Zealand Doctor*, October 24:16.

- Incorporated Societies Act. 1908. New Zealand Government: Wellington.
- King, A. 2000. *The future shape of primary health care: A discussion document*. Wellington: Ministry of Health.
- Kumar, R. 2004. Getting your slice of capitation pie. *New Zealand Doctor*, September 8:33-34.
- Ministry of Health. 2000. *New Zealand health strategy*. <http://www.health.govt.nz/publication/new-zealand-health-strategy> (accessed 25.5.12).
- Ministry of Health. 2001. *Primary health care strategy*. <http://www.health.govt.nz/publication/primary-health-care-strategy> (accessed 20.04.10).
- Morrissey, B. 2003. Bridging ethos gap between IPA and PHO. Viewpoint. *New Zealand Doctor*, November 19:12.
- New Zealand Public Health and Disability Act. 2000. New Zealand Government: Wellington.
- Noya, A., and Nativel, C., (eds). 2003. *The non-profit sector in a changing economy*. OECD: Paris
- Nursing Council of New Zealand. 2012. *Nurse practitioner numbers* <http://www.nursingcouncil.org.nz/index.cfm/1,41,html/Nurse-Practitioner> (accessed 25.5.12).
- Simon, J. 2005. The health of our health sector is an illusion. Viewpoint. *New Zealand Doctor*, March 9:14-15.
- Taylor, M., and Warburton, D. 2003. Legitimacy and the role of UK third sector organizations in the policy process. *Voluntas: International Journal of Voluntary & Nonprofit Organizations*, 14(3):321-338.
- Tennant, M., Sanders, J., O'Brien, M., and Castle, C. 2006. Defining the nonprofit sector: New Zealand. *Working papers of the John Hopkins comparative nonprofit sector project*. The Johns Hopkins Center for Civil Society Studies: Baltimore.
- World Health Organization. 1978. *The declaration of Alma-Ata*. http://www.who.int/hpr/NPH/docs/declaration_almaata.pdf (accessed 25.5.12).