
FROM THE EDITOR - Heather Dawson

SALUTE TO THE FUTURE

This issue of the *Australian Journal of Advanced Nursing* marks yet another change within the life of the journal, as not only is this my last issue as editor, it marks the beginning of a new and exciting era with a new editor. For me it has been a challenging yet rewarding experience and one that I will probably miss over the next few months as I come to terms with the increase in available hours in my day. I am hopeful of spending more time with my family and increasing my research output - both of which have had little of my time over the past four years.

In this last editorial I would like to take the opportunity to summarise the advances made by *AJAN* over the past five years, thank the numerous reviewers and members of the Editorial Advisory Board, congratulate the incoming editor, and also pay tribute to the work of the previous editor, Natalie Newman, who passed away recently after a short illness.

During my time as editor *AJAN* has undergone significant change. While these changes herald significant visual difference, it is the content changes driven by the professional needs of nurses, which have made the most impact on the way in which the journal has operated in the past few years.

During Natalie's editorship, the professional development of nursing was going through first its infancy and then its adolescence where author guidance was often needed. In terms of the editor's role, this meant authors often required help with penmanship as much as with their research format. Natalie helped numerous nurses through this phase to publication and the profession of nursing in Australia has much to thank her for.

More recently, the profession required a place to publish the ever-increasing numbers of research manuscripts pouring forth from all manners of places, including academic, clinical and other research entities. During this phase, the editor's role has focused on building up a cohort of nurse experts in a variety of areas to be

reviewers of the numerous articles sent to *AJAN* and putting in place systems to deal with these. Without these reviewers, the journal would not be able to offer the blind peer review process, and the subsequent professional feedback numerous authors have received over the past few years.

For their part in *AJAN*'s journey, I wish to sincerely thank all those reviewers who have been part of this process during my editorship. I have relied heavily on those who are considered expert in their areas, for, in a journal such as this, which accepts papers from all areas of nursing and includes all research methodology, it would be an impossible task for one person to know it all.

During my time as editor, I have watched while the profession of nursing in Australia has steadily increased their research output to the current staggering amounts. An average week would see two new manuscripts arrive at the journal office. At any one time this equates to approximately 15 manuscripts out to double blind, sometime triple, peer review. Of these, *AJAN* can publish only 20 per year! It is no wonder then that the journal has had a significant increase in the overall quality of the papers published. So much so that leading professors in nursing and related areas can now frequently be seen to publish in *AJAN*.

In addition, with the advent of the Editorial Advisory Board, the general direction of *AJAN* has been guided by the excellent suggestions of the inaugural members and by the current committee members. I would like to thank them all for their invaluable input.

The *AJAN* would not be possible without the authors therefore I would like to congratulate the nurse authors of Australia and ask them to keep up their prolific output. My advice to them is 'if at first you don't succeed, try try again' as perseverance is definitely a must for authors in the current climate.

Finally, let me congratulate the incoming editor.

GUEST EDITORIAL - NANCY ROPER

Nancy Roper, MPhil, SRN, RSCN, RNT, nursing theorist, author, lecturer.

REFLECTIONS ON NURSING

When asked to contribute this Guest Editorial I realised that after 65 years in the profession I still spend time reflecting on that age-old, apparently simple question 'what is nursing?'.

In the first 80 years of the last century the main perception of nursing held by lay people, particularly those intending to make a career in nursing, was 'hospital' nursing. Transfer of nursing into tertiary education in the latter part of the last century highlighted the fact that students were still eager 'to get to the wards'.

But much earlier, that is in 1859, Florence Nightingale's 'Notes on Nursing' was published. She wrote that the laws of health were the same as those of nursing and almost 150 years later the World Health Organisation considers that nurses are in the best position to encourage nursing patients in the community rather than in hospitals as well as encouraging health and preventing ill health.

No wonder that at the end of the 20th century - Marriner Tomey and Alligood consider Florence Nightingale to be the first 'Nursing Theorist'.

At 18 years of age I left school to begin a three-year apprenticeship training to become a State Registered Children's Nurse (1936-1939) at the end of which, World War II was declared. I proceeded to a similar type of training to become a State Registered Nurse (1940-1943). In both these trainings I disliked being moved to various wards supposedly to gain experience in different 'sorts' of nursing. Later, as a teacher, I realised that all these moves were demanded by the registration council and were essential for completion of entry forms for state examinations. However, I was of the opinion that there were more commonalities than differences in the nursing experience available in those various wards.

The writing part of my career began while I was teaching and after 15 years it became evident that I had to choose between the two. So, in 1964, I became a self-employed writer, the first British nurse to do so. When I was not writing new editions of my books (which included a nurses' dictionary and a pocket medical dictionary) I spent time thinking about commonalities and differences. I started from the premise that if it were valid to accept categories such as gynaecological nursing, psychiatric nursing and so on, then the commonality was 'nursing' and it should be identifiable. I collected data about the patients in all the clinical areas used for allocation of students in one college of nursing. The data revealed that the common

core related to patients' everyday living activities, consequently my research monograph contained the Roper model of nursing based on a model of living (Roper 1976).

In 1980 these models were superseded by the Roper-Logan-Tierney models, which were published in 'The Elements of Nursing' (1980, 1985, 1990, 1996). The fourth edition in 1996 is our last. The final version of our models is contained in a monograph, which was published in 2000. It was reprinted in 2001 and is being translated into Japanese, German and Portuguese.

The literature review for my research revealed the history of nursing models. It started around the 1950's when head nurses in the USA were resigning in large numbers and this phenomenon was called 'flight from the bedside'. Investigation revealed that they were dissatisfied that nursing was increasingly being predicted by the patients' medical diagnosis. The time was ripe for differentiating doctoring from nursing. By 1965, a small group of American nurses recognised the absence of an organising framework for nursing knowledge. They formed a Nursing Model Committee at the Nursing Faculty of the Catholic University of America, Washington. In 1968 it became the Nursing Development Conference Group and in 1973 it published the result of its work and the book was called 'Concept Formalization in Nursing: Process and Product'.

Over the years there followed publication of various models and in 1994 30 were collected as one book (Marriner Tomey, Alligood 1994). Roper-Logan-Tierney were the only other non-American 'Nursing theorists' to be included. Reflecting on the pros and cons of this era, readers are referred to Tierney's discussion 'Nursing Models: Extant or Extinct?' (Tierney 1998).

We stated that our model captured the core of nursing and that patients/persons enacting their relevant activities of living (ALs) were central to that core. Using a tree as a metaphor, the roots need to continually receive adequate nutrition from education, practice, management and research to constantly nourish the ever-changing trunk - the core of nursing. Trunks give off innumerable branches - each one bearing the name of an adjectival form of nursing and each needs the developmental support of education, practice, management and research as well as continual nourishment from the trunk/core of nursing. These adjectival forms of nursing are often called specialties and the Royal College of Nursing UK has 40 forums to support members working in these different specialties. The journals publish reports from an

increasing number of nurse specialists and their area of work seems to be more technical and dependent on medical diagnosis. Have we come full circle? Or is it due to a shortage of doctors? A shortage of nurses is frequently acknowledged in the journals! Or is it thought that publishing the technical specialty is adding to 'nursing's' body of knowledge. In a Nursing Theory Conference in Stockholm in May 2000 Jacqueline Fawcett voiced her anxiety about nursing surviving as a discipline if its research is conducted without the context of a conceptual model of nursing.

What is nursing? What is the meaning of a baccalaureate, masters, doctoral degree in nursing in the context of a conceptual model of nursing? As yet, no country's health service is carried out only by graduates who are also registered by the country's statutory body. Non-registered personnel, whatever their title, contribute to the nursing service. They may be nationally prepared at first, second or third level according to the length of the program, and they may gain a nationally relevant certificate. Other institutions use an in-house program and may award a certificate, which is not recognised nationally or even by other similar institutions. So what is the commonality of all these differently prepared personnel? Again I find a metaphor useful, this time a microscope at the end of which there is a slide of a conceptual model of nursing. Level one health care assistants look at it through a weak lens and learn about the model in a simple way. Level two assistants need a stronger lens and a less simple learning program, and so on, until doctoral students are

studying at an advanced level. It would mean that all contributors to the nursing service conceptualised the patient/person enacting relevant ALs as the core/trunk of their work from which the branches/specialties grow. Implicit in a conceptual model is the invisible contribution to the patient/person. A list of tasks can never define the work/role of any contributor to the patient/person's welfare and in this fast changing world, the role and conceptual models need to be broad and flexible to accommodate change. This is the exciting challenge of the 21st century - to confidently state our unity and acknowledge diversity.

REFERENCES

- Fawcett, J. 1995. *Analysis and evaluation of conceptual models of nursing care*. 3rd ed. Philadelphia: F.A. Davis Company.
- Marriner Tomey, A. and Alligood, M. 1998. *Nursing theorists and their work*. 4th ed. Baltimore, Boston: Mosby.
- Nightingale, F. 1859. *Notes on nursing: what it is and what it is not*. London: Harrison.
- Nursing Development Conference Group. 1973. *Concept formalization in nursing: process and product*. Boston: Little, Brown and Company. Published in Britain by Churchill Livingstone: Edinburgh.
- Roper, N. 1976. *Clinical experience in nursing education*. (Research monograph). Edinburgh: Churchill Livingstone.
- Roper, N., Logan, W. and Tierney, A. 1996, 1990, 1985, 1980. *The elements of nursing: a model for nursing based on a model of living*. Edinburgh: Churchill Livingstone.
- Roper, N., Logan, W. and Tierney, A. 2000. *The Roper-Logan-Tierney model of nursing based on activities of living*. (Monograph). Edinburgh: Churchill Livingstone.
- Tierney, A. 1998. *Nursing models: extant or extinct?* Journal of Advanced Nursing. 28:1. pp.77-85.

PATIENT FALLS FROM BED AND THE ROLE OF BEDRAILS IN THE ACUTE CARE SETTING

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ABSTRACT

The use of bedrails in preventing patient falls from bed remains highly controversial and has received only limited research attention throughout the last decade. The present study questioned the relationship between bedrail use and patient falls from bed particularly in terms of age-gender characteristics, mental status and the severity of injuries sustained. A retrospective, cross-sectional analysis was conducted of 419 patient falls occurring in an urban, acute care hospital from 1993-2000. This audit identified 136 falls from bed. It was found that for all age-gender groups the incidence of falls from bed with bedrails elevated was equal to or higher than when bedrails were not elevated. Patients in a 'non rational' state at the time of falling were significantly more likely to have fallen with the bedrails elevated ($\chi^2=19.463$, $p<0.001$). Whilst there was no statistically significant relationship between the position of bedrails and the severity of injuries sustained ($\chi^2=1.088$, $p=0.780$) the fact that there was a patient death resulting from a fall from bed over elevated bedrails was considered to be of particular clinical significance. Thus the role of bedrails as protective or safety devices was challenged and an urgent re-evaluation of current practices recommended.

INTRODUCTION

Context

The majority of patient falls within acute care settings occur from or near the patients' bed (Joanna Briggs Institute for Evidence Based Nursing and Midwifery 1998). Traditionally, the elevation of bedrails has been a routine, precautionary measure to prevent bed-related falls and has often served to give nurses, as much as patients, a sense of reassurance. However, the efficacy and safety of this still widespread practice has come under increasing examination by nurses (Jehan 1999) and has been a source of ongoing debate within the health-care profession.

It has been argued that popular assumptions of 'good' or 'standard' nursing procedure to prevent falls, including bedrail use, are often based on consensus rather than research (Whedon and Shedd 1989, p.111). Despite the fact that studies indicate that bedrails can potentiate rather than prevent patient injuries, it is commonly perceived that leaving the bedrails down is neglectful and unsafe (Govier and Kingdom 2000). Belief in the effectiveness of restraints in general is reinforced by the perception that failure to restrain puts health care providers at risk for legal liability (Capezuti et al 1998; Rubenstein et al 1994).

Restraint use has historically been associated with 'legal paranoia' (Ejaz et al 1994, p.960) more because it is defensible than because it has been proven effective (Whedon and Shedd 1989). In 1957, despite the acknowledgment that bedrails do not prevent patient falls from bed, Ludlam (cited in Whedon and Shedd 1989,

p.112) stated that 'It is much easier to defend or settle a legal case when the rails are up than when they are down'.

More recently however, the use of bedrails on the basis of legal ramifications has received justifiable criticism (Flicker 1995). Not only do bedrails not bar a conscious patient from leaving a bed if there is intent but furthermore, Wilson (1996, p.65) claims that given the evidence 'failure to restrain is rarely a negligent act'. As there is no clear legal position in regard to restraint use generally, their application and removal often becomes a 'nursing judgement' (George et al 1999; Wilson 1996).

Aside from and in addition to the unresolved legal controversy surrounding bedrail use, there are a number of emergent ethical implications. For whilst bedrails are essentially protective and safety devices they may also function as a form of restraint (Jehan 1999). The use of bedrails as restraints is an emotive issue with many authors expressing concern at the loss of patients' freedom, dignity and autonomy (Everitt and Bridel-Nixon 1997; Hanger et al 1999; Wilson 1996). Others warn that such usage by nurses is not only unethical but could in fact be perceived as a type of physical abuse (Jehan 1999; Tyler 1992).

In an Australia-wide audit involving 35 acute and sub-acute care facilities (n=976), 70% of those restrained were done so with bedrails. Further to this, consent for restraint by bedrails had only been documented in 16.2% of cases (Woodward 1998). It is argued that for those patients who are competent, consent should be obtained before the use of physical restraints as such patients have the right to refuse restraints (Flicker 1995; Wilson 1999). However, the definition of competence and means by which it can be determined are fraught with difficulty.

The role of bedrails as restraints and of late, their increasing association with patient injury has heightened the controversy surrounding their use. Furthermore, it has been suggested that the improper use of bedrails may actually contribute to patient falls and has been considered by some as an extrinsic or environmental falls risk factor (National Ageing Research Institute (Australia) 2000; Rubenstein et al 1994). Given that the decision to elevate or lower bedrails often rests primarily with nurses, continued nursing research and education into the risks surrounding their use is of utmost importance.

Aims

The questionable role of bedrails in preventing falls from bed was initially noted during descriptive examination of 419 patient fall incidents occurring within an urban acute care hospital between 1993-2000. Almost one third of all falls were reported to be 'from bed' with over half of those occurring whilst the bedrails were elevated. In addition, there had been one patient death

directly resulting from a fall from bed over elevated bedrails.

Given this, coupled with the fact that only limited literature exists which relates specifically to falls from bed and bedrail position, the study aimed to determine factors associated with falls from bed, particularly over elevated bedrails, in order to identify 'at risk' patient groups and circumstances conducive to such falls. Further, driven by recent reports linking bedrail use with increased patient injury together with the observed bedrail-related patient death, the study sought to establish whether the extent of injuries resulting from falls from bed over elevated bedrails was greater than for falls from bed when bedrails were not elevated. It was anticipated that with such information, the current practice of bedrail use within the acute care setting might be better informed and in consequence, the incidence of bedrail-related falls from bed may be reduced.

LITERATURE REVIEW

The controversy surrounding bedrail use is not a new research issue. In 1957, Ludlam (cited in Everitt and Bridel-Nixon 1997) studied 7,822 falls from bed across 120 hospitals in the United States of America and found that bedrails were elevated in 63% of reported falls. Over 40 years ago, Hazell, 1960, (cited in Govier and Kingdom 2000, p.40) observed that 'the more backward a ward appeared, the more cot sides seemed to be in evidence'. Further, in 1979, Walsh and Rosen revealed that 51% (n=53) of patients fell from bed where bedrails were elevated. However, whilst research on restraint use in general has been given considerable attention since the mid-1980s (Capezuti et al 1996), research which specifically addresses the use of bedrails has been limited.

The existing literature indicates that patients will fall from bed despite the elevation of bedrails (Evans 1999). Not only is there a distinct lack of scientific evidence to support the efficacy of bedrails in reducing patient falls and fall-related injuries but rather, studies have highlighted possible deleterious effects concluding that they may in fact 'do more harm than good' (Hanger et al 1999, p.529; Capezuti et al 1998; Everitt and Bridel-Nixon 1997; Flicker 1995; Rubenstein et al 1994; Wilson 1996).

Use of bedrails and injury severity in patient falls from bed

It has been suggested that injuries sustained from falls over elevated bedrails are possibly more severe in nature as a result of the increased height and greater obstruction encountered (Capezuti et al 1999; Evans 1999; Hanger et al 1999; Jehan 1999). Hanger et al (1999, p.530) caution that the 'use of bedrails is not benign but carries significant risks including death'. They found for instance

that the implementation of a bedrail policy discouraging the overuse of bedrails in conjunction with a staff education program resulted in a significant reduction in the severity of injuries in patients falling from bed. Similarly, Ejaz et al (1994) reported that the reduction of bed and chair restraints also in conjunction with staff education resulted in a decrease of injurious falls. Capezuti et al (1998, p.M47) state that 'evidence that restraint removal does not significantly increase falls and injuries is crucial if beliefs and practice with regard to restraint use are to be changed'.

In addition to falls injury associated with bedrail use, it has been suggested that patients who are confused may become even more distressed and agitated due to the inability to understand the reason for bedrails, subsequently further increasing their risk of falling (Downton 1993; Gray and Gaskell 1990; Hanger et al 1999). Hanger et al (1999, p.529) state that elevated rails, in terms of the 'enclosed prison-like feeling' may promote rather than alleviate agitation. For example, in a retrospective case controlled study (62 falls and 62 controls) 90% of the 'confused' patients who had fallen, did so with the bedrails elevated at the time of fall (Bates et al 1995).

Current practice

Despite the fact that bedrails are frequently used by nurses, guidelines to such usage are often insufficient, with, according to Jehan (1999) the understanding surrounding their use being poor at best and in some cases quite dangerous. Recognising that the elevation of bedrails without correct assessment can lead to serious consequences, there have been calls for their use to be tailored to patients' individual needs (Capezuti et al 1999; Walter 1999). Regardless of this, bedrails are still commonly in use in many hospitals in Australia and their usage requires urgent re-evaluation.

According to the U.S. Food and Drug Administration - Centre for Devices and Radiological Health (2000), most patients can be in bed safely without bedrails and several alternate suggestions have been put forward to meet patient safety needs. These include adjusting the bed to the lowest possible position, improving lighting and offering patients an opportunity to address elimination needs at night before retiring or before procedures in order to reduce restlessness (Govier and Kingdom 2000). Also discussed has been the possibility that half-length bedrails may reduce patients' need to climb over rails to exit the bed, whilst addressing issues of safety and patient reassurance (Joanna Briggs Institute for Evidence Based Nursing and Midwifery 1998). However, as yet, no research has been conducted to establish an effective and safe length for bedrails and there is no evidence on this matter to help inform clinical practice (Evans 1999).

METHODOLOGY

Research design

All patient incident forms from financial years 1993-2000 were reviewed and those pertaining specifically to falls were selected (n=419). A fall was considered to be any event in which the patient unintentionally came to rest on the floor or ground. Information on each fall was extracted and entered into an electronic database established using the statistical package SPSS (Version 10.0). Variables included patient demographics, pre-fall medical diagnosis and mental status, date and time of fall, fall type, position of bedrails at time of falling, and the extent of injuries sustained from the fall. Descriptive information detailing how each fall occurred and the nature of injuries sustained was obtained from the nurse's notes and was also incorporated into the database.

Analysis

Data specifically concerning falls from bed (n=136) and on bedrail position (n=92) were selected from the data set for analysis. In attempting to identify patient groups at risk of falls from bed and over elevated bedrails, particular focus was on patient age-gender characteristics and pre-fall mental status. It was hypothesised, for instance, that patient mental status and age may have been contributing factors in determining which groups had bedrails elevated and it was questioned whether these rails had a protective effect on such patients.

Patient ages (in years) were re-coded into four age groups, <65, 65-74, 75-84, and, 85+. Given that age is commonly regarded as an important variable in patient's risk of falling (Evans et al 1998; Rawsky 1998) those ages over 65 were separated into categories so that the distribution of the incidence of falls from bed among the older ages could be examined. Age-gender information for those who fell from bed was matched with existing age-gender data for all patients admitted during 1993-2000 (n=52,992). This enabled calculation of the mean number of falls from bed and by bedrail position for each age-gender group admitted and the analysis of any significant age-gender differences in falls incidence.

In assessing for a relationship between patient mental status and bedrail position at the time of falling, data on patient mental status were first coded based on descriptions provided on the patient incident forms. Patients were recorded as being either 'rational' or 'not rational', which incorporated the categories senile, disorientated and sedated.

Similarly, in analysing the relationship between the extent of injuries sustained from falls from bed and bedrail position, content of the nursing notes on patient incident forms that documented patient injuries was first manually

converted into categories. These included ‘no injury’, ‘minor injury’ (scratch or bruise), ‘moderate injury’ (sprain, cut requiring stitches), ‘major injury’ (fracture, head injury) and ‘death’.

The time at which each fall occurred was re-coded into approximate nursing shifts (0701-1500, 1501-2300, 2301-0700) and data were analysed to assess for a relationship between time and falls from bed and bedrail position. Content analysis of descriptive information of each fall event as provided by the nursing notes was used to determine the proportion of falls from bed related to patients’ attempts to meet elimination needs.

RESULTS

Overview - falls from bed

There were 419 falls recorded from July 1993 to June 2000, 136 (32.5%) of which were reported to be ‘from bed’. This equated to an overall incidence rate of 26 falls from bed per 1000 patients admitted during that time. In terms of age distribution, an independent-samples t-test revealed that the mean age of patients who fell from bed (67 years) was significantly older than for those who did not fall from bed (53 years) ($t=7.106, p<0.001$). As seen in Table 1, falls from bed were more prevalent for those patients aged over 65 years with an ANOVA indicating that the incidence of falls from bed increased significantly with age ($F=19.258, p<0.001$). The incidence of falls from bed appeared to be higher for males than females at all age groups, though this was not significant ($t=0.283, p=0.777$).

Table 1: Incidence of falls from bed per 1000 patients admitted 1993-2000 (n=52,992)

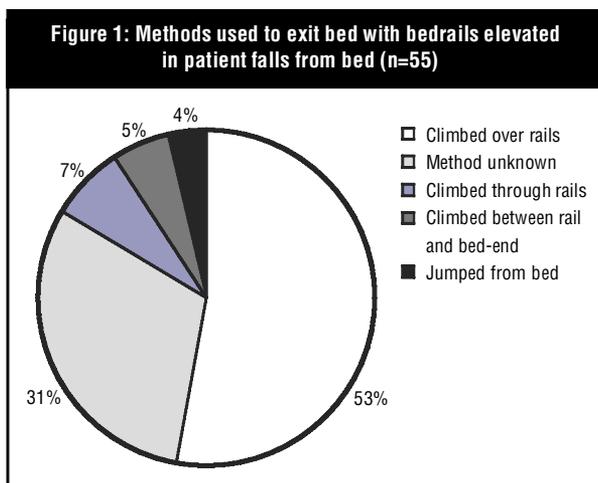
	Age group			
	<65	65-74	75-84	85+
Male	1.3	2.9	4.5	10.5
Female	1.0	1.8	3.2	6.8
Total	1.2	2.3	3.7	8.1

Chi-square analysis found that falls from bed were significantly more likely to occur between the hours 2300-0700 ($\chi^2=15.500, p<0.001$). Further, content analysis of the nursing notes on patient incident forms revealed that over half (54.5%) of falls from bed occurring during these hours were directly related to patients’ attempts to meet elimination needs.

Falls from bed and bedrail position

The position of bedrails at the time of falling had been reported for 92 of the 136 falls from bed. Of these, 55 patients, or almost 60%, had fallen from bed whilst the

bedrails were elevated. As shown in Figure 1, in over half of cases (53%) patients were in the act of climbing over the bedrails at the time of falling, four patients (7%) had climbed through them, three (5%) patients had squeezed between the end of the bedrails and the bed-end and two patients (4%) had ‘jumped’ over them. In the remaining 31% of cases, patients were found lying next to the bed with the bedrails still elevated, though the exact method used to by-pass the bedrails had not been documented.



As shown in Table 2, for all age groups except those aged over 85 years, the incidence of falls from bed with the bedrails elevated was higher than, or equal to, when bedrails were not elevated. As with falls from bed generally, there was a significant increase in the incidence of falls with age both over elevated bedrails ($F=5.124, p=0.002$) and not elevated bedrails ($F=11.054, p<0.001$). There was no difference in mean age between patients who fell from bed with the bedrails elevated and not elevated with both groups having a mean age of 68 years. Male patients appeared slightly more likely (though not significantly) to fall from bed than female patients, both with bedrails elevated ($t=0.467, p=0.640$) and not elevated ($t=0.744, p=0.457$).

Table 2: Incidence of patient falls from bed by age-gender group and position of bedrails per 1000 patients admitted 1993-2000 (n=52,992)

Rails	Age category							
	<65		65-74		75-84		85+	
	Up	down	Up	down	Up	down	Up	down
Male	0.6	0.3	1.2	1.0	1.7	1.4	2.3	5.8
Female	0.3	0.3	0.7	0.2	1.4	1.0	2.5	1.9
Total	0.5	0.3	1.0	0.6	1.6	1.2	2.4	3.9

Falls from bed over elevated bedrails were more likely to occur between the hours 2300-0700 ($\chi^2=4.955, p=0.084$) though this was not significant at the 0.05 level. Almost 20% of falls from bed over elevated bedrails

during these hours were related to elimination, with all such falls occurring while patients were climbing over the rails in order to get to the toilet.

It was noted that a high proportion (87.5%) of patients falling over elevated bedrails had a pre-fall mental state of 'not rational'. It was revealed that those who fell from bed with the bedrails elevated were significantly more likely to have been in a non-rational state at the time of falling than for those who fell from bed when the bedrails were not elevated ($\chi^2=19.463$, $p<0.001$) and the relationship was moderate-to-strong (symmetric Soma's $d=-0.502$).

Despite a patient death resulting from a fall whilst climbing over bedrails, the majority (61.82%) of falls from bed over elevated bedrails did not result in any documented injury. The proportion of minor and moderate injuries sustained was also less for falls over elevated bedrails than when bedrails were not elevated. Hence, in this study, no statistically significant relationship was found between bedrail position and injury severity in falls from bed ($\chi^2=1.088$, $p=0.780$).

DISCUSSION

Some 60% of falls from bed occurred where the bedrails were elevated. This was not dissimilar from figures reported in early research (Ludlam 1957, cited in Everitt and Bridel-Nixon 1997; Walsh and Rosen 1979). These results, together with the lack of literary evidence to support the use of bedrails in falls prevention (Hanger et al 1999), challenge the traditional perceived role of bedrails in minimising falls from bed in acute care settings and highlight the ongoing controversy surrounding their use. For whilst bedrails undoubtedly have an important role in maintaining patient safety in certain instances they do not prevent a patient getting out of bed if there is intent (Everitt and Bridel-Nixon 1997).

The incidence of falls from bed was particularly prevalent amongst older age groups, regardless of bedrail position. It is thought that the desire for many older patients, particularly males, to retain their independence and reluctance to wait for assistance, especially when trying to get to the toilet (Garcia et al 1988), may see them attempt to get out of bed with or without the presence of bedrails. Frequency and urgency of elimination may further compound this situation.

For these patients then, bedrails may serve merely as a 'stumbling block which increases the risk of falling' (Whedon and Shedd 1989, p.112) and their usage should be treated with caution. Hanger et al (1999) too argue that 'a rail does not stop the desire; it only frustrates the patient by making the desire more difficult and hazardous to achieve' and thus it is more logical to alleviate the desire to get out of bed through programs such as regular toileting.

According to the literature, 'falls occur more frequently among women than men at all ages' (National Health and Medical Research Council 1994, p.4). However, in this study the incidence of falls from bed, both over elevated and not elevated bedrails, was slightly higher for males than females. A possible explanation, as alluded to, may be that male patients are more reluctant to wait for, or accept assistance with exiting the bed.

In addition, anecdotal evidence suggests that the hospital in which this study was set receives a disproportionate number of male patient admissions associated with drug and alcohol abuse, many of which would be in a 'not rational' state and hence represent an increased risk of falls from bed, especially over elevated bedrails. Whilst analysis of the relationship between patient medical diagnosis and falls was beyond the scope of this study, it was noted however that 12.5% of patients who fell from bed had an alcohol-related diagnosis and that 85% of these patients were males. Of further interest, 70% of patients who had an alcohol-related medical related diagnosis and fell from bed, did so over elevated bedrails and two-thirds were considered 'not rational' at the time of falling.

The relationship between bedrail position and pre-fall mental status was found to be statistically significant in that a greater proportion of patients who fell from bed where the bedrails were elevated were recorded as having a pre-fall condition of 'not rational'. However, it must be noted that this 'not rational' group was more likely to have their bedrails elevated as a routine part of their clinical management. There is no way of knowing how many patients who were 'not rational' had bedrails elevated and did not sustain a fall. This limits us to examining those who did fall from bed and whether bedrails were elevated at that time.

Regardless of these limitations, the findings of this study suggest that bedrails may not be as protective as expected in 'not-rational' patients. This echoes concerns expressed by Hanger et al (1999) as to the potential for bedrail use to cause further distress and agitation among already confused patients and is consistent with Downton (1993) who proposed that patients in such a state had an equal chance of falling regardless of the position of bedrails. The authors are led to question how many falls could perhaps have been prevented or the effects of the fall minimised had the bedrails not been elevated and suggests the need for a re-examination of current practices with respect to the use of bedrails with these patients.

Fortunately the majority of those falling from bed were not seriously injured, regardless of the position of the bedrails. In accordance with recent literary concern as to the safety of bedrail use (Capezuti et al 1999; Evans 1999; Hanger et al 1999; Jehan 1999), it was hypothesised that elevation of the bedrails at the time of falling increased the

intensity of injuries sustained. Despite the death of a patient who had climbed over the bedrails, this relationship was not found to be statistically significant. However, the fact that one fall over elevated bedrails resulted in death is of immense clinical significance and only serves to highlight the importance of further research in this area.

The lack of a statistically significant finding on the relationship between severity of injury and the elevation of the bedrails may have been due in part to the incomplete documentation of data on bedrail position, thus reducing the sample size of patients who had information recorded for each of the required variables. For example, of the 136 incident forms documenting patient falls from bed, 44 had no information regarding the position of bedrails, which limited analysis and may have contributed to Type I or Type II errors.

CONCLUSION

The issue of bedrail use, particularly amongst older patients and those categorised, as 'non-rational' requires urgent attention if the incidence of falls from bed and the associated potential for serious injury are to be reduced. Clearly it is time for a re-think of established clinical beliefs and practice habits in relation to bedrail use with these patients. Recent suggestions of management of this patient group by lowering the bed height rather than elevating the bedrails would appear to be worth serious consideration and exploration with properly constituted intervention studies. Further, Skeen (1992) puts forth that a controlled trial of mechanical restraints be undertaken in patients at risk of falling in order to define which subgroups of patients would benefit from restraint use and determine whether restraints cause injury.

Evidence for the continued use of bedrails with certain groups of patients in acute care settings remains uncertain. Clearly, further research into the impact of bedrails, the development of legal and ethical guidelines to their usage as well as possible alternatives is of utmost importance not just for patients but for nurses, given that the elevation or lowering of bedrails is primarily a nursing decision.

REFERENCES

- Bates, D.W., Pruess, K., Souney, P. and Platt, R. 1995. Serious falls in hospitalized patients: correlates and resource utilization. *American Journal of Medicine*. 99(2):137-143.
- Capezuti, E., Evans, L., Strumpf, N. and Maislin, G. 1996. Physical restraint use and falls in nursing home residents. *Journal of the American Geriatrics Society*. 44(6):627-633.
- Capezuti, E., Strumpf, N.E., Evans, L.K., Grisso, J. and Maislin, G. 1998. The relationship between physical restraint removal and falls and injuries among nursing home residents. *Journal of Gerontology: Medical Sciences*. 53A(1):M47-M52.
- Capezuti, E., Talerico, K.A., Cochran, I., Becker, H., Strumpf, N. and Evans, L. 1999. Individualized interventions to prevent bed-related falls and reduce siderail use. *Journal of Gerontological Nursing*. 25(11):26-34.
- Downton, J.H. 1993. *Falls in the Elderly*. London: Edward Arnold.
- Ejaz, F.K., Jones, J.A. and Rose, M.S. 1994. Falls among nursing home residents: an examination of incident reports before and after restraint reduction programs. *Journal of the American Geriatrics Society*. 42:960-964.
- Evans, D. 1999. *Falls and fall injuries in the acute and residential setting: consensus report*. Joanna Briggs Institute for Evidence Based Nursing and Midwifery. Incidents and Accidents in Australian Health Care Conference. Joanna Briggs Institute for Evidence Based Nursing and Midwifery: Adelaide, Australia.
- Evans, D., Hodgkinson, B., Lambert, L., Wood, J. and Kowanko, I. 1998. *Falls in acute hospitals: a systematic review*. Joanna Briggs Institute for Evidence Based Nursing and Midwifery. Adelaide University: Adelaide, Australia.
- Everitt, V. and Bridel-Nixon, J. 1997. The use of bed rails: principles of patient assessment. *Nursing Standard*. 12(6):44-47.
- Flicker, L. 1995. *Position statement on physical restraint use in the elderly*. Australian Society for Geriatric Medicine: Sydney, Australia.
- Garcia, R.M., Cruz, M., Reed, M., Taylor, P.V., Sloan, G. and Beran, N. 1988. Relationship between falls and patient attempts to satisfy elimination needs. *Nursing Management*. 19(7):80V-80X.
- George, J.E., Quattrone, M.S. and Goldstone, M. 1999. Nursing judgment: is it alive? *Journal of Emergency Nursing*. 25(1):43-44.
- Govier, I. and Kingdom, A. 2000. The rise and fall of cot sides. *Nursing Standard*. 14(31):40-41.
- Gray, C.S. and Gaskell, D. 1990. Cot sides: a continuing hazard for the elderly. *Geriatric Medicine*. 20:21-22.
- Hanger, H.C., Ball, M.C. and Wood L.A. 1999. An analysis of falls in the hospital: can we do without bedrails? *Journal of the American Geriatrics Society*. 47(5):529-531.
- Hazell, K. 1960. *Social and medical problems of the elderly*, Hutchinson Medical Publications: London, England.
- Jehan, W. 1999. Restraint or protection? The use of bedside rails. *Nursing Management*. 6(2):9-13.
- Joanna Briggs Institute for Evidence Based Nursing and Midwifery. 1998. Falls in hospitals. *Best practice: evidence based practice information sheets for health professionals*. 2(2):1-6.
- Ludlam, J.E. 1957. Bedrails: up or down? *Hospitals*. 31(22):46-47.
- National Ageing Research Institute (Australia). 2000. *An analysis of research on preventing falls and falls injury in older people: community, residential aged care and acute care settings*. Report to the Commonwealth Department of Health and Aged Care Injury Prevention Section. Australia.
- National Health and Medical Research Council. 1994. *Falls and the older person: series on clinical management problems in the elderly, No. 6*. Report of the Health Care Committee Expert Panel for Health Care of the Elderly. Australia.
- Rawsky, E. 1998. Review of the literature on falls among the elderly. *IMAGE: Journal of Nursing Scholarship*. 30(1):47-52.
- Rubenstein, L.Z., Josephson, K.R. and Robbins, A.S. 1994. Falls in the nursing home. *Annals of Internal Medicine*. 121(6):442-451.
- Skeen, M.B. 1992. Do restraints prevent falls? [letter]. *Annals of Internal Medicine* 117(5):442.
- Tyler, L.J. 1992. Safety first? *Nursing the elderly*. 4(1):12-13.
- US Food and Drug Administration - Center for Devices and Radiological Health. 2000. *A Guide to Bed Safety* [brochure]. Available from URL: http://www.fda.gov/cdrh/beds/bed_brochure.html. Last update: 11/10/00. Accessed 15/01/01.
- Walshe, A. and Rosen, H. 1979. A study of patient falls from bed. *Journal of Nursing Administration*. 9(5):31-35.
- Walter, S. 1999. Side rails an issue [letter]. *Minnesota Nursing Accent*. 71(4):4.
- Whedon, M.B. and Shedd, P. 1989. Prediction and prevention of patient falls. *IMAGE: Journal of Nursing Scholarship*. 21(2):108-114.
- Wilson, E.B. 1996. Physical restraint of elderly patients in critical care: historical perspectives and new directions. *Critical Care Nursing Clinics of North America*. 8(1):61-70.
- Woodward, M. 1998. Physical restraint of older people: a study of Australian practices. *Australian Journal on Ageing*. 17(4):177-183.

DEVELOPING AND IMPLEMENTING CLINICAL PRACTICE TOOLS: THE LEGAL AND ETHICAL IMPLICATIONS

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ABSTRACT

The complexity of health care is ever increasing, as is the volume of research and literature available. In response there has been a corresponding emphasis on basing clinical decisions on the best available research evidence. The development and implementation of clinical practice tools is cited as a means of ensuring research utilisation as well as moderating variations in clinical practice. It is important that nurses contribute to the development of these clinical tools in order to actively shape their own practice. Nurses therefore need to have an understanding of the terminology and processes involved, and the implications for practice. This paper outlines definitions of the various clinical tools, the development process, and the legal and ethical implications of clinical practice tools.

INTRODUCTION

A growing interest in clinical practice tools and the process of their development and implementation has marked the past decade. This interest is usually prompted by the desire to establish best practice patterns, streamline processes and reduce health care costs. Traditionally these tools have been based on reported best practice and the consensus of expert opinions. There is now growing recognition that tools guiding clinical practice should be based, where possible, on the systematic identification and synthesis of the best available scientific evidence (National Health and Medical Research Council (NHMRC) 1998). This paper defines the terminology used in reference to clinical practice and describes the development and implementation of clinical practice tools. Finally there is a discussion of the legal and ethical implications these tools hold for nursing practice.

Definitions and terminology

Clinical practice tools (CPT) may include guidelines, protocols, standards of care, or, critical pathways. Though sometimes used interchangeably each term has its own distinct definition. These definitions need to be considered when developing a CPT.

Guidelines are recommended principles and usually take the form of systematically developed statements aimed at assisting the practitioner in making decisions about health care in specific circumstances (Jaggers 1996). In general, guidelines are broad based and provide recommendations for care based on the most current research findings (Cole and Houston 1999). They allow a degree of flexibility and interpretation by the practitioner based on their clinical judgement. More rigorous methodology applied to the analysis and classification of data prior to implementation has facilitated the wider development and acceptance of guidelines in practice

(Fuss and Pasquale 1998). Guidelines may be adopted from national and speciality organisations, or developed locally following an extensive review of the relevant literature. An example of a locally developed guideline for weaning from mechanical ventilation is detailed in this paper.

Protocols are more formal statements, specifying in detail how a process or intervention is to be conducted. They provide a standardised approach to care with a desired outcome (Cole and Houston 1999). In contrast to guidelines, protocols do not allow for any deviation. They are intended to be followed verbatim. An example is the administration of thrombolysis therapy post myocardial infarction.

Standards of care are accepted principles that help to operationalise patient care processes (Cole and Houston 1999) and, in the researcher's experience, form the basis of quality assurance measurements. They are often developed from the viewpoint of one particular discipline.

Critical pathways provide written criteria to guide the care delivery of multiple disciplines. They delineate the optimal sequencing or timing of interventions and procedures by nurses and other staff for a specified patient population (Coffey et al 1992). Deviations or variances from the critical pathway are monitored and can form the basis for quality enhancement efforts as they provide a standard of care for comparing actual with expected patient outcomes (Burns 1998). Examples of the successful application of critical pathways include care of a patient post operatively (eg post coronary artery bypass or hip replacement surgery) and care of the patient with multi-resistant *staphylococcal aureus*.

One tool may not be sufficient to standardise practice. Guidelines and protocols often form part of a critical pathway, so a variety of tools are used to guide patient care.

DEVELOPMENT AND IMPLEMENTATION OF CLINICAL PRACTICE TOOLS

The development of any CPT is challenging. They are without value if they are awkward, verbose and unrealistic to the practitioner in the clinical setting. CPTs need to be succinct, comprehensive, relevant and accessible at the bedside (Fuss and Pasquale 1998).

A number of leading agencies have proffered a variety of frameworks for the development CPTs (see Table 1). There are common threads running through all these suggested frameworks: defining the problem, using a (multidisciplinary) team approach, assessing scientific evidence, drafting and validating the tool, and finally implementation and evaluation (Agency for Healthcare Policy and Research 1991; NHMRC 1998; Paley 1995).

A review of the relevant literature and research is a vital part of the CPTs development process. This is essentially an extensive literature review or preferably a systematic review. Systematic reviews provide a rigorous summary of the current best evidence on a topic due to the methods used to collect, appraise and summarise research (Evans 2001). The components of a review protocol include a review question, inclusion criteria, search strategy, critical appraisal, data collection and data synthesis from which to draw conclusions and base recommendations.

Table 1: Summary of frameworks for development of clinical practice tools

Steps in clinical management protocol development (USA Agency for Healthcare Policy and Research 1991).	UK framework for devising a clinical protocol (nursing) (Paley 1995).	A guide to the development, implementation and evaluation of clinical practice guidelines (Australian National Health and Medical Research Council 1998).
<ol style="list-style-type: none"> 1. Selection of topic 2. Selection of committee members 3. Clarification of scope and purpose 4. Listing of goals 5. Assessment of scientific evidence 6. Drafting and validation 7. Presentation of clinical management protocol 8. Implementation 9. Evaluation 10. Recommendations for research 	<ol style="list-style-type: none"> 1. Outline the area of patient care to be covered by the protocol 2. Provide justification for using a protocol (include potential costs/benefits) 3. Outline the involvement of the nurse in the protocol <ul style="list-style-type: none"> • Theoretical framework • Unique nursing interventions • Collaborative nursing interventions 4. Outline multidisciplinary involvement 5. Outline the involvement of the patient of the patient in the protocol 6. Outline the methodology and channels of communication employed 7. Outline the expected patient outcomes from using the protocol 8. Review and revise protocol if necessary 	<ol style="list-style-type: none"> 1. Determine need and scope of guidelines 2. Establish multidisciplinary working party 3. Define purpose and target audience for the guidelines 4. Identify health outcomes 5. Review scientific evidence 6. Formulate guidelines 7. Formulate dissemination and implementation strategy 8. Formulate evaluation and revision strategy <p>Guiding principles</p> <ul style="list-style-type: none"> • Outcome focused • Evidence based • High quality synthesis of available evidence • Multidisciplinary and consumer involvement • Flexible and adaptable to local conditions • Incorporate economic appraisal • Guidelines accessible and 'user friendly' • Impact of guidelines evaluated • Guidelines revised regularly

The development and use of CPTs can facilitate interdisciplinary collaboration. CPTs reflect joint decision making and responsibility of the health care team involved with a particular patient population (Cole and Houston 1999). For example, a clinical condition where interdisciplinary collaboration is necessary in weaning a patient from mechanical ventilation. There is no conclusive evidence supporting one weaning mode over another. However, there is evidence that the weaning process was improved by a standardised approach to a particular technique (Djunaedi et al 1997; Ely et al 1996; Kollef et al 1998; Kollef et al 1997; Wood et al 1995).

CASE STUDY: DEVELOPMENT OF GUIDELINES FOR WEANING PAEDIATRIC PATIENTS FROM MECHANICAL VENTILATION

The Australian National Health and Medical Research Council's 'Guide to the development, implementation and evaluation of clinical practice guidelines' provided the framework for the development of weaning guidelines (NHMRC 1998). Ethical clearance was obtained from the relevant bodies and the guidelines were implemented only on patients from whom informed consent was obtained (either from themselves or their parent/guardian).

1. Determine the need and scope of guidelines

The need and scope of the subject was gathered through reflection on current practice, a retrospective analysis of weaning outcomes and a national survey of weaning practices in Australian paediatric intensive care units (PICUs) (Keogh 2000). Historically, weaning was carried out in an empirical manner, differing according to consultant preference and driven largely by the availability of medical staff. The national survey revealed that while all seven Australian PICUs had ventilation guidelines, none had weaning guidelines in practice.

2. Establish a multidisciplinary working party

In addition to the researcher, a seven member panel of PICU experts was convened to review the draft of guidelines and the evidence reviewed. The panel consisted of four medical consultants, a nurse leader, a hospital-based nurse educator and university-based nursing lecturer.

3. Define purpose and the target audience for the guidelines

As a reflection of the multidisciplinary nature of the weaning process the guidelines were aimed at both medical and nursing staff. As no one particular ventilatory mode had been proven for optimal weaning, the aim was to standardise the (team) approach and keep the weaning process patient centered.

4. Identify health outcomes

Specific health outcomes measured included total-ventilation-time (TVT), weaning-duration (WD), and length-of-stay (LOS) in the PICU. In addition, weaning failure and reintubation rates were monitored. The aim was to standardise and expedite the weaning process without sacrificing quality.

5. Review scientific evidence - literature review

An extensive literature search of the CINAHL and MEDLINE databases for studies since 1990 examining weaning, (particularly in the paediatric population), was conducted. A total of 30 studies were found. Only 10 of these studies specifically examined ventilation, weaning or extubation in the paediatric population. Each study examined a different aspect using a variety of research methods so it was not possible to conduct a meta-analysis of the findings. There was conflicting evidence between studies about the optimal weaning mode (Brochard et al 1994; Ely et al 1996; Esteban et al 1995; Farias et al 1998; Manczur et al 2000), however, there was an overall consensus that a standardised approach to the weaning process could improve patient outcomes. A number of studies in the adult population had demonstrated this (Djunaedi et al 1997; Ely et al 1996; Kollef et al 1998; Kollef et al 1997; Wood et al 1995). One paediatric study had successfully piloted weaning guidelines in a cardiothoracic setting (Webster 2000).

6. Formulate guidelines

A draft of the guidelines, including a weaning algorithm, was drawn up. The overall belief was that guideline development and refinement is an evolutionary process. To this end the panel met three times over a six-week period and the guidelines were redrafted twice before the final agreed format was ready for piloting on the study unit.

7. Formulate dissemination and implementation strategy

Prior to piloting, all medical and nursing staff were sent an information letter informing them about the study and the guidelines. Education sessions were scheduled over a four week period to inform staff about the weaning guidelines and process in detail and provide them with the opportunity to ask questions. There was concern amongst some members of the nursing staff that playing a more active role in the weaning process was not within their scope of nursing practice. Consultation of the state nursing registering body's 'Scope of practice decision making framework' and the national critical care college's competencies guide supported any nurse in a role that they had the education, authorisation and competency to perform (Australian Confederation of Critical Care Nurses

(ACCCN) 1996); Queensland Nursing Council (QNC) 1998). The clinical setting also influences the scope for individual practitioners. Care of the ventilated patient is part of the responsibility of the intensive care nurse and assisting the weaning of ventilation is subsequently part of that process. The majority of nurses and doctors welcomed the guidelines. They stated that they merely formalised what many nurses had been doing for years. It seemed that for some staff this was an educational tool 'expanding' their role while for others it affirmed their role.

8. Pilot study

The guidelines were piloted on 10 patients over a one-month period. Outcomes measured included total ventilation time, weaning duration, length of stay as well as quality indicators (weaning failure, reintubation and reventilation rates). Results from the pilot sample were compared to the retrospective analysis and the outcome measures were comparable. The pilot sample was too small to conduct a statistical analysis, however the pilot test demonstrated that multidisciplinary weaning guidelines were a safe clinical practice tool. Minor revisions were made to the guidelines in response to feedback from staff and the guidelines fully implemented for a 12-month period.

9. Formulate evaluation and revision strategy

The main study continues with a preliminary six-month analysis due to be completed. Health outcomes will be compared to the retrospective analysis of the historical control to detect any clinical and/or statistical differences. In addition to the quantitative analysis focus group interviews will be undertaken to discover how the staff on the study unit perceived the guidelines from weaning from ventilation and what effect these had on their practice. The wider legal and ethical issues that need to be considered are discussed below.

LEGAL ISSUES WITH CLINICAL PRACTICE TOOLS

With the concept of managed care on the increase, the legal and ethical implications of clinical practice tools need to be considered. Practice guidelines may not change the litigation system per se, but guidelines could be used as evidence to determine the case for negligence (Brennan 1991). A previous two-part study was conducted to determine how practice guidelines were being used in malpractice litigation in the United States of America (USA) (Hyams et al 1995). From the 259 claims of medical malpractice received at two major insurance companies, only 17 involved the use of practice guidelines. In their survey of 560 responding medical malpractice attorneys, 75% were aware of the concept of practice guidelines. A comparable proportion of attorneys (26% versus 30%) reported the use of guidelines influenced their decision whether to take a case or not, and

27% reported that guidelines influenced their decision to settle a case (Hyams et al 1995). Hyams and colleagues concluded the findings suggested that the concept of guidelines in litigation was spreading through the profession. Further study of USA court cases reported between 1980 and 1994 found 28 cases in which guidelines were used successfully (Hyams et al 1996). In the majority of the cases (78%) the guidelines were used for inculpatory purposes (ie implicating the defendant). Plaintiffs tended to use guidelines more than defendants did.

For practice protocols to be of use in litigation, the protocol must be relevant (Brennan 1991). In the case of *Quigley v Jobe in 1992* (cited in Hyams et al 1996) a guideline was ruled not relevant as it was promulgated by a private insurance company. Therefore the impetus for the protocol or guideline development needs to be considered. Guidelines that are centrally developed by national and government agencies are too general and vague for courtroom disputes (Hall and Dadakis 1996). Research based protocols, developed to meet the local health care needs, are more likely to establish a conclusive standard of care that can be admitted into court as evidence (Hall and Dadakis 1996).

It can therefore be concluded that although the use of guidelines in medical litigation is as yet limited, it has nevertheless had an impact on the decision-making processes of the attorneys involved. In her review of the liability issues associated with practice protocols Noonan stated that protocols offered a decrease in the need to practice defence medicine as well as a method to improve quality of care (Noonan 1997). Of significance though, from the review of all the medical malpractice cases reviewed, was the finding that practice protocols and guidelines did not eliminate the use of expert witnesses. Protocols, guidelines and critical pathways incorporate, but do not replace physician orders. CPTs require practitioners to use professional judgement by making explicit the rationale for their use (Brown 1995). As always - good clinical judgement must prevail.

ETHICAL CONSIDERATION WITH CLINICAL PRACTICE TOOLS

Ethical issues related to the use of CPTs are identical to the ethical issues surrounding the use of any therapy or intervention. Four ethical principles need to be considered: nonmaleficence (do no harm), beneficence (do good), autonomy (respect for patient self-direction), and distributive justice (be fair) (Beauchamp and Childress 1989; Jonsen et al 1992). When the decision to treat has been made, the only remaining choice is to use the most appropriate technique or process for delivering that treatment. The principles of autonomy and distributive justice become less important (Morris et al 1994). However, the importance of nonmaleficence and

beneficence remain undiminished. Striking a balance between the principles of nonmaleficence and beneficence is a challenge to the health care practitioner. In essence, a risk-benefit analysis must be undertaken, and is best done when probable estimates of outcome for treatment options are based on sound data. This statement alone mounts a convincing case for the use of research based tools for delivery of care. However, the development and implementation of CPTs in itself can give rise to ethical concerns.

The principle of autonomy requires patient participation and consent. The question then arises as to whether CPTs are considered a new and innovative non-standard therapy? Are CPTs decision support tools that merely formalise and standardise common practice? If the latter argument is used then informed consent is not mandatory. The principle of distributive justice is not an issue as long as the tool is applied to all patients without prejudice (Morris et al 1994).

When addressing the principles of nonmaleficence and beneficence in regards to CPTs, a shift is required from the traditional view that the physician is the (only) expert with the knowledge, skills and belief about what is the best available therapy for the patient. The assumption that physician belief is a reliable reflection of best information available does not acknowledge the general human limitations with information processing. (Miller 1956; Morris 1993; Morris and Gardner 1992). The forethought and consensus approach to CPT development means that more consideration and planning is behind decisions made under CPT control than by any individual practitioner (James and Eddy 1994). The intent to do good and the belief in a therapeutic decision within the increasingly complex area of critical care is not always enough. In the absence of credible data concerning outcomes from different therapy options clinicians are forced to use intent and belief to drive operational decisions rather than beneficence (Morris et al 1994). Therefore, the use and development of standardised approaches to patient care raise ethical issues that are comparable to decisions made in the conventional manner. Indeed, CPTs provide a sound basis to guide clinical decision and evaluate outcomes for ongoing assessment and quality assurance.

CONCLUSION

Clinicians can anticipate encountering practice guidelines and protocols more in future practice (Callender 1999). Quality guidelines can aid in making health care more appropriate and effective. The impact of CPTs has already been realised in medical litigation process. However, this should not be the impetus for the CPT development on a clinical issue. CPTs encourage professionals to share and define practice and utilise research to meet common goals. The ethical issues to be

considered compare to those associated with conventional clinical decision making processes. CPTs can, in fact, assist practitioners by promoting practice patterns associated with good clinical judgement, research based interventions and improved patient outcome (Cole and Houston 1999). If appropriately prepared, implemented and reviewed CPTs offer the health care team a valuable opportunity to harness the best knowledge and practice.

REFERENCES

- Australian Council for Critical Care Nursing (ACCCN). 1996. Competency standards for specialist critical care nurses. Melbourne: Australian Confederation of Critical Care Nurses.
- Agency for Healthcare Policy and Research (AHRP). 1991. Interim manual for clinical practice guideline development. Rockville, MD. USA: Agency for Healthcare Policy and Research.
- Beauchamp, T. and Childress, J. 1989. *Principles of biomedical ethics*. 3rd ed. New York: Oxford University Press.
- Brennan, T.A. 1991. Practice guidelines and malpractice litigation: collision or cohesion? *Journal of Health Politics, Policy and Law*. 161:67-85.
- Brochard, L., Rauss, A., Benito, S., Conti, G., Mancebo, J., Rezik, N., Gaspardo, A. and Lemaire, F. 1994. Comparison of three methods of gradual withdrawal from ventilatory support during weaning from mechanical ventilation. *American Journal of Respiratory and Critical Care Medicine*. 150:896-903.
- Brown, S. 1995. Multi-disciplinary clinical protocols: what are they and what is their potential for nursing? *Professional Update*. 34:29-30.
- Burns, S.M. 1998. The long-term mechanically ventilated patient: an outcomes management approach. *Critical Care Nursing Clinics of North America*. 101:87-99.
- Callender, D. 1999. Pediatric practice guidelines: implications for nurse practitioners. *Journal of Pediatric Health Care*. 133 part 1:105-111.
- Coffey, R.J., Richards, J.S., LeRoy, S.S., Schoville, R.R. and Baldwin, P.J. 1992. An introduction to critical paths. *Quality Management in Healthcare*. 1:45-51.
- Cole, L. and Houston, S. 1999. Linking outcomes management and practice improvement. Structured care methodologies: evolution and use in patient care delivery. *Outcomes Management for Nursing Practice*. 32:53-60.
- Djunaedi, H., Cardinal, P., Greffe-Laliberte, G., Jones, G., Math, B.P. and Snell, C.C. 1997. Does a ventilatory management protocol improve the care of ventilated patients? *Respiratory Care*. 42:604-610.
- Ely, E.W., Baker, A.M., Dunagan, D.P., Burke, H.L., Smith, A.C., Kelly, P.T., Johnson, M.M., Browder, R.W., Bowton, D.L. and Haponik, E.F. 1996. Effect on the duration of mechanical ventilation of identifying patients capable of breathing spontaneously. *New England Journal of Medicine*. 335:1864-1869.
- Esteban, A., Frutos, F., Tobin, M.J., Alia, I., Solsona, J.F., Valverde, I., Fernandez, R., de la Cal, M.A., Benito, S., and Tomas, R. 1995. A comparison of four methods of weaning patients from mechanical ventilation. Spanish Lung Failure Collaborative Group [see comments]. *New England Journal of Medicine*. 332:345-350.
- Evans, D. 2001. Intensive and Critical Care Nursing. *Systematic reviews of nursing research*. 17:51-57.
- Farias, J.A., Alia, I., Esteban, A., Golubicki, A.N. and Olazarri, F.A. 1998. Weaning from mechanical ventilation in pediatric intensive care patients. *Intensive Care Medicine*. 24:1070-1075.
- Fuss, M.A. and Pasquale, M.D. 1998. Clinical management protocols: the bedside answer to clinical practice guidelines. *Journal of Trauma Nursing*. 51:4-11.
- Hall, M.A. and Dadakis, D.S. 1996. Character of guidelines evolves, concern lingers over litigation protection. *Medical Malpractice Law and Strategy*. 134:1-4.
- Hyams, A.L., Brandenburg, J.A., Lipsitz, S.R., Shapiro, D.W. and Brennan, T.A. 1995. Practice guidelines and malpractice litigation: a two way street. *Annals of Internal Medicine*. 122:450-455.
- Hyams, A.L., Shapiro, D.W. and Brennan, T.A. 1996. Medical malpractice guidelines in malpractice litigation: An early retrospective. *Journal of Health Politics, Policy and Law*. 21:289-313.
- Jaggers, L. 1996. Differentiation of critical pathways from other health care management tools. *American Journal of Health Systems in Pharmacology*. 53:311-313.

- James, B. and Eddy, D. 1994. CPI and practice guidelines. In S. Horn and D. Hopkins Eds., *Clinical practice improvement: A new technology for developing cost-effective quality healthcare*. Vol. 1, pp. 271. New York: Faulker and Gray Inc.
- Jonsen, A., Siegler, M. and Winslade, W. 1992. *Clinical ethics 3rd ed*. New York: McGraw Hill Inc.
- Keogh, S.J. 2000. An analysis of weaning trends in Australian paediatric intensive care units. Paper presented at the 7th Australian and New Zealand Paediatric and Neonatal Intensive Care Conference: Canberra.
- Kollef, M.H., Horst, H.M., Prang, L. and Brock, W.A. 1998. Reducing the duration of mechanical ventilation: three examples of change in the intensive care unit. *New Horizons*. 61:52-60.
- Kollef, M.H., Shapiro, S.D., Silver, P., St. John, R.E., Prentice, D., Sauer, S., Ahrens, T.S., Shannon, W. and Baker-Clinkscale, D. 1997. A randomized, controlled trial of protocol-directed versus physician-directed weaning from mechanical ventilation. *Critical Care Medicine*. 254:567-574.
- Manczur, T., Greenough, A. and Rafferty, G.F. 2000. Comparison of pressure time product during synchronous intermittent mandatory ventilation and continuous positive airway pressure. *Archives of Disease in Childhood*. 83:265-267.
- Miller, G. 1956. The magical number seven, plus or minus two: some limits on our capacity for processing information. *Psych Review*. 632:81-97.
- Morris, A. 1993. Paradigms in management. In M. Pinsky and J. Dhainaut Eds., *Pathophysiologic foundations of critical care medicine*. 193-206. Baltimore: Williams and Wilkens.
- Morris, A and Gardner, R. 1992. Computer applications. In J. Hall and G. Schmidt and L. Wood Eds. *Principles of critical care*. 500-514. New York: McGraw-Hill.
- Morris, A.H., East, T.D., Wallace, C.J., Orme, J. Jr., Clemmer, T., Weaver, L., Thomas, F., Dean, N., Pearl, J. and Rasmusson, B. 1994. Ethical implications of standardization of ICU care with computerized protocols. *Proceedings - the Annual Symposium on Computer Applications in Medical Care*: 501-505.
- National Health and Medical Research Council (NHMRC). 1998. *A guide to the development, implementation and evaluation of clinical practice guidelines*. Canberra, Australia: National Health and Medical Research Council.
- Noonan, R. 1997. Liability issues associated with care pathways and practice protocols. *Journal of Legal Nurse Consultants*. 82:2-6.
- Paley, G. 1995. A framework for clinical protocols. *Nursing Standard*. 921:33-35.
- Queensland Nursing Council. 1998. *Scope of practice decision making framework*. Brisbane, Australia: Queensland Nursing Council.
- Webster, J. 2000. Nurse-led weaning from ventilation and extubation in the paediatric cardiothoracic intensive care unit. *Nursing in Critical Care*. 53:116-124.
- Wood, G., MacLeod, B. and Moffat, S. 1995. Weaning from mechanical ventilation: physician-directed vs a respiratory therapist-directed protocol. *Respiratory Care*. 403:219-224.

DIFFICULTY IN REMOVING SUPRAPUBIC URINARY CATHETERS IN HOME BASED PATIENTS: A COMPARATIVE DESCRIPTIVE STUDY

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Key words: suprapubic catheter, balloon cuffing, hysteresis, community nursing

ABSTRACT

The aim of the study was to monitor difficulties being experienced by community nurses when removing suprapubic catheters in 94 patients living in two area health services in Sydney. The study identified one catheter brand (Simpla) that was associated with more pain and bleeding for patients, and increased difficulties in removal for the nurses. It was found that muscle relaxant medications taken by patients contributed significantly in ease of catheter removal. In over 50% of all-silicone catheters surveyed, there was evidence of hysteresis leading to balloon cuffing on deflation. This phenomenon could be associated with increased trauma to the suprapubic cystostomy tract on catheter removal. A review of the risks and benefits associated with all-silicone catheters used for suprapubic insertion is recommended.

INTRODUCTION

In two specific area health services of Sydney, the combined incidence of long term catheterisation for bladder drainage management is estimated to be between 1-6% of all patients managed at home by either private, government or non-government community nursing agencies. These findings are similar to the 1-4% incidence noted by Capwell and Morris in 1993. Currently within the two area health services, 63% of all persons with a long term urinary catheter insitu (n=155) and who are managed at home by community nurses, have a suprapubic catheter (SPC).

An SPC may be the preferred choice for long term management of non emptying bladders or as the last option for managing urinary incontinence. A doctor initially inserts the SPC directly into the bladder via the anterior abdominal wall, sited approximately 2cm above the pubic bone. All-silicone or silicone latex combinations are the materials of choice in Foley catheters used for long term catheterisation (>28 days), particularly since studies in the 1980's linked certain types of all-latex rubber catheters with cytotoxicity (Ruutu et al 1985) and urethral stricture formation (Burkitt et al 1986, p.668). All-silicone catheters have the advantage of having a wider lumen and have been found to be least toxic compared with other materials (Talja et al 1985).

Community nurses are responsible for assisting patients to manage indwelling urinary catheters at home. This involves catheter changes and providing ongoing monitoring, education and support to patients and carers. An increasing number of community nurses over the past 18 months had experienced difficulties removing SPCs. The effort needed by the nurses to remove some catheters had led to trauma of tracts with bleeding and patient

discomfort. Difficulties had also been experienced with insertion of the new catheter as the suprapubic cystostomy tract obliterated as the detrusor fibres contracted following the traumatic removal episode.

Anecdotally, these difficulties had been linked to the Foley's balloon deflation problems. The silicone membrane that forms the balloon, when deflated, folds into a cuff or ridge which then creates resistance and stops the catheter from being removed easily through the tract. The cuff formation is due to the balloon's silicone material being elongated or stretched for a period of time beyond normal size (whilst inflated to retain the catheter in place) - which then does not return to original shape on deflation. This phenomenon with stretched materials is called hysteresis.

On some occasions, as a direct result from the difficulties experienced at home during the catheter change, patients had required admission to hospital emergency departments for completion of the procedure. This had caused much anxiety both to patients and attending community nurses, and placed unnecessary strain on hospital resources. Some community nurses had identified a particular brand of catheter as problematic, whilst others had experienced similar problems with other brands of all-silicone catheters.

It was then determined to monitor, by means of a survey, the incidence of difficulty in removing SPCs being managed at home by community nurses from government agencies within two specific area health services of Sydney.

The aims of the two stage survey were to:

- identify problems encountered with the insertion and removal of SPCs,
- note the incidence of balloon cuffing, and,
- assess factors including conditions and equipment used that may affect ease of SPC insertion and removal.

LITERATURE REVIEW

Medical problems generally associated with the use of long term catheterisation have been well documented such as bacteriuria, urinary tract infections, and histological changes (Cravens and Zweig 2000; Tambyah et al 1999; Delnay et al 1999). Although the use of SPCs for long term drainage of the bladder is controversial (Schaafsma et al 1999; Hackler 1982), Sheriff et al (1998) found that patients had a high level of satisfaction in this particular form of bladder management.

The SPC offers several advantages over traditional urethral catheters in that it is sited in a more comfortable position, particularly for persons with limited mobility, it is more appropriate in sexually active persons, it is associated with lower infection rates (Winder 1994, p.25;

Warren 1992, p.814), and it removes the risk of urethral trauma. Also, larger gauge catheters, which are generally avoided in urethral catheterisation, can be used via this insertion method.

Stokes et al (1995) suggest that chronic irritation by the catheter may be associated with the development of pre malignant states in the suprapubic cystostomy tract. Within the past 10 years carcinomas arising in the tract have been reported (Schaafsma et al 1999; Berge et al 1999; Blake et al 1996; Stroumbakis et al 1993).

There are a number of nursing articles on care and maintenance of both urethral catheters and SPCs (Godfrey and Evans 2000; Sienty and Dawson 1999; Ostaszkievicz 1997). Although Foley balloon deflation problems are discussed in the literature (Robinson 2000; Semjonow et al 1995, p.241; Falkiner 1993; Belfield 1988), there was nothing found reporting on the difficulty with SPC removal despite the increasing anecdotal evidence from community nurses of balloon cuffing on deflation and resultant problems.

SURVEY POPULATION AND METHOD

The study was of a comparative descriptive design. The non-probability convenience sample included all persons who had an SPC in situ being managed at home by government employed community nurses and who lived within two specific area health services of Sydney in which the two investigators worked. There were no exclusion criteria. The sample group was to be monitored by means of two staged questionnaires that were to be completed by the attending community nurses at two consecutive SPC changes between the months of January and April 2000. Stage One questionnaire comprised of nine questions that related to the insertion of an SPC and Stage Two questionnaire comprised of 13 questions that related to the removal of the same SPC weeks later.

Stage One questionnaire

As well as patient demographic data, the date and initials of the community nurse who was undertaking the SPC insertion were requested. The community nurse was to list the patient's current medications, date of initial SPC insertion, condition of the stoma, any apparent bleeding, the catheter brand, lumen type, balloon size, and, type and amount of fluid instilled into the retaining balloon. The degree of difficulty to insert the catheter was to be rated by the nurse on a ten point Likert scale, 1 = no difficulty, 10 = very difficult. The degree of pain experienced during the procedure was to be rated by the patient also by means of a 10 point Likert scale, 1 = no pain, 10 = very painful.

Stage Two questionnaire

This questionnaire was to be completed by the attending nurse at the patient's next catheter change. Data collected included the date and the initials of the nurse undertaking the removal procedure. Other data collected was frequency of catheter change, use of anaesthetic jelly, amount of fluid removed from the deflated balloon, and, any associated bleeding on catheter removal. If the patient had a spinal cord injury any symptoms of dysreflexia were to be described. The community nurse was requested to inspect the removed catheter and to note the state of the deflated balloon, that is whether a cuff had been formed or not. Likert scales (as previously described) were to measure degree of difficulty in removing the SPC and degree of associated patient pain.

THE PILOT STUDY

Five community nurses undertook a pilot trial of the survey instruments. A minor change to the Stage Two questionnaire was made to improve clarification prior to implementation across the regions. It was initially planned to have the removed catheters returned along with the completed questionnaires for the investigators to inspect, but this could not be readily organised due to distance, storage, transportation and concerns regarding infection control.

Permission was sought and granted from the relevant directors of nursing in the two area health services, to undertake the two-stage survey. The directors informed their community nursing staff of the pending survey. The questionnaires with an explanatory cover sheet were then delivered to the 11 community centres, and distributed to community nurses known to have patients with an SPC insitu. When the attending community nurses had completed the two stages for each patient the questionnaires were stapled together and sent back to the investigators via the postal system. A 12-week period was given for return of questionnaires.

ANALYSIS

The data were collated, coded and analysed using Statistical Package for the Social Sciences (SPSS-X). Chi Square Test of independence was used to determine the difference between brands of catheter, medications,

balloon cuffing, pain and bleeding. The Mann-Whitney U-test was used to determine the community nurse's degree of difficulty and the patient's degree of pain during both the insertion and removal of the named catheters.

RESULTS

A total of 54 community nurses returned the Stage One and Stage Two questionnaires for each of 98 patients with an SPC insitu (100% return rate). Four paired questionnaires could not be used in the analysis because they were incomplete. The sample therefore comprised of 94 patients, 59% male and 41% female, whose ages ranged from 17 to 90 years of age, with the mean age of 63.5 years. The standard deviation of the mean age was 20 years.

The majority (71%) of patients had their SPC initially inserted more than 12 months prior to the survey date. A majority (89%) had their catheters changed routinely between the 4-6 weekly intervals. Eleven percent had their catheter changed based on functional status. Table 1 demonstrates number of patients, time intervals between changes and reason for change.

Twenty nine percent of the sample were on anticholinergic medication. None of these patients experienced urine leakage from either urethra or stoma site. Anticoagulants were taken regularly by 17% of the sample. Thirty five percent of the sample took muscle relaxant medication regularly, and another 5% took a muscle relaxant only just prior to each catheter change. Other medication types recorded were urinary antiseptics, vitamins, minerals and laxatives. Five patients had a routine intra-muscular injection of an antibiotic 10 minutes prior to the SPC change procedure.

Non parametric statistics were undertaken to identify if medications taken by patients were associated with evidence of pain, bleeding or difficulty in catheter removal. There was a difference in the degree of difficulty in catheter removal, where patients on muscle relaxation medication had a less difficult removal episode ($U=680.0$; $P=0.0055$). No significance was identified between patients who were, and those who were not taking anticoagulant or anticholinergic medication, with pain experienced, evidence of bleeding, or difficulty in catheter removal.

Table 1: Time interval between catheter change, number of patients and reasons for catheter change

Time interval	1 week	2 weeks	3 weeks	4 weeks	5 weeks	6 weeks
Number of patients	1	2	8	53	15	15
Reason for change	Non functioning catheter			Functioning catheter changed on routine		

Out of the 27 patients diagnosed as having had a traumatic spinal cord injury, 20 had the potential for experiencing autonomic dysreflexia. Eleven of these patients actually experienced the condition during the catheter change procedure, however none required medication as treatment. The dysreflexic episode was probably due to the result of pain stimuli either on catheter removal or insertion, but this is conjecture, and therefore these patients could not be included in the patients' self rating degrees of pain Likert scale.

The attending nurses stated that in 30% of cases, the catheter was difficult to insert, and degrees of pain were experienced by 42% of the patients during the insertion procedure. In 49% of cases, the catheter was difficult to remove and degrees of pain were experienced by 48% of the patients during the removal procedure. There was evidence of bleeding from the site following the removal of 35% of the catheters. Twenty seven percent of the sample group had apparent overgranulation occurring of the stoma. Bleeding either on insertion or removal of the catheters was not significant in these patients.

Five different brands of Foley catheter were used during the survey. These included: Simpla, Bard, Dover, Cliny and Bardia. The catheter material of the first four brands is all-silicone, and Bardia is manufactured from natural rubber latex, silicone elastomer coated. The Bardia sample two cases were not included in analysis when brands were compared because of the different material make up.

The nurses in 53% of cases visually identified apparent cuffing of the collapsed deflated balloon. There was no significant statistical difference between the rate of cuffing between brands, however the Simpla brand was significantly more difficult to remove compared with the other brands ($\chi^2=16.2486$, d.f.=3, $P=0.0010$). There was no significant difference identified between brands of catheter and bleeding or pain on catheter removal ($\chi^2=5.94548$, d.f.=3, $P=0.11429$). Despite no significance, Table 2 demonstrates a trend towards increased bleeding and pain with the Simpla brand when compared to the other brands.

There was no difference between solution types, either saline or water, instilled into a balloon and balloon cuffing on deflation. Eighty two percent of the nurses tested the balloon by solution inflation prior to insertion, and on 81% of occasions, the balloon size was small, 5-10mls. Catheter sizes ranged from 12Fg to 24Fg with the most utilised size being 16Fg (43%). No particular size was associated with difficult removal when compared with other sizes. Ten percent of the nurses used an anesthetic jelly in the SPC tract prior to the catheter's insertion for the patient's comfort.

DISCUSSION

Repeated trauma to the SPC tract, apart from the immediate pain and bleeding associated with difficult removal of the catheter, may be harmful. The potential for complications arising from such repeated trauma raised questions about the incidence of traumatic SPC removals. The presence of a cuffed deflated balloon was evident in over half of the all-silicone catheters surveyed. The question is whether all-silicone catheters should continue to be used, given the need for regular catheter changes and the potential problem of tissue damage on catheter removal. Although all the catheters used in the survey were identical in material it was identified that the Simpla brand of catheter was associated with more bleeding, more pain and more difficulty in removal (Table 2). These findings support the clinical practice difficulties associated with Simpla catheters that had been reported by the community nurses.

In the majority of catheters surveyed, the balloon size was small, as is generally recommended for optimal drainage and decreased chance of bladder irritability with spasm (Getliffe 1994), and the balloons were test inflated prior to insertion to confirm a spherical shape. A wide size range of catheters were used - each size selected on the basis of the individual's need to adequately drain urine. The size of the catheter did not impact on the degree of removal difficulty.

Table 2: Comparison of catheter brands against difficulty in removal, a cuff present, evidence of bleeding and pain on removal

Brand of catheter	Cases	Difficulty in removal Mean rank	Cuff present on removed catheter	Bleeding on removal	Pain on removal Mean rank
Dover	34	49.13	20 (58.8%)	10 (29.4%)	48.51
Cliny	30	33.52	14 (46.7%)	13 (43.3%)	36.62
Simpla	14	64.86	9 (64.35)	9 (64.35)	63.14
Bard	14	49.57	6 (42.9%)	4 (28.6%)	46.14
Bardia	2				
Total	94				

Frequency of catheter changes is of concern because of the potential repeated trauma that occurs during the procedure. This survey found that the majority of patients had their catheters changed routinely between four and six weeks (Table 1). Catheter change frequencies is a controversial issue for clinicians. Despite the understanding that bacteriuria is almost inevitable in persons with long term indwelling catheters (Zimakoff et al 1996, p.215; Warren 1996, p.212), there remain inconsistencies in practice related to care of indwelling catheters. Millard's guidelines (1987) have driven the practice of changing a catheter on a monthly basis in New South Wales, on the understanding that the practice lowers the incidence of complications such as blockage and symptomatic UTIs, while others (White and Ragland 1995) argue that individuals whose catheters were changed more frequently were more likely to develop infection. Getliffe (1993) and Belfield (1988) state that catheter changes should be based on function, degree of catheter encrustation and frequency of blockage, and that catheters which are functioning effectively could be left insitu for up to three months.

Within the sample group surveyed were persons with the diagnosis of traumatic spinal cord injury, 11 of whom experienced autonomic dysreflexia during the catheter change. Only on five of these occasions a deflated balloon cuff was present causing difficult catheter removal. It is known that the catheter change procedure alone can act as a stimulus for autonomic dysreflexia, however a traumatic change, by pulling a cuffed deflated balloon through the tract, increases the risk. Any stimulus that brings on dysreflexia should be avoided as autonomic dysreflexia is a medical emergency.

Muscle relaxants used in this sample group were Valium and Baclofan/Lioresal. Although the use of muscle relaxant medication was found to be associated with increased ease of catheter removal, widespread advocacy for their use prior to SPC removal is not recommended in view of the significant associated side effects.

As a non-probability convenience sample was used for this survey, caution should be taken in generalising the findings. Further research is required to overcome the limitations of the study. A large randomised control study with significant numbers of participants is required to achieve statistical power, therefore preventing a Type 2 error. For example, no significant difference was found between medications and pain or bleeding, overgranulation and bleeding, or between catheter brands, solution types instilled into balloons and rates of balloon cuffing. The reason for this was the small sample size (n=94) whereby there may have been an effect if the sample was larger. Another limitation of the study was that interrater variability could not be controlled for in the 54 community nurses.

CONCLUSION

In the mid 1980s urethral catheters were the common mode of bladder drainage, while today, SPCs are gaining in popularity as the drainage mechanism of choice. Our study within two specific area health services found that 63% of all indwelling catheters (n=155) were SPCs. Given the rate of cuffing associated with all-silicone catheters and possible complications the question is whether all-silicone catheters are necessary for SPC tracts. Latex and silicone combinations exist and their cuffing rate is anecdotally believed to be less than that of all-silicone, however this is an area that has not been researched. Given the issue of latex allergy and the recent New South Wales Department of Health (NSW Health Dept) position on eliminating latex from usage in public health care facilities by 2003, there may be no present alternative than to use all-silicone catheters. Product companies were aware of this survey and have received the results.

This study has identified one catheter brand (Simpla) being associated with more pain, bleeding and increased difficulty in removal. Cuffing of the deflated balloon as a result of hysteresis was evident in 50% in the four brands of all-silicone catheters surveyed. Cuffing may be associated with increased trauma to the tract and bladder at catheter change. In view of the anecdotal evidence, and in light of these findings, a review of the risks and benefits associated with all-silicone catheters used for SPC insertions is recommended. Further research is also needed to address the ongoing questions as to whether frequent regular catheter changes make a difference to rates of catheter acquired UTIs or other complications.

REFERENCES

- Belfield, P.W. 1988. Urinary catheters' balloon volume. *British Medical Journal*. 296:836-837.
- Berge, B., Heicappell, R., Steine, U. and Miller, K. 1999. Urothelial carcinoma in a suprapubic cystostomy tract 27 years after tube removal. *Journal of Urology*. 162:797-798.
- Blake, P.A., Kim, C.O., Lopez, A.E. and Krongrad, A. 1996. Verrucous carcinoma of a suprapubic cystostomy track. *Journal of Urology*. 156:174.
- Burkitt, D.S., Barwell, N.J. and Wilson, A.G.M. 1986. Urethral catheter strictures. *Lancet*. 1:688.
- Cravens, D.D. and Zweig, S. 2000. Urinary catheter management. *American Family Physician*. 61(2):369-376.
- Capwell, A.E. and Morris, M. 1993. Audit of catheter management provided by district nurses and continence advisors. *British Journal of Urology*. 71:259-264.
- Delnay, K.M., Stonehill, W.H., Goldman, H., Jukkola, A.F. and Dmochowski, R.R. 1999. Bladder histological changes associated with chronic indwelling urinary catheters. *Journal of Urology*. 161:1106-1108.
- Falkiner, F.R. 1993. The insertion and management of indwelling urethral catheters. *Journal of Hospital Infection*. 25(2):79-90.
- Getliffe, K. 1993. Informed choices for long term benefits. The management of catheters in continence care. *Professional Nurse*. 9(2):122-126.
- Getliffe, K. 1994. The characteristics and management of patients with recurrent blockage of long term urinary catheters. *Journal of Advanced Nursing*. 20(1):140-149.
- Godfrey, H. and Evans, A. 2000. Catheterisation and urinary tract infections. *British Journal of Nursing*. 9(11):682-686.

- Hackler, R.H. 1982. Long term suprapubic cystostomy drainage in spinal cord injury patients. *British Journal of Urology*. 54:120-121
- Millard, R.J. 1987. *Guidelines for satisfactory chronic indwelling catheter care*. Eastern Area Community Health. Sydney: Australia.
- New South Wales (NSW) Health Department. 2000. *Policy framework and guidelines for the prevention and management of on latex allergies*. Circular 2000/99. New South Wales. December 2000.
- Ostaszkiwicz, J. 1997. Catheterisation and nursing management. *Australian Nursing Journal*. 14(8):22-27.
- Robinson, J. 2000. Removing catheters. *Journal of Community Contacts* (online) 14(12). Website: <http://www.jcn.co.uk/3-12-07.htm>
- Ruutu, M., Alfthan, O., Talja, M. and Anderson, L.C. 1985. Cytotoxicity of latex urinary catheters. *British Journal of Urology*. 57:82-87.
- Schaafsma, H., Delaere, K.P.J. and Theunissen, P.H.M.H. 1999. Squamous cell carcinoma of suprapubic cystostomy tract without bladder involvement. *Spinal Cord*. 37:373-374.
- Semjonow, A., Roth, S. and Hertle, L. 1995. Reducing trauma removing long term balloon catheters. *British Journal of Urology*. 75:241.
- Sheriff, M., Foley, S., McFarlane, R., Nauth-Misir, R., Craggs, M. and Shah, P. 1998. Long term suprapubic catheterisation: clinical outcomes and satisfaction survey. *Spinal Cord*. 36:171-176.
- Sienty, M. and Dawson, N. 1999. Preventing urosepsis from indwelling urinary catheters. *American Journal of Nursing*. 99(1):24C-24H.
- Stokes, S., Wheeler, J.S. and Reyes, C.V. 1995. Squamous cell carcinoma arising from a suprapubic cystostomy tract with extension into the bladder. *Journal of Urology*. 154:1332-1333.
- Stroumbakis, N., Choudhury, M.S. and Hernandez-Graulau, J.M. 1993. Squamous cell carcinoma arising from a suprapubic cystostomy site without bladder involvement. *Journal of Urology*. 41:568-570.
- Talja, A., Andersson, L.C., Ruutu, M. and Alfthan, O. 1985. Toxicity testing of urinary catheters. *British Journal of Urology*. 57:579-584.
- Tambyah, P.A., Halvorson, M.S. and Maki, D. 1999. A prospective study of pathogenesis of catheter associated urinary tract infections. *Mayo clinic proceedings*. 74:131-136
- Warren, J. 1992. Catheter associated bacteriuria. *Clinics in Geriatric Medicine*. 8(4):805-819.
- Warren, J. 1996. Urethral catheters, condom catheters and nosocomial urinary tract infections. *Infection Control and Epidemiology*. 17(4):212-214.
- Winder, A. 1994. Supra-pubic catheterisation. *Community Outlook*. 4(12):25-27.
- White, M.C. and Ragland, K. 1995. Urinary catheter related infections among home care patients. *Journal of Wound, Ostomy and Continence Nursing*. 22 (6): 286-289.
- Zimakoff, J., Stickler, D., Pontoppidan, B. and Larsen, S. 1996. Bladder management and urinary tract infections in Danish hospitals, nursing homes and home care: a national prevalence study. *Infection Control and Epidemiology*. 17 (4):215-221

THE DYNAMICS OF COPING AND ADAPTATING TO THE IMPACT WHEN DIAGNOSED WITH DIABETES

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Key words: coping, diabetes, transitions, change, residual socialisation

ABSTRACT

The coping trajectory of a group of people who were insulin dependent (Type 1 diabetes n=109) was compared with that of a group people who were non-insulin dependent (Type 2 diabetes n=241). The experience of the diagnosis of diabetes mellitus (DM) was different for both groups. Type 1 people were more likely to feel the impact of the diagnosis more severely than Type 2 people and were more likely to use avoidance, denial and fantasy strategies in their attempts to cope with the diagnosis and its implications. The residual effects of not being ill were more likely to be felt by Type 2 group. Those who showed determination not to be beaten by the disease tended to use more positive coping techniques in making the adjustment. Illustrative path diagrams for both the Type 1 and Type 2 groups are presented. Health professionals need to recognise the likely differences in order to provide the most appropriate care.

INTRODUCTION

The diagnosis of diabetes mellitus is associated with increased distress for the individual. Such distress may include anxiety, fear and depression (eg Beeney et al 1996). The individual may perceive the diagnosis of DM as catastrophic because of the actual and potential changes it imposes. Inevitably there will be demands on the individual to adjust and change as a consequence of being diagnosed with DM. In this paper we explore the dynamics of coping with the diagnosis.

According to Lazarus (1981), coping strategies function in two major ways. First, strategies may be used to change the stressful situation for the better, either by changing one's own behaviour, or by changing the threatening environment. Second, strategies may be used to manage the physiologic and psychological outcomes of stress-related emotions themselves, so that they do not overwhelm the person and damage the ability to function or maintain morale. Lazarus (1981) calls this form of coping 'palliative' because the goal is to relieve the emotional or physiological impact of the stress without actually altering the situation that caused the stress. Through this mechanism, individuals feel better and are able to maintain a sense of wellbeing and hope despite difficult situations (Cohen and Lazarus 1983; Larkin 1987; Moos 1982). Lazarus and Folkman (1984) extended these ideas and argue that any stressor (eg diagnosis and consequences of a chronic disease) is evaluated. This evaluation determines their emotional or behavioural reactions (Maes, Leventhal and de Ridder 1996). There are two evaluative or appraisal processes. Primary appraisal assesses the personal meaning of the event, and secondary appraisal evaluates the resources to meet the demands of coping. Positive emotions arise if the stressor is viewed as a challenge. Negative emotions characterised by anger and/or grief are a consequence of a threat to physical or psychological wellbeing, as is the case in most illnesses.

Maes et al (1996) argue that the Lazarus-Folkman (1984) model with its emphasis on the assessment of the

coping behaviours to the 'virtual exclusion of assessment of disease representation and coping outcomes' is limited because the model, *inter alia*, neglects situational demands, and also personal life goals. The Maes et al model is in itself limited in our view. It fails to take into account factors such as residual socialisation (MacLean 1990; MacLean, Gannon and Gould 1995), where previously learned behaviour may interfere with the acquisition of new roles. It also fails to recognise that there is a difference between taking on 'sick-role' behaviours associated with a chronic illness such as DM, and the acceptance required to acknowledge 'becoming and being' a diabetic.

The impact of a diagnosis like diabetes, cancer or heart disease is such that it will be remembered, as will the circumstances, events and responses of others at that time. Whilst Mechanic (1974) cautions about the accuracy of memory for events, the use of retrospective data need not be invalid provided adequate steps are taken to reduce recall bias. Memory is not static and with the constant reminder of the presence of the disease forgetting the impact of the diagnosis is unlikely. Indeed, where an event is highly significant, like the diagnosis of diabetes may be, it may become a 'life theme' (Guidano 1987). Life themes act as filters for the interpretation of subsequent stimuli, and help to organise and give meaning to the self.

A number of models of response to stressors (Kubler-Ross 1969; Adams, Hayes and Hopson 1976; Sperling 1988) indicate that coping or defensive responses may differ depending upon the stage within the model. Lazarus (1981) and his colleagues (Lazarus and Folkman 1984), for instance, argue that the individual uses primary appraisal followed by secondary appraisal. Schwarzer and Schwarzer (1996), review differing types of coping and argue that coping preferences may occur in a certain time order.

AIMS

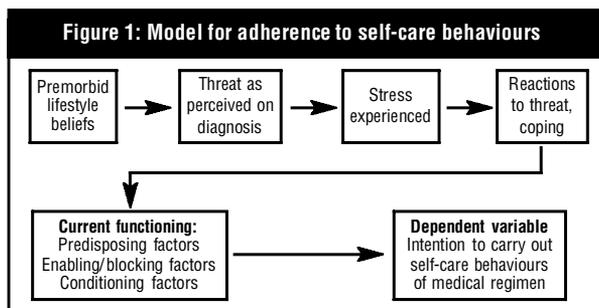
There are two inter-related aims of this paper. The first is to present data that shows there are differences in coping and adaptive behaviours between people with DM who are dependent upon insulin, and those people who are not insulin dependent. The second aim is more speculative in that it attempts to develop models of coping from the impact of the diagnosis to levels of experienced stress.

METHODOLOGY

The material for this study was obtained as part of a larger cross-sectional study into the psychosocial factors affecting adherence and compliance in people with DM (Lo 1996). The focus of this report is on the respondents' retrospective analysis of the ways in which they coped at

the time of diagnosis. Respondents completed a survey questionnaire seeking responses to Likert-type questions. Well-known, valid and reliable instruments comprised the bulk of the questions included in the questionnaire.

The theoretical model that guided our efforts asked individuals to retrospectively identify their lifestyle beliefs prior to the diagnosis, to indicate the degree of threat this posed and how they coped and lived with this initial diagnosis, and to indicate the ways they currently manage the disease. The following figure shows the model that guided the initial research.



The focus of this paper is on variables in Blocks 1-4. Our concern is not so much with how they are functioning at the moment, but with the dynamics of coping following the initial diagnosis.

SAMPLE SELECTION

The sample selection procedures have been outlined elsewhere (Lo 1996; MacLean and Lo 1998). Diabetes educators and dietitians randomly distributed 657 questionnaires to individuals who attended community health centres or diabetes education centres throughout New South Wales, Australia. Of the 657 questionnaires that were given out, there was a response rate of 59% (387 useable data). There were eight (1.2%) incomplete responses, and the rest (262) did not reply. Respondents and non-respondents did not differ significantly with regard to age, gender, type of diabetes, or the duration of the illness. Ethics approval was obtained from university and the appropriate hospitals ethics committees throughout New South Wales.

Instruments used

Pre-morbid beliefs were tapped by the use of 10 Likert-type items. Items for example asked respondents to indicate their agreement on a five point scale to such statements as 'I believed I was in control of my life', 'I was living a healthy lifestyle'; Seven items formed the Premorbid scale ($\alpha=0.67$). The three other items were entered into the equations as single item variables.

The 'impact' on being given the diagnosis of diabetes was regressed against the pre-morbid scale in the first

stage of the model building. The second phase of the model following the pre-morbid items was to measure the impact of the diagnosis. The 'impact' scale ($\alpha=0.83$) comprises three Likert-type items expressing anger, feeling cheated and being depressed at being told of the diagnosis.

The response to the 'impact' of the diagnosis was twofold - by feeling fear and being threatened on the one hand - the 'fear' scale ($\alpha=0.86$) comprising six item (eg I was afraid I could not live a normal life, ... how I would cope at home, ... have complications, ... limit my social relationships and friendships). On the other hand, there was a determination to meet the challenges of the disease (eg I believe that despite my diabetes I can still be a useful person, ... I can still enjoy life, ... a positive attitude will help me cope with diabetes). The 'determine' scale comprised 4 items ($\alpha=0.83$).

Respondents completed four scales (MacLean 1990) derived from the Ways of Coping Checklist devised by Lazarus and his colleagues at University College of Los Angeles (mean internal reliability 0.85). Three of the scales are suggestive of positive ways of coping - obtaining advice, making greater efforts, seeking opportunities for growth. For some of the purposes of this study, they were combined into a scale with its focus on 'newness' - taking advantage of the potential in what might otherwise be a challenging situation. This is the 'newness' scale used in this paper ($\alpha=0.91$). The other scale measures coping by the use of fantasy or avoiding and denying situations. Those who cope well with their diabetes are likely to score well on the positive scale, and those who do badly will tend to use avoidance and denial of the magnitude or severity of their illness as a means of coping.

Two indicators of mental health were included in the study. The first measured depression or 'gloom' ($\alpha=0.76$). The 'gloom' scale was derived from the Dunn et al (1986) ATT39 scale, which purports to measure the emotional component of attitudes to diabetes. Internal consistency was reported for the un-weighted total score as 0.78 and the test-retest reliability coefficient over various periods from a two-week interval to six months ranged from 0.87 to 0.70. The 'gloom' scale comprised five items ($\alpha=0.78$) including 'There is little hope of leading a normal life with diabetes', 'Diabetes is the worst thing that ever happened to me'. The other measure of mental health was the General Health Questionnaire (GHQ) (Goldberg 1972).

Procedure

The Type 1 and Type 2 groups were compared by the use of Chi Square tests and t-tests wherever appropriate. To build the models, the 'impact' of the diagnosis was regressed against the pre-morbid variables. Then 'fear' and 'determine' variables were regressed against the 'impact' and 'pre-morbid' variables. Thus, all the variables to the

left of a variable were deemed to be predictive of that variable. From the regression equations, the beta weights or path coefficients were extracted and included in the models as an indication of the strength of the direct relationship between variables.

RESULTS

Sample characteristics

Table 1 and Table 2 present the biographical data of respondents. Table 3 gives the mean and standard deviations for all variables and scales for both the Type 1 and Type 2 groups. Included in Table 2 is the number of items in the scale and Cronbach's Alpha, as a measure of the internal consistency of the scale. The Table reports the t-test results and probability level for the differences in means between the two groups.

Differences between people with Type 1 diabetes and those with Type 2

The 241 Type 2 respondents controlled their diabetes and its complications through diet and exercise (95) alone, and by diet, exercise and hypoglycaemic tablets (146). Their mean age (54.1) was significantly higher (Chi Sq. 138.98 $p=0.000$) than their Type 1 counterparts (38.3). There were no gender differences between the types of diabetes, but the Body Mass Index was higher for the Type 2 group (28.32) compared with the Type 1 group (26.47: $t=-3.07$ $p=0.002$). The groups also differed significantly in terms of their marital status, largely a function of age. For example, the Type 2 group was over-represented in the widowed category, and under represented in the single category.

Table 1: Types of diabetes, gender and age of subjects (n=350)

Age group	Type 1		Type 2		Total
	M	F	M	F	
18-25	8	13	-	-	21
26-35	11	14	-	6	31
36-45	10	13	9	12	44
46-55	18	17	35	48	118
56-65	1	4	64	67	136
Total	48	61	108	133	350

Table 2: Types of diabetes and marital status of subjects (n=350)

Marital status	Type 1		Type 2		Total
	M	F	M	F	
married	31	43	93	87	254
divorced	6	3	7	19	35
widowed	2	2	4	22	30
Single	9	13	4	5	31
Total	48	61	108	133	350

Table 3: Means and standard deviations for major variables: (1) Type 1 (n=109) and (2) Type 2 diabetics (n=241); t for differences between the groups and probability levels

	Group	Means	S.D.	t	p	Items	α
Premorbid	1	14.68	2.71	-0.95	0.342	7	0.67
	2	14.96	2.46				
Trans 2	1	2.79	1.21	1.55	0.122		
	2	2.57	1.21				
Trans 10	1	4.01	0.98	2.00	0.046		
	2	3.76	1.15				
Impact	1	9.62	3.36	4.29	0.000	3	0.83
	2	7.98	3.24				
Determine	1	16.40	2.98	-2.93	0.004	4	0.83
	2	17.29	2.45				
Fear	1	20.25	5.36	7.28	0.000	6	0.86
	2	15.90	5.10				
Gloom	1	14.18	4.50	4.93	0.000	5	0.76
	2	11.80	4.04				
Newness	1	20.32	4.57	0.86	0.391	6	0.88
	2	19.82	5.29				
Avoid	1	23.75	5.84	5.99	0.000	7	0.88
	2	19.68	5.91				
GHQ	1	25.35	6.29	2.59	0.010	12	0.91
	2	23.65	5.39				

(Number of items in Scale and Cronbach's Alpha for both groups combined)

We found that the ‘impact’ of the diagnosis was greater for people who were insulin dependent (Type 1) than for those people who were diagnosed with Type 2 diabetes (t=4.29 p<0.000). Furthermore, people who were diagnosed with Type 1 diabetes tended to respond more with Fear to the diagnosis (t=7.28 p=0.000); more likely to be depressed (‘gloom’ t=4.93 p<0.000), and experienced greater amounts of stress (GHQ, t=2.59 p<0.010). Type 1’s were more likely to use Avoidance as a defence strategy (t=5.99 p<0.000), whereas, those with Type 2 diabetes were more determined to overcome (t=-2.93 p<0.004) the challenges posed by the diagnosis. There were no differences between the groups in terms of their ‘positive’ coping strategies as measured by the ‘newness’ scale.

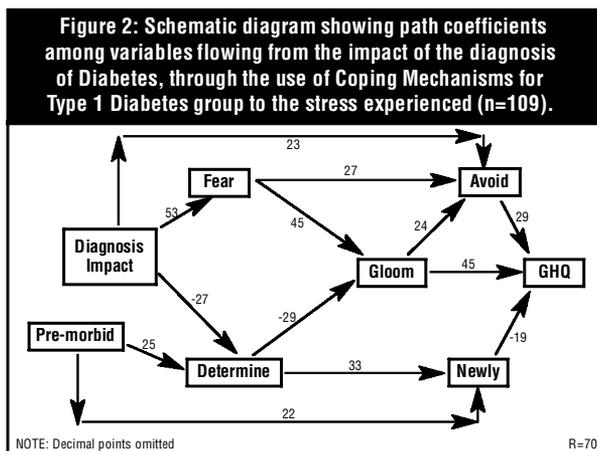
Our data suggested that the diagnosis of early onset diabetes (Type 1) was more traumatic than for those diagnosed with diabetes later in life. The differences between the groups in terms of the dynamics of coping were explored in the path diagrams that follow.

Analysis of coping - Type 1 group

For the Type 1 group (see Figure 2) no ‘pre-morbid’ variables had any role in predicting the ‘impact’ of the ‘diagnosis’. There was no association of pre-morbid beliefs with ‘fear’ of the disease, and its consequences. Fear of the consequences of the diagnosis was a function of the strong impact of the diagnosis. Pre-morbid beliefs were, however, related to the ‘determine’ scale. This relationship suggested that having a positive view of one’s health and the virtues of healthy living was positively related to the recognition that the diagnosis posed a challenge to be

overcome. Thus, there were initially two quite separate sets (orthogonal) of responses to the ‘impact’ of the diagnosis - ‘fear’ and ‘determination’.

The higher the path coefficients the greater is the strength of the direct relationship between the variables. In the model above, for example, it can be seen that ‘avoidance’ technique was a function of the ‘impact’ of the diagnosis, the ‘fear’ that this engendered, and the extent of ‘gloom’ experienced. For the Type 1 group, the use of defensive strategies, which implied growth and newness, was a function of an absence of ‘gloom’ or depression, and a determination to ‘beat’ the disease plus a set of positive pre-morbid beliefs.



The model suggested that long-term stress as measured by the GHQ was the outcome of inherent ‘gloom’ mediated by the twin coping processes of ‘avoidance’ and ‘newness’ (taking the opportunity to grow and develop).

Therefore in our model, it is argued that the ‘impact’ of the diagnosis elicits two mutually exclusive responses - Fear and concern for the implications of the disease, and a determination that despite the disease life will be lived to the full. The outcome of the struggle between these opponent processes, and the initial impact of the diagnosis is depression or gloom. Avoidance coping techniques are a function of this ‘gloom’ or depression, the ‘impact’ of the diagnosis and continuing ‘fear’ or concern for the meaning this has for normal living. This ‘fear’ also functions as a motivator for using coping mechanisms, which encourage newness, growth and a continuing determination to not let the disease dominate. Such mechanisms include seeking advice, making an effort and recognising the opportunities for growth within the present framework. Stress is then seen as an outcome of the two broad based opponent coping mechanisms of ‘avoidance’ and ‘newness’, along with ‘gloom’ and ‘depression’. Thus, the greater the depression, the greater the use of avoidance techniques, the greater the chronic stress experienced.

The model above points to two major tracks. The first focuses on the negative aspects of the transition: Impact - Fear - Gloom - Avoid - Stress, as measured by GHQ. The other track is more optimistic and ‘stress’ is negatively associated with ‘newness’, which is predicated on positive prior pre-morbid behaviour and beliefs and the determination not to let the disease get them down. The key ingredient in the first track is ‘fear’ and it is coping with this that leads to depression and gloom, use of avoidance procedures and stress. Fear of the consequences of the diagnosis is also the central feature for the non-insulin dependent group of respondents.

Analysis of coping - Type 2 group

The major differences between the models in Figure 2 and Figure 3 was predicated largely on the nature of the difference between the Type 1 and Type 2 groups, in particular the timing of the on-set of the disease. The impact of the diagnosis and quality of pre-morbid beliefs (the Premorbid scale, and two other items (Trans 2 and

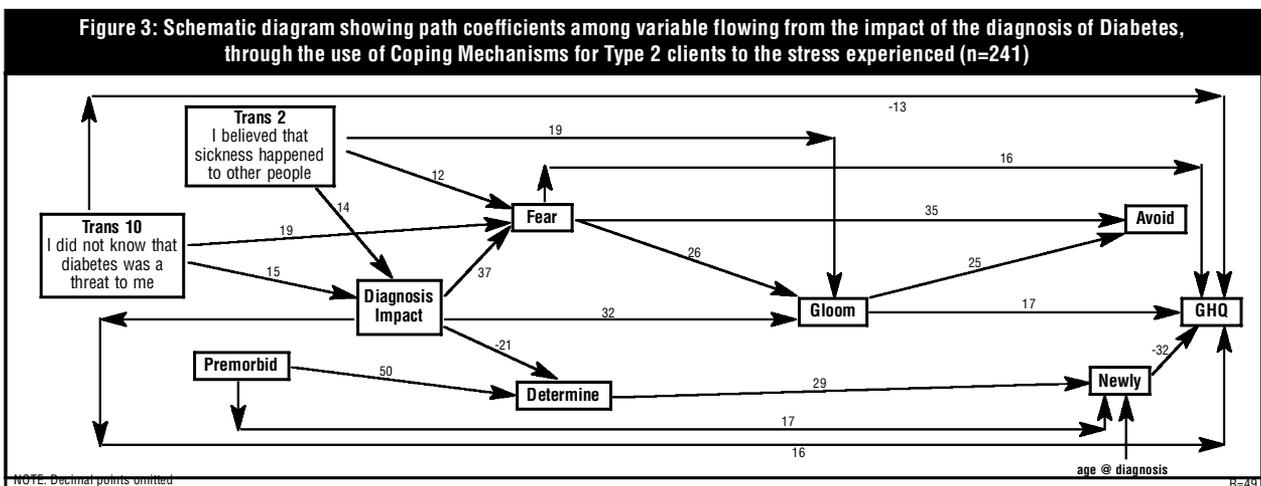
Trans 10) flow right throughout the model. For the Type 2 group, the length of time since being diagnosed was significantly less (4.2 years) than the Type 1 group (7.40 years; $t=9.10$ $p=0.000$).

DISCUSSION

There are significant differences between Type 1 and Type 2 groups of diabetic patients to the diagnosis of DM. It would be a mistake to think that the trajectory for both is exactly the same. Coping and adaptation are complex processes, not easily amenable to description or analysis.

Type 1 clients have not only had to live with the disease for a longer time, but were diagnosed at a much earlier age. Thus, part of the reason for the relative failure of pre-morbid functioning to influence the coping process may be because the effects of residual socialisation (MacLean 1990) have been attenuated. Such was not the case with Type 2 clients. Their pre-morbid beliefs permeated the whole coping process. In other words, the Type 2 diabetic group have to make a more difficult if not substantial change in their behaviours.

The shock of the diagnosis generates two processes which may have the characteristics of opponent processes (Guidano 1987), whose expression is seen in vacillation and ambivalence. Thus, it is possible to have the two processes of ‘fear’ or concern for the implications of the diagnosis concurrent with a ‘determination’ that despite this terrible diagnosis, life has to be lived. Both can reside within the individual at the same time. One leads to hope and the other to despair. In our models, this struggle between ‘fear’ and ‘determination’ had its outcomes in the relative presence or absence of ‘gloom’ and ‘depression’. Rather than viewing avoidance techniques and ‘growth’ strategies from the Ways of Coping Checklist as an either/or situation, if they are regarded as complementary opponent processes in the same way as the ‘fear-determined’ system, then the struggle for coherence and balance may be reflected in tension and stress.



It was significant, for example, that this pattern was so much stronger in the Type 1 group. The high multiple correlation ($R=0.70$) in the regression of GHQ on the coping variables, revealed that Type 1 clients as likely to be not only under greater stress ($t=2.53$ $p=0.01$), but to have been under stress for a longer period. The high GHQ multiple correlation is suggestive of the coherence of the patterning of variables that predict GHQ, and the chronicity of the stress. The more diffused patterning of the Type 2 group was reflected in much reduced multiple correlation of the regression of GHQ on the coping variables. The model for the Type 2 group was more elaborate, and complex than that for the group with Type 1 diabetes. Notably, this was in terms of the influence throughout each part of the process of the pre-morbid variables, and the continuing impact of the diagnosis through to the stress perceived as measured by the GHQ. Fear also permeated this model.

Our findings seem contrary to those of Beeney et al (1996). They indicated that 64% of the insulin-dependent group (IDDM) experienced shock compared with 53% of the non-insulin-dependent group (NIDDM). They then stated that there was no significant difference between the proportion of IDDM and NIDDM respondents who recalled experiencing significant distress. Our analysis of their paper suggests that this may be an error. In other words rather than as indicated, it is probable that the proportion of IDDMs experiencing distress is greater than the proportion of NIDDMs. If our analysis is correct, then their data fits in with our data.

The use of fantasy and avoidance techniques seems to be closely related to the strength of the fear and concerns for the future, gloom or depressive outlook and strong beliefs that 'sickness happened to others or disbelief in the possibility that DM could ever be a threat to them. This suggests a non-acceptance of the diagnosis, or more likely an oscillation between accepting it, and a refusal to accept that it applies to them. Perhaps this can be seen in the fact that the BMI for the Type 2 group was significantly higher than that for Type 1 respondents. There is a greater need for the Type 2 group to control their diet, to reduce weight and, probably, to exercise more.

Stage theory models in general tend to posit and focus the distinctiveness of phases. Sperling's (1988) model articulates the processes of adjustment to DM. But, it may be that the very idea of phases or stages may mask the moment to moment, day by day shifting between hope and gloom, between using avoidance coping methods and 'growthful' strategies suggestive in our model. The acceptance of the reality of the disease may be much more difficult for the Type 2 patient. There is, if you like, a double whammy from the re-socialisation and residual socialisation effects. Residual socialisation occurs when previously learned behaviours - the residue of old learning

- continue to assert themselves in situations that are inappropriate.

From a relatively early age, the Type 1 patients have to come to terms with injections - they are socialised into the processes of checking blood sugar levels, managing their diet and so on. Type 2 patients, however, have led a symptom free life for a significantly longer period of time and for a greater proportion of their lives. They have developed lifestyles that, in effect, have to be unlearned, and a new set of behaviours has to be learned. Such learning is much easier if there is an acceptance that they have DM. It is obvious from the study that the positive dynamic structure of 'newness' - growth, advice seeking and acceptance and effort - lead to a healthier lifestyle, and a concomitant increased likelihood of complying and adhering to management regimes.

Indeed, this kind of 'optimism' may lead to an earlier acceptance of what it means to be diabetic and its incorporation into the structure of the self. We believe that this paper is a small step on the way to understanding the dynamics of coping, and suggests to health professionals that a sound knowledge of their client is important. Thus, clients will make some progress, take steps forward and steps backward. This process of adjustment and coping will take time.

CLINICAL IMPLICATIONS

1. People who are diagnosed insulin dependent are much more likely to have a more intense, and severe reaction, to the diagnosis than those who are diagnosed non-insulin dependent.
2. Those people with a non insulin dependent diagnosis come to the point of diagnosis with a much longer history of 'illness freedom', therefore:
 - a. They may take longer to accept the diagnosis, and to incorporate the disease into their persona - 'being' rather than 'doing'.
 - b. They have residual socialisation effects, which may impede acceptance, adherence and compliance.
 - c. Paradoxically, they are likely to have access to a wider range of adaptive behaviours, family support, age and wisdom, which may facilitate acceptance of the disease with a concomitant reduction in stress and depression.
 - d. It is important to take a social history to identify possible barriers, including residual socialisation effects that impede good health care practices.
3. Recognise that coping strategies are in reality likely to be opponent processes. Clients will oscillate between hope and despair, between determination to cope and

fear of the consequences, between avoidance and growthful strategies. They will manifest ambivalence.

4. Coping is a very complex process, and various coping strategies can 'cut in' at various points within the total process. It must also be recognised that stress and depression are in themselves attempts at adaptation.
5. Depression in clients is likely to be an outcome of a 'battle' between fear and the challenge of the disease. It is probably a normal part of the process of coming to terms with the disease. In itself it is unlikely to be pathological.
6. Stress, in this model is an outcome of a failure to develop 'new-ness' or growthful coping strategies. Relief for stress comes from aiding clients to develop 'positive' attitudes to the disease, to take control and to develop new behaviours and ways of being.

REFERENCES

- Adams, J., Hayes, J. and Hopson, B. 1976. *Transition*. London: Martin Robertson.
- Beeney, L.J., Bakry, A.A. and Dunn, S.M. 1996. Patient psychological information needs when the diagnosis is diabetes. *Patient Education and Counselling*, 29:109-116.
- Cohen, F. and Lazarus, R.E. 1983. Coping and adaptation in health and illness. In Mechanic D.(ed.). *Handbook of health, health care, and the health professionals*. New York: Free Press.
- Dunn, S.M., Smartt, H.H., Beeney, L.J. and Turtle, J.R. 1986. Measurement of emotional adjustment in diabetic patients: Validity and reliability of ATT39. *Diabetes Care*, 9(5):480-489.
- Goldberg, D.P. 1972. *The detection of psychiatric illness by questionnaire*. London: Oxford University Press.
- Guidano, V.F. 1987. *Complexity of the self*. New York: Guilford.
- Kubler-Ross, E. 1969. *On death and dying*. New York: MacMillan.
- Larkin, L. 1987. Factors influencing one's ability to adapt to chronic illness. *Nursing Clinics of North America*, 22 (3):535-542.
- Lazarus, R.S. 1981. The stress and coping paradigm. In Eisdorfer, S., Cohen, D., Kleinman, A., and Maxim, R. (eds.), *Theoretical bases for psychopathology*. New York: Spectrum.
- Lazarus, R.S. and Folkman, S. 1984. *Stress, appraisal and coping*. New York: Springer.
- Lo, R. 1996. *Psychosocial factors affecting adherence in people with diabetes*. Unpublished PhD Thesis. Armidale, Australia: University of New England.
- MacLean, D. 1990. *The experience of transition*. Unpublished PhD Thesis. Canberra: Australian National University.
- MacLean, D., Gannon, P. and Gould, S. 1997. *Change and human development*. Madison: McGraw-Hill.
- MacLean, D. and Lo, R. 1998. The non-insulin-dependent diabetic: success and failure in compliance. *Australian Journal of Advanced Nursing*, 15(4):31-40.
- Maes, S., Leventhal, H. and de Ridder, D.T.D. 1996. Coping with chronic diseases in *Handbook of coping: theory research and applications*. Zeider, M. and Endler, N.S. (eds.). New York: Wiley, p.221-251.
- Mechanic, D. 1974. Social structure and personal adaptation: some neglected dimensions. In Coelho, G., Hamburg, D. and Adams, J. (eds.). *Coping and adaptation*. New York: Basic Books.
- Moos, R.H. 1982. Coping with acute health crises. In Million, T., Green, C. and Meagher, M. (eds.). *Handbook of clinical health psychology*. New York: Plenum Press.
- Sperling, M.A. 1988. *The physician's guide to insulin-dependent (Type 1) diabetes: diagnosis and treatment*. Alexandria, VA: American Diabetes Association.
- Schwarzer, R., and Schwarzer, C. 1996. A critical survey of coping instruments. In Zeider, M. and Endler, N.S. (eds.), *Handbook of coping: theory research and applications*. New York: Wiley, p.107-132.

A STUDY OF THE RELATIONSHIP BETWEEN QUALITY OF LIFE, HEALTH AND SELF-ESTEEM

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ABSTRACT

In this study, 757 participants reported data on quality of life (QOL), health and self-esteem. Findings indicated that older people experienced higher QOL than people in other age groups. Variables contributing to higher QOL include having good relationships with their partner, with their children, and God. Caring for others, or carrying a disability or illness diminished QOL scores. High positive self esteem scores were important in overall indices of QOL. High positive self esteem and an absence of negative self esteem were substantial contributors to the 'happiness' dimension of QOL. Having a good sex life, or not having sex was more important than having poor sexual relationships. QOL has been an important concern for nurses in terms of the relationship between individual health and QOL, but there is a need to broaden the perspective from which QOL is viewed.

INTRODUCTION

The World Health Organisation (WHO), in its most recent assessment of the health of nations, has presented a compelling argument that the numbers of nurses, doctors, hospital beds, total health expenditure, medical care, and public spending on health have a negligible effect on health outcomes (WHO 2000).

For all their achievements and good intentions, health systems have failed globally to narrow the health divide between rich and poor. In fact, the gap is actually widening. (WHO 2000 p.5)

... evidence seems to show that health systems make little or no difference ... there is little independent connection with inputs such as doctors or hospital beds, with total health expenditure, with expenditure only on conditions amenable to medical care, or with public spending on health ... health system expenditure often seems to make little difference even in poor countries ... (WHO 2000 p.9)

Health systems and more specifically health care systems, it seems, are not contributing significantly to increasing life expectancy or to reducing the burden of disease when measured across populations. Nurses must consider that, as part of this system, they also are not contributing to the improvement of population health according to these measures.

While it appears to be highly counter-intuitive that health care systems do not have much to do with health it is simply because poverty remains the single greatest cause of ill-health, and affluence the single greatest remedy both between nations and within nations. The very presence of a highly trained nursing workforce is simply an indicator of the level of affluence of a society. Nurses know, however, that whether they are working in a third world primary health care context or incorporated into a

commodified, multi-national health care industry, they are working to improve QOL through 'value-adding' to the human capital of society (Kermode, Emmanuel and Brown 1994). Indeed, the Australian Health Ministers' Forum (HMF) (1994) seemed to recognise this phenomenon in stating that the proper focus of population health ought to include not just '...adding years to life' but also '...adding life to years' (HMF 1994, p.6).

The issue of QOL has probably become the most important role of nursing, particularly in affluent societies, where life expectancy has risen, and the burden of disease has fallen due to social, political and economic causes, and not through any contribution of health care systems (Eyer 1984; Navarro 1984; WHO 2000). QOL is reflected in what it feels like to exist in a society at any point in time. It reflects a wide range of experiences, of which health is merely one. Nurses contribute to QOL in many ways - not all of them are what might be called mainstream health care.

From the earliest times human beings have striven to create a better society inhabited by better human beings (Nash, Kazamias and Perkinson 1965). Campbell (1981) suggested that the term 'quality of life' emerged during the period between the end of World War II and the Johnson 'Great Society Program'. Quality of life (QOL) was deemed to have been synonymous with the 'good life' and with well-being. However, what constitutes the 'good life' and what are the criteria by which QOL can be measured have always been problematic. The present consensus is that 'QOL' ought to be regarded as a multi-dimensional construct (eg Ferrell, Wisdom and Wenzel 1989; Goodinson and Singleton 1989; Ferrans and Powers 1992).

This multidimensional nature of QOL has been manifested in a variety of ways. Flanagan (1978), for example, listed 15 aspects of the QOL in five major categories, ranging from physical and material well-being to quality of personal development and recreation. Ware (1984) identified five dimensions. Ryff and her colleagues at the University of Wisconsin-Madison (eg Ryff 1989; Ryff and Essex 1992; Ryff, Essex and Schmutte 1994) have utilised six dimensions of well-being including autonomy, environmental mastery, personal growth, positive relations with other, purpose in life and self acceptance. The National Wellness Institute in Wisconsin has developed computerised versions of their Wellness Inventory (1993) that has 10 dimensions ranging from spirituality, emotional management, occupational and intellectual wellness through to physical fitness and nutrition. Conill, Verger and Salamera (1990) argue that the notion 'quality of life' is based on function and satisfaction with function - physical function, somatic discomfort, mental health and economic status. Others (eg Aaronson 1988; 1993) have argued that QOL is a concern with happiness or satisfaction. Ferrans and Powers (1992) argue cogently that satisfaction may be a more appropriate term than happiness because it suggests cognitive appraisal and

evaluation that has a greater degree of permanence than happiness (eg Goodinson and Singleton 1989).

Government agencies have also used QOL measures to develop and implement policy. The QOL approach, for instance, has been used to develop standards and outcomes of quality of care of aged people (eg Bortner and Hultsch 1970; Commonwealth Department of Community Services and Health 1987; 1988); as an index in the context of treatment selection and therapeutic approaches (Goodinson and Singleton 1989); to assist in the evaluation of the quality of nursing care (Ferrans and Powers 1985; Hatz and Powers 1980); and of health services and subsequent client satisfaction (Bryne and MacLean 1997; Davis 1991).

It has also been proposed that people who act as carers would tend to have higher levels of chronic stress (named 'strain' in this study) and those who feel they are making a contribution (high 'useful' scale scores) would tend to have a higher QOL. The individual subscales related to these constructs typically show high levels of internal consistency ($\alpha=0.86, 0.79$ - 'useful', and $0.89, 0.84$ - 'strain', $n=378, 837$); (Lo 1996 and MacLean 1990 respectively). The issue of caring is, of course, a central concern to nurses. Caring, while having the potential to provide satisfaction and fulfillment to those doing the caring, also has the potential to create stress and even burnout. It is a reasonable proposition, therefore, when examining the relationships between health, self-esteem and QOL, to also examine the mediating relationship of being a carer on QOL. By examining this relationship in lay carers in the community, nurses may gain some insights not only into the complex issues affecting the QOL of their patients, but also of the potential risks to themselves as professional carers.

Ferrans and Powers (1992, p.29) define QOL as '...a person's sense of well-being that stems from satisfaction or dissatisfaction with the areas of life that are important to him/her.' This research study used the Ferrans and Powers Quality of Life Index (QLI 1985), as a general measure of QOL. The authors of this paper chose the QLI to help answer a number of questions:

- Does QOL vary over the lifespan?
- Does it vary according to marital status or gender?
- Does it vary according to socio-economic status?
- Does it vary according to health status?
- Does having to care for somebody with an illness and/or a disability affect QOL?
- How are self-esteem and health related to QOL?

Hypotheses

On the basis of previous findings, and the concerns of the investigators to examine the relationship between QOL, health and self-esteem, this study sought to test the hypotheses, that:

1. Self-esteem is positively correlated with QOL;
2. Chronic and transient stress, as indicators of general health, are negatively correlated with QOL;
3. Having a disability, carrying an illness or caring for someone within the family correlates negatively with QOL;
4. Good important relationships, including marriage, are positively correlated with QOL.

METHODS AND PROCEDURES

This study was undertaken using a cross-sectional survey design, with questionnaire data collection methods from a non-probability sample. The Human Research Ethics Committee of Southern Cross University gave ethical approval for this study. Health psychology students as part of their studies were asked to recruit six to 10 people each for participation in the study within three broad age groups - those aged less than 40 years, those aged 40 to 65 years, and those aged over 65 years. This resulted in a total sample of 757 obtained from a wide range of people, mainly resident in NSW. Respondents were asked to complete biographical data that included requests for information on marital, employment, and health status. Participants were asked to indicate size of family still living at home and whether or not they were responsible for the care of a sick, or elderly person within the family.

Each participant also provided data on health, self-esteem and QOL on three separate psychometric instruments. In addition to the Ferrans and Powers (1985) QOL Index, respondents were asked to complete the Rosenberg (1965; 1979) Self Esteem Inventory. This scale is a measure of global self esteem, that according to Rosenberg and his associates is more relevant to self esteem (Rosenberg, Schooler, Schoenbach and Rosenberg 1995). The scale is not unifactorial. It consistently comprises two factors. Positively worded items tend to form one factor, and negatively worded items the other factor (Kohn and Schooler 1969, 1983; MacLean 1990; Owens 1993), with reliabilities for each scale in excess of $r=0.80$. The two components have been labeled simply positive self-esteem or self-confidence for the positively worded items and negative self-esteem or self-deprecation for the negatively worded items. According to Kohn and Schooler (1983) structural equation modeling the two component model of self esteem demonstrates a better fit to the data than does having a global self esteem score based on all items.

Respondents were also asked to complete the 12 item General Health Questionnaire (Goldberg 1972; 1978). The six positively toned items tend to reflect normal healthy activities and those according to Goodchild and Duncan Jones (1985) reflect more transient states or reactions to transient stress. The negatively toned items, they believe,

represent an indication of long-term pathological symptomatology. This shortened version of the GHQ has been widely used in Australia (Australian Bureau of Statistics 1982; Lo 1996; MacLean 1990; National Heart Foundation of Australia 1980) and tested and validated in a number of overseas countries (Harding 1976; Munoz and associates 1978; Chan and Chan 1983).

Validity and reliability issues

There have been many attempts to measure QOL through psychometric tests (eg Bowling 1993). Critical review of the concepts, measures and clinical implications of QOL undertaken by other authors has concluded that the following criteria must be satisfied by an adequate QOL instrument (Goodinson and Singleton 1989 p.339):

- (i) It should be subjective in the sense that the information be obtained from the individual;
- (ii) Recognition must be given to the fact that the information cannot be abstracted from the individual in isolation from coping strategies, past experiences of illness and other variables;
- (iii) The QOL test should incorporate a weighting by the individual, of the importance to them, of the dimensions investigated in the test;
- (iv) The test should cover a range of dimensions known to contribute to QOL and include the definition/basis from that it has been developed;
- (v) It must be designed such that it is appropriate to apply it at different times, to cover the period before the onset of illness, during illness and the different phases that follow treatment; and,
- (vi) Further investigation is necessary to establish the influence of adaptation phenomena and coping strategies on QOL.

Oleson (1990a) used a concept analysis procedure to analyse subjectively perceived QOL. She identified that satisfaction and happiness were the two critical attributes for QOL. She recommended the Ferrans and Powers Quality of Life Index (QLI 1985) as an instrument with the promise of being able to produce empirical data across populations for perceived QOL. In a study of the content validity of the QLI (1990b), Oleson found it to have a Content Validity Index of 87%, surpassing the 80% benchmark required to consider the instrument to be valid.

Ferrans and Powers developed the Quality of Life Index (QLI) and evaluated its psychometric properties (1985; 1992). It was found to have content validity, criterion-related validity, construct validity, stability reliability (0.87) and internal consistency (Cronbach's $\alpha=0.90$).

The Ferrans and Powers QLI has been used successfully with many clinical groups, including coronary bypass patients, transplant patients and patients

undergoing radiation therapy (eg Artinian and Hayes 1992; Belec 1992; Bliley and Ferrans 1993; Grady et al 1991; Johnson et al 1994; Smith 1993). It has been translated into nine languages and is currently being used in research and clinical practice by psychologists, physicians, nurses and other professionals (Ferrans 1996 p.301). There are as yet, however, no published data based on a widespread population study and which are matched to data from other well-tested correlates of health and well-being.

The quality of life index

The Ferrans and Powers (1985) Quality of Life Index (QLI) comprises two major components - 'satisfaction' and 'importance'. There are 34 items within each scale with essentially the same wording. The emphasis in the 'satisfaction' scale however, is on the extent to which a person is satisfied with the aspect of their life represented by each item, while the 'importance' scale asks how important it is to them. An item may, for instance, be very important to someone but they may not be very satisfied with that aspect of their life. Both scales are crucial in acquiring an accurate picture of someone's perceived QOL. They allow for accurate comparison of the relative importance of items as well as the relative levels of satisfaction with them.

The authors made a number of minor adjustments to the QLI to allow more valid responses, including the addition of a 'Not Applicable' category for items pertaining to children, spouse or partner, sex life or God, and the creation of dummy variables for items related to marital and employment status. In addition, the four sets of items in relating to children, relationship with spouse, sex life and God were scored somewhat differently to more adequately allow for their use in regression equations.

RESULTS AND DISCUSSION

Overall, 757 persons participated in this study. Fifty-six percent of participants were female, while 8% were 'carers', with responsibility for the home-based care of a relative. Of the 'carers' two-thirds were female. Table 1 presents the regression of the QOL indices on all the dependent variables. Stepwise multiple regression was used in an attempt to identify the key 'predictive' variables. Indeed there were only slight overall differences in the models whether they were derived by entering all variables hierarchically in blocks, or by entering all variables at once followed by stepwise elimination, or using stepwise only procedures. The amount of accounted for variance is quite substantial for overall total QOL and for the happiness subscale. All correlations and beta weights are in the expected direction. Only results that achieved a significance level of $p=0.05$ or better are reported in this paper.

In Table 2, data are presented by gender and age group based on the expectation that QOL components would vary between the sexes and over the life span.

The sub-scales

Ferrans and Powers, through development of the QLI and Factor Analysis identified four sub-scales of the QLI. The authors of this study decided to undertake a post-hoc Factor Analysis of data to determine the accuracy of these sub-scales within the available data pool. The data from several random samples of 50% of the respondents were factor analysed utilising the maximum likelihood procedure, both varimax and oblique rotation and utilising Baggaley's (1982) use of the inverse matrix to identify likely redundant items. Four factors were derived similar to those suggested by Ferrans and Powers:

Table 1: Correlation coefficients and beta weights - regression of QOL and the components of QOL on the independent variables, multiple correlation coefficient and r squared

	Overall QOL		Happiness		Health		Standard of living		Emotional support	
	r	β	r	β	r	β	r	β	r	β
Positive self esteem	51	30	57	35	32	17	35	20	28	17
GHQ - Strain	-50	-24	-16	-20	-34	-16	-36	-14	-25	-10
Gender	-14	-12	-13	-10	-	-	-07	-09	-24	-20
Partner	40	19	35	11	30	17	14	14	31	23
God	31	21	30	18	16	16	12	12	29	22
Children	26	10	24	10	-	-	13	13	22	09
Sex	38	11	39	10	-	-	11	11	-	-
Caring Index	-12	-10	-	-	-35	-32	-	-	-	-
Retired	11	10	-	-	-	-	16	16	-	-
GHQ - Useful	-	-	49	13	-	-	-	-	-	-
Divorced	-	-	-20	-08	-	-	-11	-11	-	-
Employed	-	-	06	07	-	-	-	-	-	-
Not Seeking Work	-	-	-	-	-	-	-11	-10	-	-
Widowed	-	-	-	-	-	-	-	-	08	09
R	0.71		0.76		0.54		0.57		0.53	
R squared	51%		57%		30%		32%		28%	

Table 2: Beta weights - regression of QOL and components of QOL on the independent variables, multiple correlation coefficient and r squared, for females and males by age group

Age group	Females			Males		
	<40	40-65	65+	<40	40-65	65+
n=	215	169	38	166	125	44
TOTAL QUALITY OF LIFE						
GHG - Strain	-19	-37	-38	-32	24	-
Positive self esteem	35	27	41	25	49	-
Partner	16	-	34	39	-	38
Sex	15	-	-	-	25	-
God	23	29	-	18	-	-
Children	-	-	62	-	-	-
GHQ - Useful	-	-	-	-	-	54
R=	65	67	84	71	77	78
R squared	43%	44%	71%	50%	59%	61%
HAPPINESS						
GHG - Strain	-	-34	-	-35	-	-69
Positive self esteem	43	34	70	51	39	-
Partner	-	-	-	31	-	-
Sex	20	21	-	-	-	-
God	19	20	-	18	-	-
Children	-	-	44	-	-	-
GHQ - Useful	25	-	-	27	-	-
Divorce	-	-	-	-	-16	-
R=	69	74	79	71	82	69
R squared	47%	55%	63%	50%	67%	48%
HEALTH						
Index of caring	-25	-34	59	-26	-40	-
Positive self esteem	20	29	-	-	-	-
Negative self esteem	-	-	-	-	-31	-
GHQ - Strain	-16	-17	-	-38	-	-
GHQ - Useful	-	-	-	-	-	68
God	17	21	-	-	23	-
Partner	-	-	-	30	-	-
R=	44	58	59	60	59	68
R squared	20%	34%	35%	36%	35%	46%

- (i) Personal Happiness (items 28, 30, 31, 32, 34; $\alpha=0.90$);
(ii) Support (items 13 and 14; $\alpha=0.78$);
(iii) Personal Health (items 1, 3, 4, 5; $\alpha=0.80$), and,
(iv) Standard of Living (items 18, 19, 20, 24 and 26; $\alpha=0.81$).

The items for the 'happiness' and 'standard of living' scales are congruent with the psychological/spiritual and socioeconomic subscales reported by Ferrans and Powers. The items comprising our 'support' and 'health' scales are closely related to the Ferrans and Powers' 'health' and 'functioning' scale. Our analysis produced no equivalent scale for their 'family' subscale (items 8, 9, 10 and 11). We summed the scores on these four scales to obtain a Total Quality of Life score.

Gender

Females are more likely than males to view their QOL positively. This is the case for overall QLI scores ($t=3.83$ $p<0.000$), in terms of 'personal happiness' ($t=3.59$ $p<0.000$), support from friends and in terms of emotional support ($t=6.85$ $p<0.000$) and standard of living ($t=2.08$ $p<0.038$).

There were significant differences between males and females in terms of their employment status ($\chi^2=55.29$, 4df, $p=0.0001$). Females were under represented in the full-time work category, over-represented in part-time work and unemployed not seeking work categories. There were no significant gender differences in those who were unemployed and seeking work nor were there any differences in the retired category.

There were no significant differences between the sexes in terms of the quality of their health. There were no gender differences in positive or negative self-esteem, chronic or long-term stress, marital status, age, disability, treatment, or size of household.

Age

A third of those over the age of 60 had some form of disability, compared with approximately 9% of those aged 59 years and under. Both marital and employment status were obviously influenced by age. There were no age differences in whether or not they cared for someone who was unwell or disabled.

Positive self-esteem was distributed non-significantly over the five age groups. Negative self-esteem seemed to decline with age ($F=4.00$ $p=0.003$) with a statistically significant difference occurring (Scheffe $p=0.05$) between the 18-24 age group and the over 75 year age group. There were consistent increases with age in perceived QOL overall ($F=3.80$ $p=0.005$) and in the home and social support areas. No increase in health QOL or in general levels of happiness were noted. There were age related increases in the scores obtained from the subscale concerned with psychological and spiritual QOL.

Chronic stress scores tended to reduce with age ($F=2.96$ $p=0.0191$) with the significant difference (Scheffe $p=0.05$) occurring between those aged 40 to 59 and the 60 to 75 age group. Transient stress increased paradoxically with age ($F=5.66$, $p=0.0002$) with significant differences between the 25-39 age group and the two age groups covering the years 40-75. This finding is at odds with the positive correlation ($r=40$) between total QOL score and transient stress scores. A closer examination through the use of Chi Square analysis show that the 25-39 age group is over represented in higher useful scores categories (that is lower stress) whereas the 40-59 and 60-74 year old were under represented in these categories.

Being a carer

Being a carer imparts significantly more chronic stress and reduces the QOL overall than it does for non-carers. Self esteem is however, not significantly different for carers than for non-carers, nor is transient stress. Significant differences in the QOL in and around the home and personal health occur between carers and non-carers. Non-carers have higher QOL in these areas. Being a carer is a threat to QOL.

The 'caring index', that is the sum of caring for others within the family household, being ill one's self or having a disability, was strongly predictive of the quality of health being experienced. This seems to present some degree of construct validity for the 'health' subscale of the Ferrans and Powers scale.

Having a disability

Those having a disability or having treatment for a medical condition are reflected in the health subscale scores as expected. QOL is lower for those who are currently in treatment or disabled. They also exhibited both chronic and transient stress. Transient stress scores are higher than those for chronic stress. Being in treatment or having a disability is not, however, reflected in self-esteem scores.

Marriage

Those who are married perceive their QOL to be higher, overall and in most areas, than those who are

widowed, single or divorced. They have higher positive self-esteem and lower negative self-esteem. Married people experience lower chronic long-term stress than the divorced or separated and the widowed. They have lower transient stress scores than the widowed or separated. The never married group tended to experience less stress than the married group, but this does not attain statistical significance. Those at most risk from a poor QOL are the never married group and the separated/divorced group. Being divorced mitigates against happiness and reduces perceived standards of living.

Interestingly, while divorce affects the standard of living for both men and women, it has a negative impact only on the happiness of women. In addition to this, widowhood for men appears to have a positive influence on their happiness.

Employment

Employment status was independent of both positive and negative self-esteem. Levels of happiness were independent of employment status. Generally speaking, the retired group had higher levels of QOL, overall and in most major areas of functioning than did people who were not retired. Those in employment full-time, and part-time tended to have higher levels of QOL than those who were unemployed.

Retirement was associated with high QOL and standard of living, while being employed is functional for happiness and being unemployed and not seeking work has significant negative implications for standard of living.

Relationships

The quality of relationships with significant others - children, partner, God and the quality of respondent's sex life were deemed to be part of the set of independent variables that included positive and negative self esteem measured by the Rosenberg Self Esteem Inventory, chronic and transient stress levels measured by the General Health Questionnaire, and biographical items including marital and employment status, and an index of caring, along with age and gender information. It is quite clear from table 1 that having positive self esteem, having good relationships with God and one's partner and an absence of long term chronic stress ('strain') appear to be consistent with a high QOL, overall and among its various components.

Unlike much previous research into QOL, personality characteristics and personal effort, perhaps represented as proactivity or optimism, seem to play an important role in how the vicissitudes of life are tackled. This fits in with research into a major transition by MacLean (1990) and by MacLean and Lo (1998) in research into compliance among people who suffer from diabetes. Happiness has to be worked at. Though having a good sex life and having an agreeable relationship with one's children make a

substantial contribution to the over-all QOL experienced, levels of happiness and standard of living. It reinforces the positive effects of a stable and supportive family on QOL.

For males having a poor partner and/or not having sex, and having a poor relationship with their children reduced QOL scores. For females, the absence of poor self-esteem, having a good sexual relationship, and not having a partner were conducive to good QOL scores.

Spirituality

The spiritual dimension was also significant. Having a good relationship with God was conducive to high QOL scores. It seems that strong relationships of all kinds were conducive to high QOL. This tends to reinforce the notion of spirituality as being derived from holism and 'interconnectedness', rather than simply a form of religiosity (Ramsay 2000).

LIMITATIONS

The three instruments used in this study have well-established and well-documented levels of reliability and validity. The major limitation in this study is not internal validity, but external validity. The sampling technique chosen for the study was non-probability, and therefore limits the generalisability of the findings. The size of the sample, however, significantly reduces the risk of Type I or Type II errors, and would indicate acceptable validity in respect of the intra-sample comparisons on which the major findings are based.

CONCLUSION

As far as the major hypotheses that underpinned this study were concerned, the findings confirmed all of them to varying extents. In summary:

- (i) Having positive self-esteem was related to higher QOL.
- (ii) Absence of long-term chronic stress was related to higher QOL.
- (iii) Having a disability, carrying an illness or caring for someone within the family was related to lower QOL.
- (iv) Married people tended to have higher QOL scores than those who are divorced or single.
- (v) Good relationships with children, partner or spouse and God are all positive influences on QOL.

In addition to confirming these major hypotheses, there were a number of other significant findings in this study. They included that:

- (i) Females tended to have higher levels of QOL than males.
- (ii) QOL improved with age.

(iii) Unemployment was a significant factor in reducing QOL.

(iv) A good sex life is a positive influence on QOL.

For nurses, none of these findings are counter-intuitive. They reinforce many of the notions regarding QOL and its relationship to health that have permeated nursing literature for some time. There is, however, evidence in these data that the QOL of lay carers is diminished as a result of their caring activities. Lay caring, of course, differs from professional caring in a number of ways. Most importantly, caring for a family member in one's own home does not finish at the end of a shift - it stays with you permanently. Nevertheless as professional carers it is important for nurses to recognise the deleterious effect that caring may have on one's own QOL, particularly for nurses who are also lay carers of children or other dependents in their non-professional lives. Indeed, in combination with the presence of long-term, job-related chronic stress, there is a warning in these data for nurses. Caring is a very real threat to QOL.

The role of nursing in promoting QOL is a seminal one. While we know that population health is more strongly determined by poverty than by any other factor and that affluence improves population health more than anything, we also know that good health is only one factor among the many that contribute to QOL, and that individuals may trade-off health-behaviours against other behaviours in order to optimize their QOL at any one time. Expressing concern for QOL will require nurses to embrace a broad and inclusive concept of what health care can and should be. Indeed, nursing will need to address all aspects of the pursuit of QOL, not just for patients, but for nurses as well. The personal determinants of QOL have always been a concern for nurses. The social, spiritual, political and economic determinants of QOL are also legitimate concerns for nursing. This study has provided some baseline data for considering the parameters of QOL.

REFERENCES

- Aaronson, N., Ahmedzai, S. Bergman, B. 1993. The European Organisation for Research and Treatment of Cancer QI-Q-C30: A quality-of-life instrument for use in international clinical trials in oncology. *Journal of the National Cancer Institute*. 85:365-376.
- Aaronson, N.K. 1988. Quality of life: what is it? How should it be measured? *Oncology*. 2: 69-74.
- Artinian, N. and Hayes, M. 1992. Factors related to spouses' quality of life one year after coronary artery bypass graft surgery. *Cardiovascular Nursing*. 28(4):33-39.
- Australian Bureau of Statistics. 1982. *Australian Health Survey, 1977-78: outline of concepts, methodology and procedures used*. Canberra: Australian Government Publishing Service.
- Baggaley, A.R. 1982. Deciding on the ratio of number of subjects to number of variables in factor analysis. *Multivariate Experimental Clinical Research*. 6(2):81-85.
- Belec, R. 1992. Quality of life: perceptions of long-term survivors of bone marrow transplantation. *Oncology Nursing Forum*. 19(1):31-37.
- Bliley, A. and Ferrans, C. 1993. Quality of life after angioplasty. *Heart and Lung*. 22(3):193-199.

- Bortner, R. and Hultsch, D. 1970. A multivariate analysis of correlates of life satisfaction in adulthood. *Journal of Gerontology*, 25:41-47
- Bowling, A. 1993. *Measuring health: a review of quality of life measurement scales*. Philadelphia: Open University Press.
- Bryne, H. and MacLean, D. 1997. Quality of Life: what residents say and nurses need to know. *International Journal of Nursing Practice*, 3(1):21-28.
- Campbell, A. 1981. *A Sense of Wellbeing in America*. New York: McGraw-Hill.
- Chan, D.W. and Chan, T.S.C. 1983. Reliability, validity and the structure of the General Health Questionnaire in a Chinese context. *Psychological Medicine*, 13:363-371.
- Commonwealth Department of Community Services and Health. 1987. *Living in a nursing home*. Canberra: Australian Government Publishing Service.
- Commonwealth Department of Community Services and Health. 1988. *Nursing Home standards monitoring guidelines*. Canberra: Australian Government Publishing Service.
- Conhill, C., Verger, E. and Salamera, M. 1990. Performance status in assessing cancer patients. *Cancer*, 65:1864-1866.
- Davis, M. 1991. On nursing home quality: a review and analysis. *Medical Care Review*, 48:129-166.
- Eyer, J. 1984. Capitalism, health and illness, In: McKinlay, J. (ed) *Issues in the Political Economy of Health Care*. New York: Tavistock.
- Ferrans, C. 1996. Development of a conceptual model of quality of life. *Scholarly Inquiry for Nursing Practice*, 10(3):293-304.
- Ferrans, C. and Powers, M. 1985. Quality of life index: development and psychometric properties. *Advances in Nursing Science*, 8(1):15-24.
- Ferrans, C. and Powers, M. 1992. Psychometric assessment of the Quality of Life Index. *Research in Nursing and Health*, 15:29-38.
- Ferrell, B.R., Wisdon, C. and Wenzel, C. 1989. Quality of life as a variable in the management of cancer pain. *Cancer*, 63:2321-2327.
- Flanagan, A.J. 1978. A research approach to improving our quality of life. *American Psychology*, 33:138-147.
- Goldberg, D. 1972. The detection of mental illness by questionnaire. *Maudsley Monograph*, 21. Open University Press.
- Goldberg, D. 1978. *Manual of the General Health Questionnaire*. Windsor: NFER-Nelson.
- Goodchild, M.E. and Duncan-Jones, P. 1985. Chronicity and the General Health Questionnaire. *British Journal of Psychiatry*, 146:55-61.
- Goodinson, S. and Singleton, J. 1989. Quality of life: a critical review of current concepts, measures and their implications. *International Journal of Nursing Studies*, 26(4):327-341.
- Grady, K., Jalowiec, A., White-Williams, C., Grusk, B. and Blood, M. 1991. Health care provider interventions for heart transplant candidates. *Circulation*, 84(4 Suppl):696.
- Harding, T.W. 1976. Validating a method of psychiatric case identification in Jamaica. *Bulletin of the World Health Organisation*, 54:225-231.
- Hatz, P. and Powers, M. 1980. Factors related to satisfaction with life for patients on hemodialysis. *Journal of Nephrology Nurses and Technicians*, 1:290-295.
- Health Ministers' Forum. 1994. *Towards a national health policy: a discussion paper*. Canberra, Australia: Australian Government Publishers.
- Johnson, D., Casey, L. and Noriega, B. 1994. A pilot study of patient quality of life during radiation therapy treatment. *Quality of Life Research*, 3:267-272.
- Kermode, S., Emmanuel, N. and Brown, C. 1994. A critical overview of current public policy trends and their implications for nursing. *The Collegian*, 1(1):14-23.
- Kohn, M.L. and Schooler, C. 1969. Class, occupation and orientation. *American Sociological Review*, 34:659-78.
- Kohn, M.L. and Schooler, C. 1983. *Work and personality: an inquiry into the impact of social stratification*. Norwood, N.J.: Ablex.
- Lo, R. 1996. *Psychosocial factors affecting adherence of people with diabetes*. Unpublished doctoral thesis. Lismore: University of New England-Northern Rivers.
- MacLean, D. 1990. *The Experience of transition*. Unpublished doctoral thesis. Canberra: Australian National University.
- MacLean, D. and Lo, R. 1998. The non-insulin-dependent diabetic: success and failure in compliance. *Australian Journal of Advanced Nursing*, 15(4):31-40.
- Munoz, P.E., Vazquez, J.L., Pastrana, E., Rodriguez, F. and Oneca, C. 1978. Study of the validity of Goldberg's 60 item GHQ in its Spanish version, *Social Psychiatry*, 13:99-104.
- Nash, P., Kazamias, A.M. and Perkinson, H.J. 1966. *The educated man*. New York: Wiley.
- National Heart Foundation of Australia. 1980. *Risk Factor Prevalence Study Report No 1*.
- National Wellness Institute. 1993. *Testwell - Wellness Inventory*. Stevens Point.
- Navarro, V. 1984. A critique of the ideological and political positions of the Willy Brandt Report and the WHO Alma Ata Declaration. *Social Science and Medicine*, 18(6):467-474.
- Oleson, M. 1990a. Subjectively perceived quality of life. *IMAGE: Journal of Nursing Scholarship*, 22(3):187-190.
- Oleson, M. 1990b. Content validity of the Quality of Life Index. *Applied Nursing Research*, 3(3):126-127.
- Owens, T. 1993. Accentuate the positive and the negative: rethinking the use of self-esteem, self-deprecation and self-confidence. *Social Psychology Quarterly*, 56:288-99.
- Ramsay, L. 2000. Holism and Spiritual Wellbeing, in Kermode, S. *Foundation Concepts for Holistic Health*. Lismore: Southern Cross University Press.
- Rosenberg, M., Schooler, C., Schoenbach, C. and Rosenberg, F. 1995. Global self-esteem and specific self-esteem: different concepts, different outcomes. *American Sociological Review*, 60:141-156.
- Ryff, C.D. 1989. Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of personality and Social Psychology*, 57:1069-1081.
- Ryff, C.D. and Essex, M.J. 1992. Psychological well-being in adulthood and old age: Descriptive markers and explanatory processes, In K.W. Schaie (ed). *Annual Review of gerontology and geriatrics*, 11:144-171. New York: Springer.
- Ryff, C.D., Lee, Y.H., Essex, M.J. and Schmutte, P.S. 1994. My children and me: midlife evaluations of grown children and of self. *Psychology and Aging*, 9(2):195-205.
- Smith, C. 1993. Quality of life in long-term total parenteral nutrition patients and their family caregivers. *Journal of Parenteral and Enteral Nutrition*, 17(6):501-506.
- Ware, J. 1984. Conceptualising disease impact and the treatment of outcomes. *Cancer*, 53(Suppl.10):2316-2323.
- World Health Organisation. 2000. *The World Health Report 2000*. Geneva: WHO Publications.

RESEARCH ROUNDUP A summary of research reports from nursing and medical journals

WEEKEND HOSPITAL ADMISSIONS MORE LIKELY TO DIE

Patients with some serious medical conditions are more likely to die in hospital if they are admitted on a weekend than if they are admitted on a weekday. This is a finding of a study which analysed 3.8 million acute care admissions from emergency departments in Ontario, Canada, between 1988 and 1997. Researchers compared in-hospital mortality among patients admitted on a weekend with that among patients admitted on a weekday for three prespecified diseases: ruptured abdominal aortic aneurysm, acute epiglottitis, and pulmonary embolism; and, for three control diseases: myocardial infarction, intracerebral haemorrhage, and acute hip fracture. The study showed weekend admissions were associated with significantly higher in-hospital mortality rates than were weekday admissions among patients with ruptured abdominal aortic aneurysms (42% versus 36%), acute epiglottitis (1.7% versus 0.3%), and pulmonary embolism (13% versus 11%).

Reference

Bell, C.M. and Redelmeier, D.A. 2001. *Mortality among patients admitted to hospitals on weekends as compared with weekdays*. *New England Journal of Medicine*. 345(9):663-668.

CHILDBIRTH-RELATED DEATHS INCREASING

There has been an increase in the number of women in Australia dying in childbirth according to a new report by the Australian Institute of Health and Welfare and the National Health and Medical Research Council. The report found that 100 women died during and after childbirth between 1994 and 1996 - a 20% jump from the previous three-year period. Of the total 768,075 births between 1994-96, there were 102 deaths reported of which 100 (46 direct, 20 indirect and 34 incidental) were defined as maternal deaths during pregnancy and the puerperium. Of those 100 deaths, 46 were directly related to pregnancy. The leading causes of direct maternal deaths were pulmonary embolism (8), amniotic fluid embolism (8) and pre-eclampsia (7). The researchers said that they didn't know whether the increase in caesarean deliveries was responsible for the increase in deaths or whether it was because women are waiting longer to become pregnant. Overall, Australia's maternal death rate remains low by world standards at one in 7675 births.

Reference

National Health and Medical Research Council (NHMRC) and Australian Institute of Health and Welfare (AIHW). 2001. *Report on Maternal Deaths in Australia 1994-1996*. Australian Government Printing Service, Canberra. Cat. No. 0145246.

CRANBERRY JUICE REDUCES RECURRENT UTIS

Regular consumption of cranberry juice can reduce the recurrence of urinary tract infection (UTI) in women, according to a recent study published in the *British Medical Journal*. Researchers recruited 150 women with UTIs caused by *Escherichia coli*. After treating the women with standard antimicrobials and obtaining bacteria free urine samples the researchers allocated them into three groups. One group received 50mls of cranberry-lingonberry juice concentrate each day for six months. A second received 100mls of a lactobacillus drink five days a week for a year. The third group served as a control. During the six months of the study 16% of women in the cranberry group, 39% of those in the lactobacillus group, and 36% of those in the control group developed at least one UTI. At 12 months the figures were 24%, 42% and 39% respectively. The researchers say the daily consumption of cranberry juice reduces the recurrence of UTI by about a half and recommend it as a self-administered preventative measure.

Reference

Kontiokari, T., Sundqvist, K., Nuutinen, M., Pokka, T., Koskela, M. and Uhari, M. 2001. *Randomised Trial Of Cranberry-Lingonberry Juice and Lactobacillus GG Drink for the Prevention of Urinary Tract Infections in Women*. *British Medical Journal*. 322:1571-1580.

STUDY REVEALS NURSES' FRUSTRATION, AGGRESSION AND BURN OUT

The current nursing shortage, high hospital nurse job dissatisfaction, and reports of uneven quality of hospital care are not uniquely American phenomena according to a major US study of 43,000 nurses from 700 hospitals in five countries. Researchers from the University of Pennsylvania School of Nursing's Centre for Health Outcomes and Policy Research studied RNs in the US, Canada, England, Scotland and Germany in 1998-1999. The researchers found that the nurses reported similar shortcomings in their work environments and the quality of hospital care. Many nurses were frustrated to the point of burnout because of inadequate numbers, rising patient loads, a declining quality of patient care and abuse directed at them on the job. About 43% of the US, 36% Canadian, 36% English, 29% Scottish and 15% of the German nurses surveyed scored high on a 'burnout inventory' used to measure emotional exhaustion and the extent to which they felt overwhelmed by their work.

Reference

Aiken, L.H., Clarke, P., Sloane, D., Sochalski, J., Busse, R., Clarke, H., Giovannetti, P., Hunt, J., Rafferty, A.M. and Shamian, J. 2001. *Nurses' reports on hospital care in five countries*. *Health Affairs*. 20(3):43-53.