January 2004

# A national survey of New Zealand registered nurses caring attributes, professional self concept and technological influences

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**Abstract** A postal questionnaire reaching 380 New Zealand registered nurses using a refined version of the Caring Attributes, Professional Self and Technological Influences Questionnaire (CAPSTI) was conducted. The original instrument was tested with a sample of nurses from 11 different countries but was found to need refinement for use in a New Zealand sample. Results from a pilot facilitated the development of a refined CAPSTI research instrument (CAPSTI2) with improved reliability for use in other research studies examining nurse caring.

This paper reports a national survey and highlights the importance of nurse opinion about caring behaviours across multiple New Zealand settings. There were significant differences found in relation to the Professional Self Concept subscale, Technological Influence and Caring Attributes scales against type of educational preparation, age and gender. Furthermore there are strong correlations between subscales for demographic categories indicating that nurses apply more than one caring construct to nursing situations at any one time.

## INTRODUCTION

This paper reports the results of a national New Zealand (NZ) survey on nurse caring that aimed to measure and compare registered nurses caring attributes, their views of themselves as nurses (professional self concept) and their perception of technological influences on their nursing practice. The paper attempts to synthesise these results with a range of disparate views on nurse caring, and research that explores nurses' views of themselves and their work. A research instrument developed by Arthur *et al*., (1998) as part of an international study on caring attributes was trialed and refined in New Zealand with postgraduate students from Massey University School of Health Sciences, prior to this study being conducted.

The aim of the international study (Arthur *et al*., 1999) was to test the reliability and construct validity of the instrument on a sample of nurses from a diverse range of cultures. The international study involved eleven countries including Canada, Australia, China, Hong Kong, Korea, New Zealand, Philippines, Scotland, Singapore, South Africa and Sweden and a total of 1,956 registered nurses were surveyed.

O'Brien *et al*. (1999), provide an analysis of the psychometric properties of the above instrument known as the CAPSTI questionnaire in their paper describing its trial and refinement in New Zealand. Based on this first application of the CAPSTI and its subsequent analysis and in the interests of a shorter, more reliable and valid instrument, the CAPSTI2 was developed which was the instrument used for the NZ national survey as reported below.

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## LITERATURE REVIEW

The concept caring has been a central nursing focus in recent decades and has been a significant feature of the works of several leading nursing researchers and theorists (Benner, 1984; Leininger, 1981, 1990; Watson, 1985, 1988, 1990). However, there are a number of different interpretations of 'care' and 'caring', with each concept conveying a considerable number of potentially different meanings to both caregivers and care recipients.

The concepts of care and caring contain both general and particular intent; that is, 'care' may apply to several caring contexts involving an almost infinite number of philosophical, theoretical and practice-based variables. For instance, care and caring are represented philosophically as the basic constitutive phenomenon of human existence (Heidegger, 1962), or as the human mode of being (Roach, 1987), or as a desirable moral attitude in our relationships with others (Buber, 1958). Dreyfus (1991) has even argued that caring may be a 'saving practice' in health care because of its relational, situational and subjectively sensitive elements. Within the nursing literature much work is being done on clarifying these concepts and identifying nurses' caring behaviours (Larson & Ferketich, 1993; Morse *et al.*, 1991; Morse *et al.,* 1990; Von-Essen & Sjödén, 1995). Indeed, caring research has been conducted in a number of diverse nursing environments, including caring for the critically ill, oncology patients, psychiatric care, and the aged, the use of touch, listening, and appreciating the patient's self knowledge (Larson, 1987; Mayer, 1987; Von Essen & Sjödén, 1995; Wolf, 1986). In short, caring has been "addressed and studied more explicitly in nursing than in other disciplines during the last decade" (Euswas, 1991, p. 35).

Caring constructs usually range from simplistic early explanations that nursing is the care of the ill in the hospital and the care of mothers and children in the community to the more complex notions of nursing as a 'humanistic' and caring response to the demands of 'a technological age' (Henderson, 1980). In the 1980s and 1990s, caring has been further specified as the essence of nursing practice, the moral ideal inherent in nursing (Watson, 1985); the exemplary relationship between nurse and patient, the primary concept in nursing (Benner, 1984); and as an imperative in nursing education (Leininger & Watson, 1990).

Henderson's (1980) words are perhaps the most prophetic (because rapidly changing technologies have indeed presented new challenges for caring practice), it is the notion of nursing as a distinctive type of 'professional caring' that has perhaps prevailed over the years. In Leininger's (1981) explanation, which promotes the supreme importance of care in nursing, she maintains that professional caregivers exhibit identifiable skilled care values, or attitudes. Furthermore, she maintains that caring acts are directly affected by the degree of dependency on technology within a given group or society. It follows that if nursing is to continue to promote itself as the caring profession, then greater attention to more precise measurements of nurse attitudes towards caring, technology and the professional self are required.

There have also been a number of quantitative instruments developed to measure caring in the various domains of nursing (Andrews, Daniels & Hall, 1996; Larson, 1986; Larson & Dodd, 1991; Lea, Watson & Deary, 1998; Macey & Bouman, 1991). However, despite these and other similar studies and the plethora of theoretical literature on caring in nursing there still appears to be uncertainty and lack of consensus regarding the role and nature of the caring construct (Arthur *et al.*, 1999; Komorita *et al.,* 1991). This is particularly so, in relation to nurses cross-cultural opinions of their professional self and in the context of technology, which is having an increasing impact on the conduct of care in nursing environments. It follows, from the philosophical, theoretical, and practice based research findings which have led to the development of the CAPSTI, that further research on caring in nursing should include an examination of those constructs already identified as the main relational elements of caring in nursing.

In the New Zealand context there have been no quantitative studies specifically based on the multiple components of the caring construct. Nor has there been any reported work on the process of developing and refining a nursing research instrument for the measurement of caring in New Zealand. This lack of well designed scientific studies in New Zealand on the concept of caring is demonstrative of the lack of a focus on measurement of the construct and highlights the need to further investigate caring from a generalisable scientific framework. Nevertheless, and even though Chick (1993) concluded that caring as a construct was "too loose to delineate a distinctive

field of practice", Euswas (1991) still managed to present her grounded theory research on the caring practices of New Zealand nurses in a reasonably cohesive fashion. Basically, in what may be the only major qualitative research on caring in nursing in New Zealand, Euswas claimed that there are recognisably distinct 'actualised caring moments' in most nursing acts, i.e. where the nurse and the patient realise their ' intersubjective connectedness' within a 'transforming healing-growing' specific change situation. In this regard at least, the Euswas dissertation highlighted some of the main categories of the caring practices of New Zealand nurses.

In recent years, New Zealand nurses have been heavily involved in a number of care-related phenomena, not least of which include those issues surrounding cultural identity and responsiveness in relation to caring practices. Indeed, in the former case, considerable effort has been put into the implementation of Kawa Whakauruhau or 'cultural safety' in both nursing education and practice. Naturally, attention to culturally safe care for all patients from all socio-cultural groups has grown exponentially since its mainstream introduction on an increasingly more formal basis around the 1990s onwards (Ramsden, 1990).

One of fundamental elements of cultural safety in New Zealand recognises (in a fashion not too dissimilar to Leininger's transcultural care theory, 1981) that the nurse's own cultural identity and beliefs may affect the care of a patient who belongs to another culture. Subsequently, in a myriad of bicultural or transcultural nursing focused care situations, much interest has centered around the examination of nursing attitudes towards others, open-mindedness and flexibility, and the avoidance of blame of the 'victims; of historical and social processes (Nursing Council of New Zealand, 1992). Essentially, these elements are quite closely related to the more specific care related elements of self concept, attitudes, communication, advocacy, involvement and practice. As all of these concepts are essential parts of CAPSTI2 and the administration of the questionnaire in New Zealand should contribute significantly to the body of knowledge about caring in the context of New Zealand nursing and New Zealand society.

## METHOD

The questionnaire and information sheet were mailed to 1000 randomly selected registered nurse members of the New Zealand Nurses Organisation (NZNO). Potential participants were provided with a free-post return envelope. Ten questionnaires were returned with undeliverable addresses resulting in a net mail out of 990 questionnaires. In an effort to maximise the response rate a reminder notice in the form of a letter to the editor was published in the May 1999 issue of Kai Tiaki Nursing New Zealand, the official journal of the NZNO. Of the 990 questionnaires mailed to valid addresses, 380 completed questionnaires were returned giving an overall response rate of 38.4 percent.

### The CAPSTI2 questionnaire

The psychometric development and properties of the CAPSTI and CAPSTI2 and its component subscales are detailed elsewhere (Arthur, 1992; Arthur, 1995; Arthur *et al.,* 1998; Arthur *et al.,* 1998; Arthur & Thorne, 1998; Arthur, *et al*., 1999 and O'Brien *et al.,* 1999). The CAPSTI2 consists of four parts. Part one has 10 demographic questions, which include some items identical to the data, collected by the Nursing Council of New Zealand. Part two consists of the Professional Self-Concept of Nurses Instrument (PSCNI) (30 items) and technological influences (14 items).

Part three measures the degree of technological influence experienced in 30 hospital units. Part four contains 27 caring items. Conceptually, items in part four reflect three subscales: caring communication, caring advocacy and caring involvement. High scores in each part of the CAPSTI2 questionnaire correspond with a positive attitude or belief about the construct being measured and a low score corresponds to a negative attitude or belief.

### Data analysis

Item responses were coded and recorded according to the Likert scale used in each section of the questionnaire. Negative items were reversed so that high numbers corresponded to positive responses. Data was analysed using the Statistical package for the Social Sciences (SPPS, Inc. 1986). Frequency distribution, percentages, means and standard deviations were

obtained for each item and for each scale and sub-scale. Means, standard deviations and Cronbach's alpha were obtained as a measure of scale and sub-scale reliability.

To investigate the relationship between various scales and sub-scales correlation coefficients were calculated. The mean scores for demographic groups based on gender, age range, religion, main type of work, years since registration, initial pre-registration qualification and post registration nursing qualifications were compared using one-way analysis of variance (ANOVA). The mean scores for the two genders were also compared using the nonparametric Mann-Whitney U test. This approach was taken because it was not possible to assume a normal distribution given the small number of male respondents.

**Reliability and Validity**

The extent to which the items in each subscale and scale measure the same construct was assessed using Cronbach's alpha coefficient. The three scales within the CAPSTI2 all had Cronbach's alphas above 0.77 and four of the six subscales had Cronbach's alphas above 0.7 (table 5). This is considered acceptable for an opinion base survey instrument.

## RESULTS

**Demographic characteristics**

The mean age of respondents was 43 years (SD=11.13) (Table 1). The mean number of years since registration was 19 years (SD 12) (Table 2). Figures obtained from the New Zealand Health Information Service through data collected by the Nursing Council of New Zealand (1999) have been included as a guide to demonstrate the representativeness of the sample to New Zealand's entire registered nurse workforce (Table 3 and 4).

**Relationship between subscales**

To examine the relationship between the various components of the CAPSTI2 and the content validity of the conceptual framework, Pearson's *r* correlation coefficients were calculated (table 6). Strong statistically significant ($p<0.0001$) correlations were found between the caring attributes scale and the caring communication, caring advocacy and caring involvement subscales and between the caring communication and caring advocacy subscales. There was a moderate statistically significant ($p<0.0001$) correlation between caring communication and caring involvement.

Furthermore, there were strong statistically significant ($p<0.0001$) correlations between the professional self concept scale and the professional practice and satisfaction subscales. There was a moderate statistically significant ($p<0.0001$) correlation between the professional self concept scale and its communication subscale. There was a moderate statistically significant ($p<0.0001$) correlation between the professional self concept scale and the caring attributes scale and the caring communication subscale. There was also a moderate statistically significant ($p<0.0001$) correlation between the professional practice subscale and the caring communication subscale. The technological influences scale had very

**Table 1. Demographic features of respondents**

| Characteristic | |
|---|---|
| *Age* | 21 - 68 years |
| Gender | % of valid responses |
| Female | 96% |
| Ethnicity | |
| NZ European/Pakeha (* 76.7 %) | 86% |
| NZ Maori (* 5.6 %) | 2% |
| Other European (* 9.4 %) | 5% |
| Pacific Islander (* 2.5 %) | 1% |
| Asian | 1% |
| Other Ethnic groups | 5% |
| Marital Status | |
| Married | 58% |
| Single | 19% |
| Defacto | 9% |
| Divorced | 9% |
| Separated | 5% |
| Identity with religious group | |
| No Religion | 30% |
| Christian | 68% |
| Other religions | 2% |

* = Ethnicity of active registered nurses and midwives working in NZ, 1998 sourced from the New Zealand Health Information Service (1999).

**Table 2. Years since registration and nursing qualifications of the respondents**

| *Years since registration* | 0-45 years |
|---|---|
| Initial Pre-registration Qualification | % of valid responses |
| Hospital Certificate | 60% |
| Diploma | 31% |
| Degree | 09% |
| Post registration Nursing Qualifications | |
| Hospital Based Programme | 51% |
| Diploma (e.g. ADN SANS) | 21% |
| Certificate | 24% |
| Bachelors Degree | 28% |
| Postgraduate Certificate | 12% |
| Postgraduate Diploma | 06% |
| Masters Degree | 02% |
| Other Qualifications | 19% |

**Table 3. Main type of nursing work of respondents and active registered nurses and midwives working in New Zealand**

| Main type of nursing work | % of respondents | % of active Registered Nurses and Midwives working in NZ from Annual Practicing Certificate data 1998 |
|---|---|---|
| Obstetric / Maternity | 0.8 | 1.8 |
| Midwifery | 1.6 | 5.9 |
| Mental Health | 3.6 | 8.9 |
| Intellectually Disabled | 0.3 | 1.3 |
| Intensive Care / Coronary Care | 8.2 | 4.5 |
| Perioperative Care | 7.7 | 4.7 |
| Assessment and Rehabilitation | 3.6 | 3.0 |
| Continuing Care (Elderly) | 7.1 | 11.7 |
| Medical | 8.0 | 8.4 |
| Surgical | 12.9 | 12.2 |
| Accident and Emergency | 4.9 | 3.0 |
| Child Health including Neonatology | 8.2 | 5.6 |
| Palliative Care | 2.7 | 1.5 |
| Public Health | 1.6 | 1.5 |
| District Nursing | 3.8 | 2.9 |
| Practice Nursing | 10.2 | 9.7 |
| Occupational Health | 1.1 | 1.3 |
| Primary Health Care | 0.5 | 0.8 |
| Nursing/Midwifery | 0.5 | 3.2 |
| Management/ Administration | 1.6 | 0.7 |
| Nursing/Midwifery Education | 3.3 | 2.0 |
| Other Nursing/ Midwifery | 6.0 | 5.4 |

* = New Zealand Health Information Service (1999).

**Table 4. Main employment setting of respondents and active registered nurses in New Zealand**

| Employment setting | % of respondents | % of active Registered Nurses and Midwives working in NZ from Annual Practicing Certificate data 1998 * |
|---|---|---|
| CHE/HHS Hospital | 57.5 | 49.6 |
| CHE/HHS Community Service | 8.5 | 8.1 |
| Non-CHE Non-HHS Hospital | 7.3 | 9.3 |
| Non-CHE Non-HHS Clinic/Trust | 5.9 | 6.4 |
| Non-CHE Non-HHS community service | 3.1 | 3.9 |
| Rest Home | 3.1 | 6.7 |
| Nursing Agency | 0.3 | 2.2 |
| Self Employed | 2.3 | 2.8 |
| Maori Health Service Provider | 0.3 | 0.4 |
| Educational Institution | 3.1 | 2.4 |
| Government Agency | 0.8 | 0.9 |

**Table 5. Scale and sub-scale Cronbach's alpha coefficients**

| Scale and Sub-scales | Cronbach's Alpha |
|---|---|
| Professional Self Concept | 0.85 |
| Professional Practice | 0.81 |
| Satisfaction | 0.82 |
| Communication | 0.52 |
| Technological Influences Questionnaire | 0.77 |
| Caring Attributes Questionnaire | 0.77 |
| Caring Communication | 0.79 |
| Caring Advocacy | 0.70 |
| Caring Involvement | 0.45 |

weak correlations with the other scales and subscales and most of those correlations were not statistically significant.

**Professional Self Concept**

In this previously validated and reliable component of the CAPST2 instrument, the highest and lowest item scores represent items that solicited the strongest responses from the respondents. These items suggest that respondents valued "professional interaction with colleagues" (item 28, mean 3.78, SD. 0.43), "their own skillfulness" (item 2, mean 3.73, SD 0.46) and their "ability to think of alternatives" (item 1, mean 3.72, SD 0.46). The item that solicited the lowest response indicates that work as a nurse is not what they expected it to be before starting nursing (item 14, mean 2.44 SD 1.03).

With negative items reversed, the maximum possible score for professional self-concept was 120, while the minimum was 30. Table 7 shows the spread of results for each of the CAPST2 scales. For comparison table 8 provides the mean scale and subscale scores from other published studies using the Professional Self-Concept of Nurses Instrument. There was a statistically significant difference ($p<0.05$) in the mean professional self-concept score between those respondents whose initial pre registration qualification was a hospital certificate or a diploma and those with an initial pre registration qualification of bachelor degree.

Higher mean professional self-concept scores were observed in those nurses whose initial pre registration qualification was a hospital certificate or diploma. There was a statistically significant difference ($p<0.05$) in the mean professional self concept score between those aged 40–49 and those aged 20–24 with higher professional self concept scores observed in the 40–49 year old group.

On the satisfaction subscale there was a statistically significant difference ($p<0.05$) between the mean scores of those respondents aged between 45–49 and those aged 30-34. There was also a statistical difference between those aged 60-64 and those aged 30-34 with a higher satisfaction score observed in both the 45-49 and 60-64 year old groups. A statistical difference was found ($p<0.05$) on the satisfaction subscale between those who had been registered for 40-44 years and those who had been registered for 15-19 years, with higher satisfaction scores in the group that had been registered for 40-44 years.

Using nonparametric tests there was also a statistically significant difference ($p<0.001$) between males and females on the satisfaction subscale with a higher satisfaction score observed in female respondents. There was also a statistically significant difference ($p<0.02$) between males and females on the communication score with higher communication scores observed in female respondents. However, this finding has less power due to the low numbers of male respondents.

**Table 6. Correlation matrix of CAPSTI2 scales and subscales.**

| | Caring Attributes | Caring Communication | Caring Advocacy | Caring Involvement | Professional Self Concept | Professional Practice | Satisfaction | communication | Technological influences |
|---|---|---|---|---|---|---|---|---|---|
| Caring Attributes | 1.00 | 0.84 * | 0.76 * | 0.72 * | 0.35 * | 0.25 * | 0.15 * | 0.27 * | 0.03 |
| Caring Communication | | 1.00 | 0.58 * | 0.34 * | 0.39 * | 0.30 * | 0.19 | 0.29 * | 0.07 |
| Caring Advocacy | | | 1.00 | 0.27 * | 0.29 * | 0.24 * | 0.12 | 0.17 * | 0.05 |
| Caring Involvement | | | | 1.00 | 0.21 * | 0.17 * | 0.04 * | 0.24 * | -0.03 * |
| Professional Self Concept | | | | | 1.00 | 0.78 ** | 0.67 ** | 0.38 ** | 0.21 ** |
| Professional Practice | | | | | | 1.00 | 0.17 ** | 0.08 ** | 0.16 ** |
| Satisfaction | | | | | | | 1.00 | 0.14 | 0.14 |
| Communication | | | | | | | | 1.00 | 0.06 |
| Technological influences | | | | | | | | | 1.00 |

* $p < 0.0001$ * * $p < 0.001$

On the professional practice subscale there was a statistically significant difference (P<0.05) between those who had been registered for 20-24 years and those who had only been registered for 0-4 years. With higher professional practice scores observed in those who had been registered for 20-24 years. There was also a statistically significant difference (p<0.05) in the professional practice score between those respondents whose initial pre registration qualification was a hospital certificate or a diploma against a degree. Higher professional practice scores were observed in respondents who had an initial pre registration qualification of hospital certificate or diploma.

**Technological Influences**

At the item level the technological influences questions solicited a wide range of responses as evidenced by the relatively large standard deviations. The highest and lowest item scores represent the items that produced the strongest response. These items suggest that respondents believe that technology enhances patient care and well being (item 40, mean 3.83, SD 0.94). However this is contrasted with a belief that the "increase in technical tasks has downgraded the nursing profession" (item 34, mean 3.83, SD 1.04) and some doubt about the "benefits of technology to their practice" (item 39, mean 3.77 SD 1.26).

With negative item scores reversed, the maximum possible score for the technological influences questionnaire was 70, while the minimum was 14. Table 7 shows the spread of results for each of the CAPST2 scales and of all the scales the relative difference between the mean score and the maximum possible score is greatest for the technological influences scale.

Again, using nonparametric tests because of the low numbers of male respondents in comparison to females, there was a statistically significant difference (p<01) between males and females on the technological influences scale with a higher score observed in male respondents. There was also a statistically significant difference (p<0.05) in technological influences between those aged between 30–34 and those aged 60–64, with higher technological influences scale scores observed in the 30–34 year old age group. A statistically significant difference (p<0.05) was found for the technological influences scale between those whose initial pre-registration qualification was a diploma compared to those whose initial pre registration qualification was a hospital certificate.

**Degree of Technological influence**

The respondent's impressions of the technological influence on various hospital wards and units are presented in table 9.

**Caring Attributes**

At the item level the caring attributes questions tended to solicit a narrow range of responses. The highest and lowest item scores suggest respondents see "communication with the patient" (item 11, mean 4.93, SD 0.25), "giving the patient explanations concerning his/her care" (item 15, mean 4.91, SD 0.29), "being available for the patient" (item 5, mean 4.90, SD 0.35) and "working collaboratively with colleagues" (item 24, mean 4.87, SD 0.35) as important attributes of caring. The item that solicited the weakest response suggests the respondents "do not see caring as a planned nurse activity designed to meet patients' needs" (item 1, mean 3.78, SD 1.36).

With negative item scores reversed, the maximum possible score for the caring attributes scale was 135, while the minimum was 27. Table 7 shows the spread of results for each of the CAPST2 scales. The respondents mean scores on the caring attributes scale and its subscales were close to the maximum possible scores. A statistically significant difference (p<0.05) in the mean caring attributes score between those

**Table 7. Spread of CAPSTI2 scale scores (items summed)**

| Scale | Mean | Std Dev | Minimum | Maximum | Valid n = |
|---|---|---|---|---|---|
| Professional Self Concept | 101 | 10 | 56 | 120 | 374 |
| Caring Attributes | 126 | 9 | 15 | 135 | 372 |
| Technological influences | 45 | 8 | 11 | 70 | 365 |

**Table 8. Likert item mean scores for the Professional Self Concept of Nurses Instrument by published study.**

| Sample | N = | Reference | PSCNI | Professional | Satisfaction | Communication |
|---|---|---|---|---|---|---|
| New Zealand | 364 | Arthur & Thorne (1998) | 3.36 | 3.54 | 3.19 | 3.11 |
| Canada (RN, MSN students) | 40 | | | 3.55 | 3.27 | 3.31 |
| Canada (RN, BSN students) | 28 | | | 3.37 | 2.68 | 3.10 |
| Canada (4th yr. BSN students) | 27 | | | 3.19 | 3.25 | 3.19 |
| Canada (2nd yr. BSN students) | 32 | | | 3.00 | 3.17 | 3.22 |
| New Zealand (RN postgrad.) | 96 | | 3.39 | | | |
| Philipines | 185 | | 3.38 | | | |
| Canada | 105 | | 3.35 | | | |
| South Africa | 260 | | 3.31 | | | |
| Sweden | 69 | | 3.29 | | | |
| Scotland | 94 | Arthur et al. (1999) | 3.27 | | | |
| Australia | 308 | | 3.25 | | | |
| China (Beijing) | 249 | | 3.03 | | | |
| Singapore | 230 | | 3.00 | | | |
| China (Hong Kong) | 110 | | 2.99 | | | |
| Korea | 250 | | 2.84 | | | |

**Table 9. Perception of the degree of technological influence in hospital units.**

| Hospital Unit | Mean score on a 5point Likert scale n = 259 |
|---|---|
| Mental health / Psychiatric Unit | 1.89 |
| Geriatric Unit | 2.06 |
| General Outpatient Department | 2.17 |
| Specialty Outpatient Department | 2.73 |
| Gynecology Unit | 2.98 |
| Sport Medicine Unit | 3.02 |
| Infection Control Unit | 3.08 |
| Dental Unit | 3.08 |
| Ear Nose and Throat Unit | 3.18 |
| Medical Unit | 3.21 |
| Obstetric Unit | 3.40 |
| Ophthalmology Unit | 3.44 |
| Labour Room | 3.53 |
| Surgical Unit | 3.60 |
| Neurology Unit | 3.64 |
| Paediatric Unit | 3.66 |
| Haematology Unit | 3.71 |
| Burn Unit | 3.77 |
| Orthopaedic and traumatology Unit | 3.93 |
| Neurosurgical Unit | 4.14 |
| Accident and emergency department | 4.16 |
| Radiotherapy and Oncology Unit | 4.21 |
| Renal Unit | 4.37 |
| Neonatal and Infant Care Unit | 4.5 |
| Cardiothoracic Surgery Unit | 4.61 |
| Organ Transplantation Unit | 4.68 |
| Operating Theatre | 4.70 |
| Cardiac Care Unit | 4.75 |
| Neonatal ICU | 4.90 |
| Intensice Care Unit | 4.92 |

nurses whose post registration qualifications were a hospital based diploma or a certificate and for those nurses whose post registration qualifications included a postgraduate certificate, postgraduate diploma or master's degree. Those nurses with the lower post registration qualifications scored higher on the caring attributes scale.

## DISCUSSION

The aim of the present study was to contribute data from a sample of New Zealand registered nurses to the growing international literature nurse caring attributes, professional self concept and technological influences. The analysis reported here establishes the reliability of the instrument and its various subscales for the New Zealand context and provides a snapshot of the caring attributes of a sample of NZ nurses which can now be contrasted with findings of other studies measuring the construct in the future.

In a representative sample of registered nurses working in Crown Health Enterprise facilities (now known as District Health Boards) the results show New Zealand Registered Nurses to be combining caring attributes with patient advocacy and incorporating these concepts into their professional practice and professional self concept. The results further indicate that caring is a satisfying part of professional registered nurse practice for New Zealand nurses and that working collaboratively is part of their practice.

The differences between nurses trained in hospitals and those trained in polytechnics and universities in this sample indicate that hospital trained nurses have a stronger sense of professional self concept; however, this finding is open to speculation and further research. One reason could be related to the quantity and quality of time spent on the clinical floor during educational and training preparation. That is, where hospital trained nurses get more client contact during their professional self concept development and thus gain a stronger sense of professional self and understand more about the process of caring. It is also evident that that the longer one has been nursing and the older one is, correlates more strongly with a 'caring awareness', particularly in relation to professional self. Put simply, the longer one is on the clinical floor in contact with clients, the more that professional practice confidence increases. This is not an earth shattering finding in itself, but it highlights the perennial debate surrounding clinical practice experience and the necessary balance between theory and practice in comprehensive programs of nursing education.

Technological influences are as part of the new millennium nursing environment as the old, but due to a number of missing cases it is difficult to construe too much from these findings. However, male nurses appear to be more technologically orientated than females and nurses in their early to late 30s seem more comfortable with technological advances. What a pity that men are not attracted to nursing in the numbers that females are, especially considering that technology in years to come will have even more an influence on nursing that it currently does. It also seems that nurses who have greater contact over time with technology are more comfortable with it. The area of gender and technological influence confidence is worthy of further investigation. There is much to make from the results of this study, the first of its kind in New Zealand, notwithstanding the discussion already alluding to areas of concern for the professional development, educational preparation, age and gender and in the caring orientation of registered nurses in New Zealand.

## CONCLUSION

One limitation of the study and the survey instrument is that it did not incorporate items sensitized to Maori (including language), especially considering New Zealand is a bi-cultural country. However, the study was national research survey and the same could be said for other ethnic groups. Furthermore, there were not enough Maori registered nurses in this sample for their specific caring orientation to be represented.

It can also be argued that quantitative surveys artificially constrain investigations of complex multidimensional ideas such as caring, professional self-concept and technological influences on nursing practice. However, this quantitative study provides generalisable findings upon which to compare and contrast the findings of existing qualitative studies. A comparison with nursing workforce data obtained from the New Zealand Health Information Service (1999) on ethnicity, employment setting and type of

work demonstrates the study sample is representative of active registered nurses in New Zealand.

The number of missing cases for each item in the questionnaire was small except for the technological influences scale of the questionnaire, where every item had at least 62 and up to 92 missing cases for the total sample. This part of the questionnaire aimed to explore the respondent's impression of the technological influences in various hospital units/wards. Many respondents who did not respond to this section of the questionnaire commented that it was not applicable because they did not work in a hospital setting. A future study could focus on the technological influences on nursing practice in a variety of community settings.

While there is literature to support the validity of the content of the CAPSTI2, further statistical testing of the construct validity of the caring attributes and technological influences scales of the CAPSTI2 is warranted. It would also be useful to measure whether the caring attributes section measures the same construct as existing measures of caring among nurses such as the Caring Dimensions Inventory (Lea *et al.*, 1998).

The study, as previously stated, is the first of its kind in New Zealand and is now available for other nurse researchers to replicate. The study has contributed to the New Zealand research lacuna concerning the concepts of caring, professional practice attributes and self concept, especially in regard to place of work, age, gender, ethnicity and discipline of clinical practice.

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## ACKNOWLEDGMENTS

This study was funded by the Massey University Research Fund (MURF) with support from the School of Health Sciences. The authors gratefully acknowledge the work of the New Zealand Nurses Organisation (NZNO) staff, which arranged the mail out of the questionnaires to NZNO members.

新西兰注册护士对关顾的归因持性、专业自我概念及科技带来的影响的全国性调查

本研究采用专业自我概念及科技影响问卷(CAPSTI)修订版向380位新西兰注册护士以邮递方式进行调查。原创CAPSTI的量表经向十一个不同国家的护士进行测试后，发现有需要作修订才能使用于新西兰样本。此先导计划结果促进了研究工具CAPSTI的精微修订为(CAPSTI2)及改善了它在其他研究中检视护理关顾的信度。

本文报告一个夸新西兰的全国调查并突显护士对于关顾行为意见的重要性。其中在专业自我概念次量表、科技影响及关顾归因，对应于教育程度、年龄及性别的出现了显著差别。再者，在人口统计类别次量表中的强相关指示出护士在任一时间的护理情境中都使用多于一个关顾架构。

摘要