

Nurse intention to remain employed, understanding and strengthening determinants

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ABSTRACT

Aim: This paper reports a study testing a hypothesized model of the determinants of nurse intention to remain employed in current hospitals of employment.

Background: Previous research has shown that stronger nurse intention to remain employed is associated with higher job satisfaction, higher organizational commitment, higher perceived manager support, lower burnout, higher work group cohesion, being older, having more years of nursing experience and having lower levels of education.

Methods: A descriptive survey design was adopted. Over 13,000 Ontario, Canada nurses were invited to complete a mailed survey between February and May 2003. The Ontario Nurse Survey includes instruments and items measuring job satisfaction, burnout, professional nursing practice environment, demographic characteristics of nurse respondents and items about intention to remain employed. Two multiple regression models, one including all variables and the other using a stepwise method, were used to test the proposed model.

Results: Regression models explained 34% of variance in nurse intention to remain employed. The strongest predictors were nurse age, overall nurse job satisfaction and years of employment in the current hospital. Although the proposed model hypothesized six categories of predictors of intention to remain employed, only four of these were statistically significant determinants of nurse intention to remain: job satisfaction, personal characteristics of nurses, work group cohesion and collaboration, and organizational commitment of nurses. The other two categories of predictors, nurse burnout and nurse manager ability and support, may be predictors of job satisfaction and have indirect effects on intention to remain employed that are mediated through job satisfaction.

Conclusions: Possible strategies to strengthen predictors of intention to remain employed include employment practices that reflect moral integrity, incorporate clear communication systems, maximize employee involvement in decision-making, promote praise and recognition, and establish a shared vision and goals.

Key Words: empirical research report; intention to remain employed; job satisfaction; nurses; retention; survey; theory development

Introduction

The global shortage of nurses is reaching a critical level and many nurses continue to voluntarily leave their workplaces before the normal age of retirement (Stephenson 2004). Quality health care is dependent on an adequate supply of qualified nursing personnel [Canadian Nursing Advisory Committee (CNAC) 2002]. One way to minimize the impact of this shortfall is to implement strategies that discourage voluntary separation of nurses from their workplaces before their normal age of retirement. However, development and implementation of effective strategies that promote nurse retention necessitate a clear understanding of those factors that influence nurse intention to remain employed. Theory development and testing is the foundation for promoting understanding of factors affecting nurse intention to remain employed and leads directly to identification and testing of strategies that strengthen this intention (Boyle *et al.* 1999).

Background

Intention to remain employed is a nurse's perceived likelihood of staying within the organization and is directly and

positively related to retention (Boyle *et al.* 1999). Nurses who intend to remain employed in their current organizations are more likely to actually remain employed in those organizations. A review of the related literature elucidates evidence of the following categories of factors related to nurse intention to remain employed in their jobs: job satisfaction; organizational commitment; manager ability and support; burnout; work group cohesion and collaboration; and personal characteristics such as age, education level and years of nursing experience.

Job Satisfaction

Throughout the literature, job satisfaction was the most consistent predictor of nurse intention to remain employed and has even been reported as explaining most of the variance in job satisfaction (Sourdif 2004). Shields and Ward (2001) found that nurses who reported overall dissatisfaction with their jobs had a 65% higher probability of intending to leave than satisfied nurses. Consistently, direct positive relationships have been found between job satisfaction and nurse intention to remain employed (Chan & Morrison 2000, Kunaviktikul *et al.* 2000, Fletcher 2001, Janney *et al.* 2001, Shader *et al.* 2001, Shields & Ward 2001, Aiken *et al.* 2002, Cowin 2002, Ingersoll *et al.* 2002,

Joshua-Amadi 2002, Lacey 2003, Larrabee *et al.* 2003, Roberts *et al.* 2004, Sourdif 2004). Most studies also reported positive direct relationships between nurse intention to remain employed and specific components of job satisfaction, including satisfaction with pay and benefits (Chan & Morrison 2000, Kunaviktikul *et al.* 2000, Fletcher 2001, Janney *et al.* 2001, Shields & Ward 2001, Cowin 2002, Joshua-Amadi 2002, Lacey 2003), satisfaction with scheduling (Fletcher 2001, Janney *et al.* 2001, Shader *et al.* 2001, Shields & Ward 2001, Lacey 2003, Roberts *et al.* 2004), satisfaction with control (autonomy) and responsibility (Chan & Morrison 2000, Cowin 2002, Larrabee *et al.* 2003, Roberts *et al.* 2004), and satisfaction with professional opportunities (Kunaviktikul *et al.* 2000, Shields & Ward 2001, Cowin 2002, Joshua-Amadi 2002, Roberts *et al.* 2004).

Organizational commitment

A positive, direct relationship has been found between nurse organizational commitment and nurse intention to remain employed (Ingersoll *et al.* 2002, Sourdif 2004). Ingersoll *et al.* (2002) found relationships between favourable perceptions of work group, increased levels of job satisfaction and organizational commitment. Nurses who perceived their work groups as supportive and cohesive were found to be less critical of their organizations and more likely to remain attached to their organizations.

Manager ability and support

Manager ability and support of nursing staff has been found to be associated with nurse intention to remain employed. The higher nurses rated their managers' leadership styles and the more they reported their managers used supportive behaviours (e.g. recognition, encouragement and positive feedback), the greater were both nurse satisfaction and nurse intention to remain employed (Chan & Morrison 2000, Kunaviktikul *et al.* 2000, Janney *et al.* 2001, Joshua-Amadi 2002, Lacey 2003, Larrabee *et al.* 2003, Roberts *et al.* 2004, Sourdif 2004).

Burnout

Nurse burnout has been found to be inversely associated with both job satisfaction and nurse intention to remain employed (Shader *et al.* 2001, Aiken *et al.* 2002). Aiken *et al.* (2002) found that 43% of nurses who reported high levels of burnout and dissatisfaction also intended to leave their jobs within 1 year. Shader *et al.* (2001) found relationships between nurse burnout, job stress, work group cohesion and nurse intention to remain employed. Specifically, the higher was job stress and burnout and the lower was work group cohesion, the less likely were nurses intending to remain employed.

Work group cohesion and collaboration

The level of commitment nurses have to their organizations has been shown to be correlated with work group cohesion (Chan & Morrison 2000, Ingersoll *et al.* 2002). Positive work relationships, effective nurse-physician collaboration, and high levels of work group cohesion have been found to contribute to

higher job satisfaction and have been found to be significant determinants of nurse intention to remain employed (Chan & Morrison 2000, Shader *et al.* 2001, Ingersoll *et al.* 2002, Lacey 2003, Larrabee *et al.* 2003).

Nurse personal characteristics

Evidence exists of relationships between the following personal characteristics of nurses and their intention to remain employed: age (Shields & Ward 2001), specialization (Chan & Morrison 2000), and years of experience as a nurse (Chan & Morrison 2000, Larrabee *et al.* 2003). Nurses were found to be more likely to remain employed when they were older, worked in specialized clinical areas, and had more years of nursing experience. Nurses with higher levels of education were found to be less likely to remain employed with their current employers (Shields & Ward 2001).

Some suggest that it is age cohort or generational affiliation rather than age alone that affects nurse intention to remain employed. Generational affiliation reflects grouping of nurses into age cohorts. The four generations in the current nursing workforce reflect its diversity. Each generation differs in values, goals, priorities, work ethics, attitudes, expectations, and perceptions of work and work settings (Duchscher & Cowin 2004, Hu *et al.* 2004). Although the findings are inconsistent, there is some evidence that generational affiliation is related to nurses' organizational commitment and intention to remain employed (McNeese-Smith & van Servellen 2000, Santos & Cox 2000, McNeese-Smith & Crook 2003, Hu *et al.* 2004, Stuenkel *et al.* 2005).

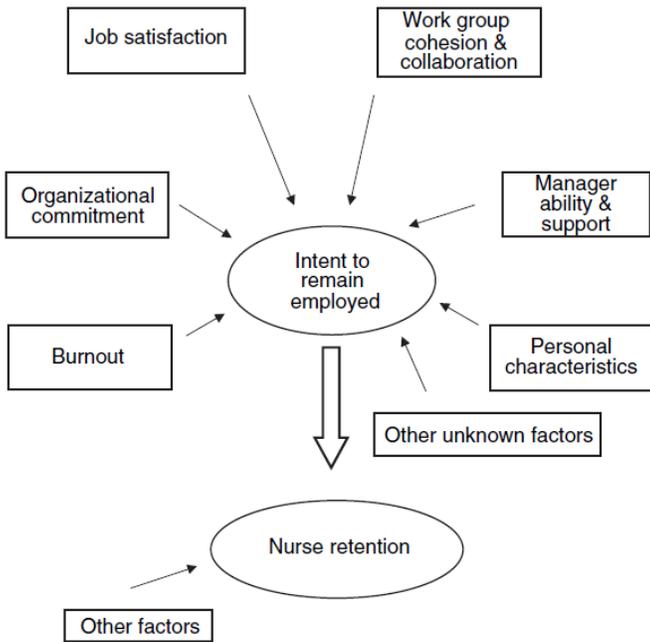
Theoretical model

Boyle *et al.* (1999) developed a 'Conceptual Model of Intent to Stay' that describes four sets of predictor variables of intensive care unit (ICU) staff nurse intention to stay employed: (a) manager characteristics (power, influence, leadership style), (b) nurse characteristics (opportunity elsewhere, job decision priorities, age, nursing education, tenure expectations at employment, years in position, years in hospital, years in profession, marital status), (c) organizational characteristics (distributive justice, promotional opportunity, control over practice, and unit characteristics such as workload), and (d) work characteristics (autonomy, instrumental communication, work group cohesion and routinization). Their primary interest was to examine the influence of manager characteristics on nurse intention to stay employed in the ICU. Using causal modelling and multiple regression path analysis, they found five variables directly affected nurse intention to stay: manager position power, manager influence over work coordination, opportunity elsewhere, promotional opportunity, and job satisfaction. They reported that control over nursing practice, situational stress, and the manager characteristics of structuring expectations and consideration had indirect effects on ICU nurse intention to remain employed.

Based on this and other literature, a theoretical model of *Determinants of Nurse Intention to Remain Employed* was proposed for this study (Figure 1). This model incorporates the following hypothesized predictors of nurse intention to remain employed: job satisfaction, manager ability and support,

organizational commitment, burnout, work group cohesion and collaboration, and personal characteristics of nurses. We hypothesized that nurses who report having more organizational commitment, working within groups that are more cohesive and collaborative, who experience less burnout, who experience higher job satisfaction, and who have more effective managers are more likely to remain employed in their current jobs. We also hypothesized that nurses' own characteristics such as age, years of experience, career satisfaction, educational preparation, sex, category of nurse, and full-time or part-time employment status affect their intention to remain employed. It is assumed that nurse intention to remain employed predicts nurse retention, but we did not test this relationship in this study.

Figure 1 Model: determinants of nurse intention to remain employed



The Study

Aim

The aim of this study was to test the hypothesized model of the determinants of nurse intention to remain employed in their current acute care hospitals until retirement.

Design

A descriptive survey design was adopted. This survey was one component of two studies investigating determinants of patient safety outcomes. Here, we use elements of the nurse survey to explore determinants of the outcome intention to remain employed in current hospitals of employment.

Participants

Over 13,000 Registered Nurses and Registered Practical Nurses working in acute care hospitals in Ontario, Canada were

mailed the survey between February and May 2003. Questionnaires were mailed to nurses' homes. The sampling plan was developed from the 2003 College of Nurses of Ontario registration database. All Registered Nurse (RN) and Registered Practical Nurse (RPN) registrants who reported on their 2003 registration renewal form that they worked in a medical, surgical, or critical care area in an Ontario teaching or community acute care hospital were invited to complete the questionnaire. A total of 8456 nurses from 75 hospitals (65% of surveyed nurses) completed the questionnaire. A description of nurse respondents by RN and RPN category is given in Table 1, including mean age and years of experience, and proportions who were employed full-time, were male respondents, regularly worked 12-hour shifts, and had a baccalaureate degree, and numbers working in each clinical area.

Ontario Nurse Survey

The Ontario Nurse Survey instrument was nine pages in length and included sections inviting respondents to describe the following: where they worked within their hospitals, evaluation of quality of patient care, career intentions, history of injury from a patient contaminated sharp, job-related feelings (burnout), condition of the nursing practice environment, job satisfaction, selected patient discharge processes of care, and demographic information. Included in the survey were three frequently used instruments: the Maslach Burnout Inventory (MBI), the Revised Nursing Work Index (NWI-R), and the McCloskey Mueller Satisfaction Scale (MMSS).

Validity and reliability

The MBI is a 22-item instrument used to measure three dimensions of job-related burnout: emotional exhaustion, depersonalization and personal accomplishment. Burnout is conceptualized as high levels of emotional exhaustion and depersonalization and low levels of personal accomplishment (Maslach *et al.* 1996). Respondents were asked to rate how frequently they were experiencing each of the job-related feelings described in the 22 items on a seven-point scale ranging from never (value = 0) to everyday (value = 6). Both validity and reliability of the three MBI subscales and published norms to facilitate score interpretation have been extensively documented (Maslach *et al.* 1996, Tourangeau & McGilton 2004).

Table 1 Nurse respondent sample description

Sample descriptor	All sample	RN	RPN
Number of RN or RPN respondents	8456	6856	1325
Mean age (SD)	43.1 (9.4)	42.6 (9.5)	45.8 (8.7)
Mean years experience as RN or RPN (SD)	17.8 (9.9)	17.6 (9.9)	19.6 (9.9)
Proportion full-time	59.0%	60.7%	50.4%
Proportion male	3.6%	3.8%	3.0%
Proportion regularly working 12-hour shift	69.8%	76.5%	34.7%
Proportion baccalaureate degree or higher level preparation	18.7%	21.8%	2.3%
Number working in medical hospital area	2089	1600	489
Number working in surgical hospital area	1789	1525	264
Number working in combined medical-surgical hospital area	890	608	282
Number working in critical care hospital area	2515	2423	92

The NWI-R was used to measure the condition of the professional nursing practice environment. Respondents were asked to indicate their agreement with each of the 49 items about their work environment on a four-point scale ranging from strongly disagree (value = 1) to strongly agree (value = 4). This instrument has been used extensively in nursing research over the past decade. Several recent reports of psychometric properties of the NWI-R have yielded inconsistent findings of the essential dimensions of the nursing practice environment being measured with this instrument. For example, Lake (2002) tested the psychometric properties of the NWI-R using 1985–1986 magnet hospital data and 1999 Pennsylvania nurse data. Lake reported finding five distinct subscales: nurse participation in hospital affairs, nursing foundations for care quality, nurse manager ability and support, staffing and resource adequacy, and collegial relationships among nurses and physicians. However, Estabrooks *et al.* (2002) found that a one-factor solution explained the majority of variance of the NWI-R with a sample of 6526 Canadian nurses.

Job satisfaction is defined as the degree of positive affective orientation that nurses have towards their employment (Mueller & McCloskey 1990). There are various dimensions of job satisfaction. The MMSS is a 31-item instrument developed to measure global nurse job satisfaction as well as eight distinct job satisfaction dimensions, including satisfaction with: extrinsic rewards, scheduling, balance of family and work, co-workers, interaction opportunities, professional opportunities, praise and recognition, and control and responsibility. Respondents were asked to identify how satisfied they were with each of the 31 items on a five-point scale ranging from very dissatisfied (value = 1) to very satisfied (value = 5). Development of the MMSS and its psychometric properties has been documented including reports of the eight-factor structure of the instrument and reliabilities of the eight subscales. Cronbach α s for these eight MMSS subscales have been reported to range between 0.52 and 0.84 (McCloskey 1974, McCloskey & McCain 1987, Mueller & McCloskey 1990).

Model concepts and their measurement

Nineteen variables were used as indicators of the six model predictor categories. These variables are described below.

Job satisfaction

Job satisfaction was measured in two ways. First, respondents were asked to answer one overall job satisfaction question by indicating their response to the following question on a four-point response scale ranging from very dissatisfied (value = 1) to very satisfied (value = 4): on the whole, how satisfied are you with your present job at this hospital? Higher item scores indicate higher nurse-reported job satisfaction. Because job satisfaction consists of affective orientation related to a variety of job-related aspects, respondents were invited to complete the MMSS. The eight subscales of the MMSS were constructed for each participant. Cronbach α s for these MMSS subscales ranged from 0.02 to 0.84. One MMSS subscale, satisfaction with balance of family and work ($\alpha = 0.02$), was excluded from further analyses because of its unacceptably low reliability coefficient. The remaining seven subscales of the

MMSS had reliability coefficients of 0.56 or greater and were included as predictors in the regression models. Higher scores in each subscale reflect higher reported job satisfaction. To facilitate interpretation, each subscale was standardized to be out of 100.

Organizational commitment

Organizational commitment is defined as the degree of attachment that nurses have towards their employer. Because organizational commitment was not directly measured, two proxy variables were used as indicators of nurses' commitment to their organizations. First, it was assumed that nurses demonstrate their organizational commitment by their length of employment in their current hospital. The more years of employment a nurse has in a hospital, the stronger is that nurse's commitment to the organization. Responses to the survey item asking nurses to report the number of years of employment with their current hospital was included as an indicator of nurse organizational commitment.

A second proxy indicator of organizational commitment, nurse participation in hospital affairs, was also used in this study. Nurses who are committed to their organizations demonstrate their commitment by participating in hospital affairs such as working on hospital committees and engaging in other governing activities. Lake (2002) found that *Nurse Participation in Hospital Affairs* was one of five subscales of the NWI-R. This subscale, consisting of nine items, was used to measure the amount of nurse participation in hospital affairs. Responses for each item inquiring about participation in hospital affairs ranged from strongly disagree (value = 1) to strongly agree (value = 4). Items were summed and each respondent's subscale scores were standardized to be out of 100. Cronbach α for this scale in our study was 0.85.

Manager ability and support

Manager ability and support refers to nurse-reported adequacy of their managers' management and leadership qualities and supportive behaviours towards staff. Manager ability and support was measured using the four-item Nurse Manager Ability, Leadership, and Support Subscale of the NWI-R. Lake (2002) found this subscale was one of five subscales of the NWI-R. Items in this scale were summed and then standardized to be out of 100. Cronbach α for this scale in our study was 0.84.

Burnout

Burnout is defined as the amount of emotional exhaustion nurses report experiencing in their work situations. Nurse burnout was measured as each respondent's score on the emotional exhaustion subscale of the MBI. This scale has a theoretical range of 0–54. The higher the score, the higher is the respondent's level of emotional exhaustion. Scores of 27 or higher indicate high emotional exhaustion, scores between 17 and 26 indicate moderate emotional exhaustion and scores 16 or less indicate low emotional exhaustion (Maslach *et al.* 1996). The mean level of emotional exhaustion for nurses in acute care

hospitals was in the moderate range. Cronbach α for this scale in our study was 0.91.

Work group cohesion and collaboration

Work group cohesion and collaboration is defined as the degree of attraction that nurses feel towards their work group and their motivation to be a member of that group (McShane 2004). Nurse-reported level of teamwork was included as an indicator of work group cohesion and collaboration in the model. Respondents were asked to identify on a four-point scale whether the following statement was 'not at all like our system of care delivery' (value = 1) or was 'a lot like our system of care delivery' (value = 4): we work as a team or group of nursing staff over the shift and together work to provide care to a group of patients. The higher the item score, the higher is reported work group cohesion and collaboration.

Nurse personal characteristics

Nurses' personal characteristics and circumstances have been shown to be associated with intention to remain employed. The following six nurse characteristics were hypothesized to be predictors of nurse intention to remain employed in their current hospital: age, sex, whether the respondent was a RN or RPN, full-time or part-time employment status, baccalaureate or higher educational preparation, and satisfaction being a nurse. Single-item survey questions were used as indicators for each nurse characteristic and were entered as predictors (either as dichotomous or continuous variables, as appropriate) in regression modelling.

Intention to remain employed

The dependent variable in this study was nurse-reported intention to remain employed in the current hospital until retirement. Nurses were invited to respond to the following question about their future career plans on a four-point scale ranging from very unlikely (value = 1) to very likely (value = 4): considering your career goals, how likely is it that you will continue working in this hospital until retirement? Higher response scores indicate stronger nurse intention to remain employed in their hospital.

Data collection

Because of the large number of participants, survey administration was contracted out to the Institute of Social Research at York University in Toronto, Canada to manage mailings, receive returned questionnaires, and to create the final dataset. Reminder cards were mailed 10 days after the initial survey was mailed. A second complete package was mailed to non-responders 4 weeks after the initial mailing, and was followed 10 days later by a reminder card.

Ethical considerations

The study was approved by the University of Toronto Health Sciences Ethics Review Board. A cover letter containing detailed explanation of the study, risks and potential benefits of

participating, and mechanisms to ensure participant anonymity and confidentiality was attached to the front page of the package mailed to potential participants. Return of the completed questionnaire was taken as consent to participate.

Data analysis

Data were analysed using SPSS® Version 11.5 (SPSS Inc., Chicago, IL, USA). Analysis procedures included descriptive statistics and two multiple regression analytic models, one including all variables and the other using a stepwise method.

Results

Table 2 gives a summary of the mean and standard deviation (or proportion, if appropriate), minimum value, and maximum value for each variable. To test the hypothesized model, multiple regression analyses were carried out. Regression analysis was used to predict outcomes and explain interrelationships among variables (Munro 2005). First, all 19 predictor variables were forced to enter the model simultaneously. The percentage of variance explained by this model (adjusted R -squared) was 34%. The overall model P -value was less than 0.001. Table 3 lists each predictor variable, the associated parameter estimate, the associated standardized coefficient, the associated t -statistic, and the associated P -value.

Ten of the 19 hypothesized predictors of intention to remain employed had parameter estimates that were statistically significantly different from zero at the 0.05 level. One of the two indicators of organizational commitment was a statistically significant predictor: years employed in the hospital. The more years nurses reported being employed in their current hospitals, the more likely they were to remain employed in that hospital until retirement. However, the level of nurse participation in hospital affairs was not a statistically significant predictor of nurse intention to remain employed. Level of teamwork, the indicator for collaboration and work group cohesion, was a statistically significant predictor. The higher nurses rated teamwork in their work areas, the more likely they reported intending to remain employed.

Unexpectedly, nurse emotional exhaustion and manager ability and support were not found to be statistically significant predictors of intention to remain employed. Overall job satisfaction and two of the seven components of nurse job satisfaction (satisfaction with co-workers and satisfaction with interaction opportunities) were statistically significant predictors. As overall nurse job satisfaction increased, nurse intention to remain employed in that hospital also increased. The higher nurses rated their satisfaction with co-workers as well as their satisfaction with opportunities for interactions at work, the more likely nurses reported intending to remain employed in that hospital. None of the other five components of job satisfaction were significant predictors of intention to remain employed.

Five of the six indicators of nurse personal characteristics were statistically significant predictors of nurse intention to remain employed. The older was the nurse, the more satisfied respondents were as nurses, nurses employed full-time, and RPN respondents (compared to RN respondents) reported being more likely to remain employed in their hospitals. Nurses with

baccalaureate degrees were less likely to report intending to remain employed in their current hospitals.

Table 2. Descriptive statistics for model variables

Variable	Theoretical range	Mean or proportion (SD)	Minimum value	Maximum value
Years employed in this hospital	–	13.26 (9.3)	0	45
Mean level of nurse participation in hospital affairs	0–100	46.06 (19.8)	0	100
Teamwork	1–4	2.62 (1.1)	1	4
Emotional exhaustion	0–54	23.13 (11.1)	0	54
Overall job satisfaction	1–4	2.95 (0.93)	1	4
Satisfaction: extrinsic rewards	0–100	56.62 (23.2)	0	100
Satisfaction: scheduling	0–100	51.50 (23.6)	0	100
Satisfaction: co-workers	0–100	71.34 (18.1)	0	100
Satisfaction: interaction opportunities	0–100	63.52 (18.3)	0	100
Satisfaction: professional opportunities	0–100	46.26 (17.3)	0	100
Satisfaction: praise and recognition provided	0–100	50.46 (22.5)	0	100
Satisfaction: control and responsibility	0–100	44.95 (21.0)	0	100
Nurse manager ability and support	0–100	46.13 (26.7)	0	100
Mean age	–	43.26 (9.4)	22	69
Independent of job, satisfaction as nurse	1–4	3.27 (0.86)	1	4
Proportion with baccalaureate or higher degree	–	18.9%	–	–
Proportion employed full-time	–	59.8%	–	–
Proportion male	–	3.7%	–	–
Are you an RN or RPN?	–	RN: 6856, RPN: 1325	–	–
Intention to remain employed at hospital	1–4	2.98 (1.2)	1	4

RN, Registered Nurse; RPN, Registered Practical Nurse.

Those predictor variables most strongly correlated with the dependent variable, intention to remain employed, can be determined by examining standardized coefficients for each predictor variable. The standardized coefficient represents the partial correlation between that predictor variable and the dependent variable while holding constant the influence of other independent variables (Munro 2005). The three predictors with the highest partial correlations with the dependent variable were: nurse age, years of employment at the current hospital, and overall job satisfaction.

As shown in Table 3, not all model predictors added to the explanation of nurse intention to remain employed in the current hospital until retirement. To find a more parsimonious explanation of factors that predict and explain nurse intention to remain employed, stepwise multiple regression was used. Stepwise regression combines both backward and forward regression procedures and starts by entering the single best predictor into the model. The next best predictor that contributes the greatest amount of unique variance is entered next. At each step, the new predictor entered is that variable with the greatest partial correlation with the dependent variable when all variables already included have been partialled out (Tabachnick & Fidell 2001, Munro 2005). Using stepwise regression, 12 model

iterations were completed. Twelve statistically significant predictors were included in the final model that explained 34% of variance in nurse intention to remain employed. The overall model *P*-value was less than 0.001. Table 4 lists each predictor variable, the associated parameter estimate, the associated standardized coefficient, the associated *t*-statistic, and the *P*-value for each predictor variable that remained in the final stepwise regression model.

The stepwise regression model yielded two additional statistically significant predictors of intention to remain employed than did the first model that included all predictors: nurse satisfaction with praise and recognition and being a male nurse. Nurses who were more satisfied with the praise and recognition they received at work were more likely to remain employed at their current hospitals. Male nurses were less likely to remain employed than were females. Differences in regression model results may be found when different regression procedures are used. This may happen in stepwise regression procedures as variables are entered into the model because of their highest correlation with the dependent variable and then assessed at each step to determine whether their contribution to explained variance is still significant (Munro 2005). These findings suggest that nurses are more likely to remain employed in their current hospitals of employment until retirement under the following circumstances: are older; have higher overall job satisfaction; have more years of employment in current hospitals; do not have a baccalaureate degree or higher level of education, are more satisfied as a nurse, are more satisfied with the praise and recognition received at work, are employed full-time, are more satisfied with their co-workers, are Registered Practical Nurses rather than Registered Nurses, are more satisfied with interaction opportunities at work, report more effective teamwork, and are female.

Table 3. Multiple regression model results: all 19 predictor variables forced into the model

Predictor variable	Parameter estimate	Standardized coefficient	<i>t</i> -statistic	<i>P</i> -value
Years employed in this hospital	0.023	0.184	12.13	<0.001
Level of nurse participation in hospital affairs	0.001	0.018	1.00	0.319
Teamwork	0.029	0.028	2.42	0.015
Emotional exhaustion	-0.003	-0.026	-1.83	0.067
Overall job satisfaction	0.220	0.174	11.44	<0.001
Satisfaction: extrinsic rewards	0.001	0.023	1.79	0.074
Satisfaction: scheduling	-0.001	-0.013	-0.91	0.363
Satisfaction: co-workers	0.003	0.039	2.93	0.003
Satisfaction: interaction opportunities	0.002	0.030	2.95	0.001
Satisfaction: professional opportunities	0.002	0.023	1.58	0.114
Satisfaction: praise and recognition	0.001	0.027	1.42	0.156
Satisfaction: control and responsibility	-0.002	-0.022	-1.13	0.259
Nurse manager ability and support	0.000	0.004	0.23	0.819
Age	0.040	0.320	21.21	<0.001
Satisfaction as nurse	0.094	0.069	5.21	<0.001
Baccalaureate or higher degree	-0.279	-0.094	-8.06	<0.001
Employed full-time	0.148	0.062	5.33	<0.001
Male	-0.132	-0.022	-1.92	0.054
Registered Nurse	-0.127	-0.038	-3.19	0.001

Predictor variable	Parameter estimate	Standardized coefficient	t-statistic	P-value
Age	0.040	0.322	21.46	<0.001
Overall job satisfaction	0.227	0.179	12.74	<0.001
Years employed in hospital	0.023	0.184	12.22	<0.001
Baccalaureate or higher degree	-0.283	-0.095	-8.20	<0.001
Satisfaction as nurse	0.104	0.076	5.91	<0.001
Satisfaction: praise and recognition	0.002	0.041	2.86	0.004
Employed full-time	0.146	0.061	5.39	<0.001
Satisfaction: co-workers	0.003	0.040	2.99	0.003
Registered Nurse	-0.124	-0.037	-3.17	0.002
Satisfaction: interaction opportunities	0.003	0.040	2.84	0.004
Teamwork	0.028	0.027	2.38	0.018
Male	-0.135	-0.022	-1.97	0.049

Table 4 Multiple regression model results: stepwise procedure

Discussion

Both regression models explained 34% of variance in nurse intention to remain employed. These findings are similar to models tested by Larrabee *et al.* (2003), Sourdif (2004) and Shader *et al.* (2001), whose models explained 25.5%, 26%, and 31% of variance in intention to remain employed, respectively. Boyle *et al.* (1999) included a larger number of predictor variables and explained 52% of variance in ICU nurse intention to remain employed.

Although both regression models explained 34% of variance in nurse intention to remain employed with their current hospital until retirement, it is important to note that 66% of variance remained unexplained, indicating that there are other important predictors of nurse intention to remain employed. These predictors may include other personal characteristics of nurses, changing life circumstances, other work environment or organizational characteristics, economic factors, or even characteristics of the communities in which nurses live and work. Further exploratory research is needed to elucidate those other predictors of nurse intention to remain employed that comprise the larger proportion of unexplained variance.

Evidence was found to support four of the six categories of predictors proposed in the *Determinants of Nurse Intention to Remain Employed* model. The strongest single predictor was age. The older the nurse, the more likely they were to remain employed in the current hospital. Although this finding may be a simple function of increasing age, it may also be related to attitudinal priorities and differences in values among generations of nurses in the workforce. For example, nurses in the *Silent Generation* born between 1925 and 1945 value loyalty and seniority (Duchscher & Cowin 2004). Because of these values, this generation of nurses is more likely to intend to remain employed compared to those who are *Generation Xers*. *Generation Xers*, born between 1965 and 1980 are very comfortable with change and value career security over job security (Duchscher & Cowin 2004). Consequently their generational values lead to less inclination to remain employed in one organization. The remaining five indicators of personal characteristics were also found to be statistically significant predictors of intention to remain employed. However,

understanding personal characteristics that predict intention to remain employed does not lead to identification of strategies to promote stronger nurse intention to remain employed because these characteristics usually are not easily modified.

Organizational commitment, measured as the number of years of employment in the current hospital, was a statistically significant and strong predictor of intention to remain employed. Nurses demonstrate their organizational commitment by remaining employed in their hospitals rather than choosing to take employment with another organization. It is, therefore, in the best interest of hospitals to develop and implement strategies that support nurse organizational commitment. Building organizational commitment can be facilitated in a variety of ways such as by hospitals consistently abiding by and demonstrating humanitarian values such as fairness, moral integrity, and courtesy; by promoting job security that may include avoiding nurse lay-offs in situations of perceived over-supply; by establishing clear organizational communication systems that promote organizational; and by maximizing employee involvement in decision making (McShane 2004).

Overall job satisfaction was one of three strongest predictors of nurse intention to remain employed, similar to previous research findings (Boyle *et al.* 1999, Shader *et al.* 2001, Larrabee *et al.* 2003, Sourdif 2004). As well, satisfaction in particular job satisfaction dimensions were also found to be predictors of intention to remain employed. Satisfaction with praise and recognition, with co-worker relationships and with social interaction opportunities were found to be predictors of intention to remain employed. Perhaps the most important strategies strengthening nurse intention to remain employed are those that promote job satisfaction. Although not all components of job satisfaction were found to be statistically significant determinants of nurse intention to remain employed, each component of job satisfaction contributes to overall job satisfaction and should, therefore, not be ignored as foundations for strategy development to strengthen intention to remain employed. Priority should be placed on implementation of strategies that promote satisfaction in the areas of praise and recognition, relationships with co-workers, and with social interaction opportunities. For example, strategies such as establishing recognition programmes that promote praise and

recognition of nurse contributions within organizations will lead to increased intention to remain employed. Programmes such as clinical ladder systems, scholarships, awards, and appreciation events are examples of nurse recognition programmes.

Our findings support the importance of effective co-worker relationships in promoting nurse intention to remain employed. Interdisciplinary team-building strategies may be implemented to create opportunities for work group members to learn to relate effectively with each other according to established group norms. Deliberately creating and supporting situations for work group members to relate together in social situations such as departmental celebrations may promote satisfaction with interaction opportunities. Strategies that promote satisfaction in other job satisfaction components should be implemented because of their contribution to improving overall job satisfaction. For example, employers may promote higher job satisfaction by incorporating generous pay and benefits, by ensuring fair scheduling practices, and by maximizing nurse control and autonomy.

The finding that nurse-reported level of teamwork, an indicator of work group cohesion and collaboration, is a predictor of intention to remain employed is similar to those of Shader *et al.* (2001), who previously reported that work group cohesion contributed to nurse intention to remain employed. Strategies to promote satisfaction with co-workers and interaction opportunities will also strengthen work group cohesion and collaboration. Work group cohesiveness may also be strengthened when team members are clearly focused on accomplishment of a shared vision, common goals and objectives (McShane 2004). Therefore, building consensus about work group goals and objectives and providing leadership that inspires this shared vision may lead to increased intention to remain employed.

Evidence was not found to support hypothesized direct effects of burnout or manager ability and support on nurse intention to remain employed. This finding is contrary to that of Boyle *et al.* (1999), who found that managers' abilities were statistically significant predictors of intention to remain employed. However, there is evidence that both burnout and manager ability and support directly affect job satisfaction (Chan & Morrison 2000, Shader *et al.* 2001, Aiken *et al.* 2002, Larrabee *et al.* 2003). In our study, Pearson correlation coefficients between burnout and overall job satisfaction, as well as the components of job satisfaction measured by the MMSS subscales, ranged from -0.23 to -0.50 (all probabilities <0.001). Yet, the correlation between burnout and intention to remain employed was considerably lower at -0.17 . It is likely that the effect of emotional exhaustion on intention to remain employed is mediated through its direct inverse effect on job satisfaction. This same argument may apply to the effect of manager ability and support. Pearson correlation coefficients between nurse manager ability and support and overall job satisfaction, as well as the components of job satisfaction measured by the MMSS subscales, ranged from 0.22 to 0.72 (all probabilities <0.001). The correlation between nurse manager ability and nurse intention to remain employed was considerably lower at 0.13 . It is likely that the effect of nurse manager ability and support on intention to remain employed is mediated through its direct positive effect on job satisfaction. This is compelling evidence for revision of the originally proposed model to remove nurse

burnout and nurse manager ability from the model as having direct effects on nurse intention to remain employed, and to revise the model to include these two variables as having direct effects on job satisfaction that then has direct effects on nurse intention to remain employed. Further research is needed to test this revised *Determinants of Nurse Intention to Remain Employed* theoretical model (Figure 2).

Study limitations

There were a number of limitations in this study, including credible threats to both internal and external validity of study findings. In particular, history may be a threat to internal validity. This nurse survey was conducted at approximately the same time as the outbreak of Sudden Acute Respiratory Syndrome (SARS) in Toronto, Canada hospitals. It is possible that the SARS experience could have acted as an independent variable that might also have affected nurse intention to remain employed (Polit & Beck 2004). However, an indicator of this potential variable was not included in analytic models.

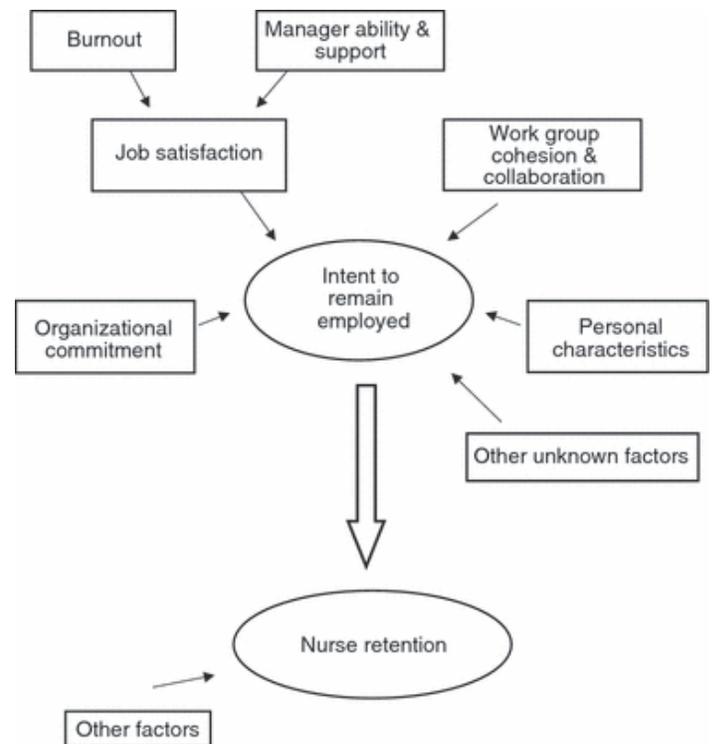


Figure 2 Revised model: determinants of nurse intention to remain employed

The accessible population for this study was nurses working in acute care hospitals in Ontario, Canada. The same findings may not have been obtained with a sample of nurses in another setting or even at a different time. Therefore, generalization of these findings to nurses working in different locations, in different practice settings, and at different points of time should be undertaken only with caution (Polit & Beck 2004).

Multiple regression data analysis procedures used in this study also pose limitations on study findings. Multiple regression examines only direct effects of predictors on the outcome intention to remain employed and does not necessarily account

What is already known about this topic

- Current and future shortages in the nursing workforce make it prudent for healthcare organizations to make every effort to retain their nursing workforce members as long as possible.
- Job satisfaction has consistently been found to be a predictor of nurse intention to remain employed.
- Personal characteristics of nurses have been found to be predictors of intention to remain employed.

What this paper adds

- Four categories of determinants were found to predict 34% of variance in nurse intention to remain employed: job satisfaction, work group cohesion and collaboration, nurse organizational commitment and personal characteristics of nurses.
- Nurse burnout and nurse manager ability and support are predictors of job satisfaction and have an indirect effect on intention to remain employed.
- Strategies that may strengthen job satisfaction, organizational commitment, and work group cohesion and collaboration include employment practices that reflect moral integrity and fairness, incorporate clear communication systems, maximize employee involvement in decision-making, promote praise and recognition, and establish a shared vision and goals.

for the impact of correlations among predictors (Tabachnick & Fidell 2001). Therefore, potential indirect effects of predictors on intention to remain employed that are mediated through other predictors are not considered.

Explaining 34% of variation in the outcome under investigation, such as found in this study, is a respectable amount of explanation but indicates we do not have a broad and complete understanding of what contributes to nurse intention to remain employed. Because 66% of the variance remains unexplained, we conclude that there are unmeasured and potentially unknown predictors of nurse intention to remain employed in hospitals. More complete understanding of these determinants requires further exploration and discovery of those predictors that explain the large portion of unexplained.

For these reasons, further study is recommended that explores these and other predictors of nurse intention to remain employed. Use of analytic techniques such as structural equation modelling should be incorporated that account for correlations among predictors and that can estimate indirect effects of predictors on other predictor variables that taken together affect the outcome of nurse intention to remain employed.

Conclusion

Although the originally proposed model *Determinants of Nurse Intention to Remain Employed* hypothesized six categories of predictors of intention to remain employed, only four of these categories of predictors were significant determinants of nurse intention to remain employed: job satisfaction, personal characteristics of nurses, work group cohesion and collaboration,

and organizational commitment of nurses. There is strong evidence that the other two categories of predictors, nurse burnout and nurse manager ability and support, are predictors of job satisfaction and, therefore, have indirect effects on intention to remain employed that are mediated by job satisfaction. Further research is needed to explore other potential predictors of nurse intention to remain employed and to test the revised model resulting from this study. Strategies have been suggested to strengthen the predictors of intention to remain employed, particularly those that promote job satisfaction and its specific components, promote more cohesive and collaborative work groups, and may strengthen nurse organizational commitment.

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Author contributions

AT and LC were responsible for the study conception and design and drafting of the manuscript. AT and LC performed the data collection and data analysis. AT obtained funding and provided statistical expertise. AT and LC made critical revisions to the paper. AT supervised the study.

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