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Effective strategies for nurse retention in acute hospitals: A mixed method study

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ABSTRACT

Background: The realization of an organizational context that succeeds to retain nurses within their job is one of the most effective strategies of dealing with nursing shortages.
Objectives: First, to examine the impact of nursing practice environments, nurse staffing and nurse education on nurse reported intention to leave the hospital. Second, to provide understanding of which best practices in the organization of nursing care are being implemented to provide sound practice environments and to retain nurses.
Methods: 3186 bedside nurses of 272 randomly selected nursing units in 56 Belgian acute hospitals were surveyed. A GEE logistic regression analysis was used to estimate the impact of organization of nursing care on nurse reported intention to leave controlling for differences in region (Walloon, Flanders, and Brussels), hospital characteristics (technology level, teaching status, and size) and nurse characteristics (experience, gender, and age). For the second objective, in-depth semi-structured interviews with the chief nursing officers of the three high and three low performing hospitals on reported intention to leave were held.
Results: 29.5% of Belgian nurses have an intention-to-leave the hospital. Patient-to-nurse staffing ratios and nurse work environments are significantly ($p < 0.05$) associated with intention-to-leave. Interviews with Chief Nurse Officers revealed that high performing hospitals showing low nurse retention were – in contrast to the low performing hospitals – characterized by a flat organization structure with a participative management style, structured education programs and career opportunities for nurses.
Conclusion: This study, together with the international body of evidence, suggests that investing in improved nursing work environments is a key strategy to retain nurses.

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What is already known about the topic?

- A great number of cross-sectional nurse survey's have illustrated relationships between supportive work environments and lower number of nurses reporting that they intend to leave the hospital.

What this paper adds

- This study re-emphasizes the important relationship between nurse staffing, the quality of the nurse practice environment and intention-to-leave the hospital.
- In-depth interviews with Chief Nurse Officers provide support for the empirical finding that the nursing work environment affects turnover intention.
- Hospitals with lower intention-to-leave rates implicitly adopt policy components recommended by the magnet hospital program. The elements of the Magnet recognition program can be considered as an effective intervention to improve the quality of the work environment and to lower nursing staff turnover.

1. Background

There is a preponderance of evidence suggesting that adequate nursing care is an important factor in the delivery of quality inpatient care (Kane et al., 2007; Rafferty et al., 2007; Van den Heede et al., 2009a,b). On the other hand, nurses and general policymakers repeatedly express their concerns about the recurring cycles of shortages of qualified nurses. The European commission, for example, have estimated that there will be a shortage of 590,000 nurses by the year 2020 in the European Union (Sermeus and Bruyneel, 2010). Shortages have been related to both increased demand and decreased supply of nurses (Simoens et al., 2005). The continuously rising and changing demand for health services, due to ageing populations, technological advances and higher patient expectations, requires a larger and more skilled nursing workforce. The nursing profession itself is challenged by an ageing workforce, and difficulties with recruitment of young, motivated people and retention of existing nursing personnel (Buerhaus et al., 2007). This trend implies that, in the future, sicker patients on average will receive care from fewer nurses (Birch et al., 2003). This creates a sense of urgency forcing policymakers, healthcare administrators and managers to undertake actions. Several possible strategies (e.g. investing in additional educational facilities, international recruitment) have been formulated to prevent a lack of active nurses (Hasselhorn et al., 2006). In any case, the answer to this policy issue will be multifaceted.

A promising strategy is the realization of an organizational context that succeeds to retain nurses within their job. The American Nurses Credentialing Centre, promotes with the Magnet Recognition Program best practices to provide sound practice environments that ultimately favour nurse attraction and retention (American Nurses Credentialing Center, 2008; McClure et al., 1983). The recently updated conceptual model from the American Nurses Credentialing Centre re-grouped the 14 original forces of magnetism (i.e. quality of nursing leadership; organizational structure; management style; personnel policies and programs; professional models of care; quality of care; quality improvement; consultation and resources; autonomy; community and the healthcare organization; nurses as teachers; image of nursing; interdisciplinary relationships; professional development) in five key components (i.e. transformational leadership; structural empowerment; exemplary professional practice; innovations and improvements; and empirical outcomes) (American Nurses Credentialing Center, 2008).

The research that supports the links between the different model components of the 'Magnet concept' and nurse retention is mostly focussed on the association with one or several – but to our best knowledge never all – magnet forces. The mainstream of research in this field uses one of the variants of the 'Nursing Work Index (NWI)' (or alternative tools) to measure the nursing practice environment (Aiken and Patrician, 2000; Lake, 2002). Numerous studies all over the world using NWI-derivates or other instruments pointed out that factors of the nursing work environment are related with nurse well-being (e.g. burnout and the intention of nurses to leave their current position or the profession) (Estryn-Béhar et al., 2007; Gunnarsdóttir et al., 2009; Hart, 2005; Lavoie-Tremblay et al., 2008; Lynn and Redman, 2005; Scott et al., 2008; Sofield and Salmond, 2003; Stone et al., 2006, 2007; Tourangeau and Cranley, 2006; Aiken et al., 2011).

The study discussed here was part of a larger project called 'RN4CAST – Registered Nurse Forecasting in Europe' that studies the dynamics between nursing system delivery strategies on the one hand, and nurse wellbeing and quality and safety of patient care on the other hand (Sermeus et al., 2011). The objectives of the study discussed in this paper are twofold:

- to examine the association of nursing practice environments, nurse staffing and nurse education profile to nurse reported intention to leave the hospital;
- to identify best practices for positive nurse practice environments and for nurse retention being implemented in acute care hospitals.

2. Methods

2.1. Study design

In the RN4CAST study a cross sectional design was used in 12 European countries (Belgium, England, Finland, Germany, Greece, Ireland, the Netherlands, Norway, Poland, Spain, Sweden, and Switzerland). Data were gathered via four data sources (nurse, patient and organizational surveys and via routinely collected hospital discharge data). The design of the RN4CAST-study is described in detail by Sermeus et al. (2011). The study presented here makes use of a sequential mixed method research design (Ostlund et al., 2010). First, quantitative data from the Belgian branch of the nurse and organizational survey are used to determine the association between the nursing practice environment, staffing and educational profile and intention-to-leave the hospital.

Second, qualitative, in-depth interviews with chief nurse officers in a selection of hospitals are employed to provide insight into the underlying nurse workforce strategies that appear to be related to success in nurse retention. The cross-sectional data collection took place from October 2009 to January 2010. The in-depth interviews were held between April and May 2010.

2.2. Ethical approval

Ethical approval was obtained from the ethical committees of all participating hospitals and the central ethical committee of the University Hospitals Leuven (Approval No. ML 5879).

2.3. Study sample

All 104 Belgian acute hospitals were invited to participate in the study. Fifty-six hospitals (37 Flemish, 15 Walloon, and 4 Brussels Capital hospitals) confirmed participation, representing 67 hospital sites. Subsequently, a master list of all adult general surgical, internal medicine and mixed surgical-medical units was requested from the participating hospitals. Depending on hospital size, four (<500 beds) to six nursing units (>500 beds) were randomly selected in each hospital. In four hospitals, only two to three nursing units were included as no more units were available. Overall, 272 nursing units participated in the study. Inclusion criteria specified that individual respondents were to be registered nurses employed in direct patient care for the majority of their work time. Nurses on maternity leave, extended sick leave or study leave were excluded from participation.

The consecutive qualitative part of this study was conducted in a selection of six hospitals. Due to language restrictions (native language of the interviewer was Dutch) only Flemish hospitals were eligible for participation. All 37 Flemish hospitals were ranked based on the percentage of nurses' reports on the intention to leave the hospital. From this list the three hospitals with the highest proportion of nurses reporting an intention to leave the hospital (low performing hospitals) and the three hospitals with the lowest proportion of nurses intending to leave (high performing hospitals) were selected. Cases at both ends of the continuum, were selected to obtain contrasting information on the presence or absence of best practices to provide sound nursing practice environments.

2.4. Instruments and measures

The two RN4CAST data sources used for this study included the nurse survey and the organizational profile survey. The nurse survey measures nurses' job experiences (e.g. job satisfaction, burnout, and intention to leave) and allows the creation of aggregated hospital level measures of organizational characteristics (i.e. staffing and education profile; nursing work environment). Drawing on previous experience of the 'International Hospital Outcome Study' (Aiken et al., 2001; Clarke and Aiken, 2008), wherever possible, existing instruments were used. The English core battery of survey instruments was translated into Dutch, French, and German using translation-back-translation method. The quality of each translated instrument was assessed by a panel of 10 bilingual experts to obtain Content Validity Indexes for each item separately (I-CVI) and for the entire scale (S-CVI). The results were favourable, with the I-CVI ranging from 0.70 to 1.00 across the three translations and S-CVIs of 0.85 for the Dutch translation, 0.77 for the French translation and 0.94 for the German translation (Squires et al., 2011).

The primary outcome examined in this study was "intention to leave the hospital". This variable is measured by the yes or no question 'If possible, would you leave your current hospital within the next year as a result of job dissatisfaction?'. Nurses' intention to leave has been found to predict the actual decision to leave the profession (Lake, 1998; Moshe et al., 1995; Lane et al., 1988; Flinkman et al., 2010). Nurses with an intention-to-leave the hospital were, asked to indicate if they were planning to stay in nursing (other hospital or healthcare setting outside the hospital) or if they were planning to leave the profession (Sermeus et al., 2011).

The explanatory variables in our study include staffing levels (number and educational level) and the nursing work environment.

Staffing levels were measured via patient-to-nurse ratios. Nurses were asked to report for their last shift how many nurses and patients were present on their nursing unit. These nurse reported ratios were then aggregated at the hospital level using the method validated by Aiken and colleagues (2002).

The education profile was measured as the hospital proportion of individual nurses reporting they hold a bachelor degree in nursing (three year university college education) using the method validated by Aiken and colleagues (2003). In Belgium two educational pathways exist to enter the nursing profession: diploma level and bachelor level. Both degrees meet the criteria to practice nursing as a registered nurse and limited differentiation between those two types of nurses is made in the execution of one's professional duties (Van den Heede et al., 2009a,b).

The Nursing work environment is measured by the Practice Environment Scale of the Nursing Work Index or PES-NWI (Lake, 2002). This instrument is endorsed by the U.S. National Quality Forum (NQF) (National Quality Forum, 2004) and has been widely used in international research (Warshawsky and Havens, 2011; Aiken et al., 2011). It is a forced-choice Likert type scale anchored by 'strongly disagree' (1) to 'strongly agree' (4) and includes 32 positively phrased items that allow the measurement of five nursing work environment factors (i.e. staffing and resources adequacy, hospital and unit level nurse management abilities and leadership, nurse–physician relations, nursing foundations for quality of care, and nurse participation in hospital affairs). The reliability (i.e. Cronbach's alpha coefficients) of the dimensions varies from 0.71 to 0.84 (Lake, 2002). Analogue to international studies (Kutney-Lee et al., 2009; Lake and Friese, 2006) the items of four out of five PES-NWI factors were used to calculate a three-category hospital composite measure

differentiating hospitals with lowest quartile (poor work environment), middle 50% (mixed work environment), and highest quartile nurse practice environment scores (better work environment). The subscale of staffing and resource adequacy was omitted from this composite score due to overlap with the direct measure of nurse staffing.

Three types of variables were used to control for confounders: demographic characteristics of the respondents (age, gender, and years worked as a nurse); organizational profile characteristics (bed size, teaching status, and technology level); and the Region (Wallonia, Brussels-Capital, and Flanders) in which the questionnaires were distributed.

2.5. Data collection procedure

The research team explained the context of the study and distributed the questionnaires at all selected nursing units ($n = 272$) of the participating hospitals. Nurses were asked to return their questionnaire within one month from the date of distribution in sealed envelopes in a secured box on the unit. To maximize response rates, all nursing units received posters explaining the study prior to the on-site visits. Also, feedback of response rates to chief nursing officers with benchmarks of other hospitals was given during data collection. The nurse survey response rate was 72%, ranging from 59% to 90% between hospitals. Research by Kramer et al. (2009) documents that a 40% response rate is adequate to differentiate nurse work environments at the unit level.

2.6. In-depth interviews procedure

Prior to the nurse executive interviews, all six selected hospitals received detailed feedback on the results. Hospital specific feedback reports were made by comparing the results of the hospital to the overall Belgian results. The descriptive results allowed hospitals to position themselves in the upper or lower quartiles for all dimensions of the PES-NWI and for nurse wellbeing (e.g. burnout, job satisfaction). Ridit analysis (Bross, 1958) and fingerprint visualization (Sermeus and Delesie, 1996) of PES-NWI factors were used to graphically present the hospital's position in the Belgian sample (Figs. 1 and 2).

The interview between the chief nursing officer and one member of the research team was structured on the basis of these reports. First, the results of the nurses' perceptions of their work environment were discussed. Next, the topics of nurse intention to leave, job dissatisfaction and burnout were brought up. In a next step, the results on nurse-perceived quality of care in the hospital were discussed. By the end of the interview, chief nursing officers were free to expand on best practices they had implemented to support professional nursing practice roles.

The semi-structured interviews lasted about 2 h and were tape-recorded. In addition, hand-written field notes were taken.

2.7. Data analysis

A two level data structure (i.e. hospitals and nurses) was used in the analysis. The constructs of organization of

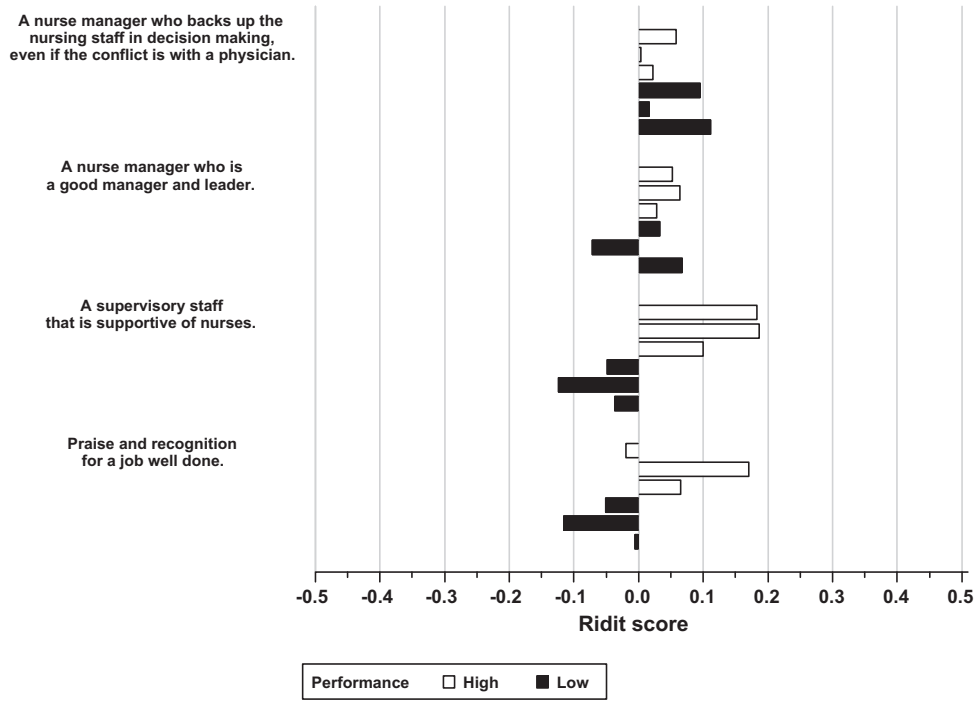

Fig. 1. Satisfaction with management. "High": high performing hospitals (hospitals with low intention-to-leave rates), "Low": low performing hospitals (hospitals with high intention-to-leave rates). The figure illustrates RIDIT-scores ranging from −0.5 to +0.5 with '0' as reference point. (This value is calculated per variable based on the distribution of responses from all nurses in the sample over the different response categories.) For each question the RIDIT-scores of the 3 low performing and 3 high performing hospitals are shown by black and white bars, respectively.

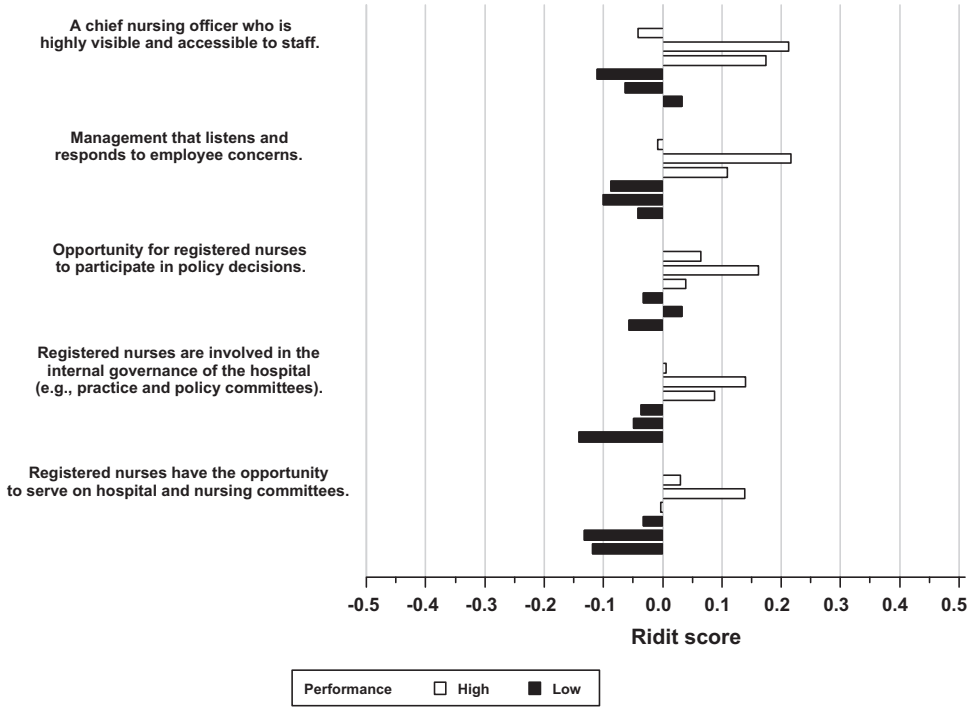

Fig. 2. Structural empowerment. "High": high performing hospitals (hospitals with low intention-to-leave rates), "Low": low performing hospitals (hospitals with high intention-to-leave rates). The figure illustrates RIDIT-scores ranging from −0.5 to +0.5 with '0' as reference point. (This value is calculated per variable based on the distribution of responses from all nurses in the sample over the different response categories.) For each question the RIDIT-scores of the 3 low performing and 3 high performing hospitals are shown by black and white bars, respectively.

nursing care (i.e. patient-to-nurse ratio; proportion of nurses with a bachelor's degree; nursing work environment categorized as poor; mixed; and better) and the hospital profile characteristics (i.e. bed size; technology level; and teaching status) were aggregated at the hospital level, whereas the outcome measure "intention to leave the hospital" and nurse demographics were measured at the individual nurse level. Logistic regression analyses were used to investigate the association between the organizational characteristics and intention-to-leave the hospital. All logistic regression models were estimated by using a Generalized Estimation Equation (GEE) approach to adjust standard errors of the parameter estimates for the clustering of nurses within hospitals.

Since explanatory and response variables come from assessment of the same nurses we performed split-sample analyses to test the validity of our findings. A stratified random sample including half of the participating nurses from each hospital was therefore used to recreate hospital measures of our explanatory variables, whereas the other half of the sample was used to measure intention to leave the hospital. Split sample analyses were estimated by using GEE regression models repeatedly five times. Results did not differ from our full sample analysis. All quantitative analyses were conducted using SAS version 9.2 (SAS Institute, 2001).

For the analysis of the interviews, all PES-NWI items were mapped to the five Magnet Hospital components. The mapping was performed intuitively by one researcher (MF) and validated by two other researchers (K.V. and L.B.). In case of disagreement a face-to-face discussion was held until consensus was reached. The transcripts of the full chief nursing officer interviews were analyzed by the primary interviewer labelling all parts of the interview using the five Magnet Hospital model components as a guiding framework. To reduce biased interpretation, a second member of the research team (L.B.) then independently analyzed and interpreted the interviews based on the audio records. The complementary mix of skills of these two researchers (one had clinical/managerial skills, the other had research methodology skills) contributed to trustworthiness of the findings. As was done during the interviews, the quantitative data (i.e. extracts from the feedback reports based on the nurse survey) are mixed with text fragments resulting from the in-depth interviews.

3. Results

3.1. Descriptive results

Of the 56 hospitals selected for the survey, 52 were non-academic general acute hospitals and 4 were academic hospitals; and 37 were located in Flanders, 4 in the Brussels region and 15 in Wallonia. The median bed size was 446 (IQR = 269). In total, the sample included 3186 nurses. The median age of nurses in the sample was 38 years (IQR = 19) and the median years of experience as a nurse was 15 years (IQR = 19). Most (90%) of nurses surveyed were female.

Table 1
Variation between hospitals for hospital characteristics and intention-to-leave-the-hospital.

	Mean	Min	P25	Median	P75	Max
Patient-to-nurse ratio	10.40 (1.71)	7.64	9.02	10.11	11.66	14.97
Educational level	55.58% (14.62%)	25.71%	46.09%	53.66%	68.33%	86.49%
PES-NWI composite score	2.56 (0.14)	2.28	2.48	2.56	2.65	2.88
Intention-to-leave-the-hospital	29.50% (10.96%)	13.11%	21.18%	28.57%	37.48	55.88%

Table 1 presents summary statistics for the explanatory variables aggregated at the hospital level. The median patient-to-nurse ratio's in the sampled hospitals was 10.1 (IQR = 2.6) and 56% of the RNs working in these hospitals had a bachelor's degree (median = 53.7; IQR = 22.2). The mean PES-NWI score was 2.6, ranging from 2.3 to 2.9.

Overall, 29.5% of the surveyed nurses reported the intention to leave their current hospital within the next twelve months due to job dissatisfaction. The intention to leave the hospital ranged from 13% to 56% (median = 29; IQR = 25). Of those nurses that intended to leave the hospital, 29.7% plan to leave the profession. The remainder (70.4%) plan to stay in nursing but want to be employed in another hospital (40%), in a healthcare setting outside the hospital (27.9%) or was undecided (2.4%).

The 6 Flemish hospitals selected for the in-depth interviews included three high performing hospitals (intention to leave the hospital: Hos1: 13.1%; Hos2: 13.5%; and Hos3: 13.2%) and three low performing hospitals (Hos4: 48.9%; Hos5: 36.4%; and Hos6: 38.0%). The three low performing hospitals represented 130 nurses (4.1% of total sample) working in 12 nursing units. The three high performing hospitals represented 154 nurses (4.8% of total sample) working in 11 nursing units. All six hospitals had a response rate over 75%.

3.2. Effect of organizational characteristics on intention to leave the hospital

Table 2 presents the estimates resulting from the multilevel logistic regression model used to study how intention to leave the hospital was affected by variation in different organizational characteristics. Hospitals with on average a greater number of patients assigned to one nurse were associated with higher rates of intention to leave the hospital ($p < 0.03$). We also observed a significant association ($p < 0.001$) between the quality of the nursing work environment and intention to leave the hospital. The proportion of nurses with a bachelor's degree had no significant impact on intention-to-leave the hospital.

Table 2
Generalized Estimation Models of the association between nurse reported organization of care and intention to leave the hospital within the next twelve months as a result of job dissatisfaction.

	Odss ratio (95% CI)	*p*-value
Control variables		
Nurse characteristics		
Age	0.98 (0.95–1.00)	<0.05
Gender	1.16 (0.91–1.48)	0.2202
Years worked as a nurse	1.00 (0.98–1.02)	0.7672
Organizational profile		
Bed size	1.05 (1.02–1.07)	<0.05
Teaching status	0.92 (0.64–1.34)	0.6752
Technology level	1.11 (0.90–1.37)	0.3234
Region		
Wallonia vs. Flanders	1.69 (1.20–2.40)	<0.05
Brussels vs. Flanders	1.53 (1.22–1.94)	<0.05
Organization of nursing care		
Practice environment quality	0.69 (0.61–0.78)	<0.0001
Patient-to-nurse ratio	1.08 (1.01–1.16)	<0.05
Nurse education profile	0.99 (0.98–1.00)	0.1084

3.3. In-depth interviews in 3 high and low performing Flemish hospitals

In each organization we conducted semi-structured interviews with the Chief Nurse Officer. The results of these interviews were centred on five themes: (1) transformational leadership; (2) structural empowerment; (3) exemplary professional practice; (4) innovations and improvements; and (5) empirical outcomes (American Nurses Credentialing Center, 2008).

3.3.1. Transformational leadership

In Fig. 1 it is shown that high performing hospitals score better (compared to the reference population of 56 hospitals) on the items from the RN4CAST survey that correspond with transformational leadership compared to low performing hospitals.

"High" performing hospitals were characterized by transformational leadership and participatory management styles. A CNO of a high performing hospital explains "I do each week a round on the nursing units. I especially want to see the nurses and listen to them. I meet ward managers on other moments (CNO 1)". A CNO of another high performing hospital says "I used to do a daily round on all my nursing units. These days I do this more focused...sometimes a round only takes 30 min, sometimes it takes more, depending on the questions I get... (CNO 2)".

A CNO of a low performing hospital: "The middle management and I are doing daily rounds on the nursing units. We try to be accessible. We try to react as soon as possible (CNO 6)". By choosing the words "we try" and the intonation used, the CNO implicitly acknowledged that he was questioning the actual accessibility of the higher and middle management.

The CNOs of high performing hospitals appeared to be highly involved with their staff. Their responses during the interviews were always based on what they have heard from nurses directly: "I hear that...", "the nurses tell me that...". They had first hand information from bedside care nurses. The words they used like, for instance "*my* nurses say that..." and "*we* assure that...", express respect for their staff. In contrast, CNOs of low performing hospitals

used phrases like "what I hear from the middle management is..." or "I think that *one* means...".

3.3.2. Structural empowerment

As shown in Fig. 2, nurses in high performing hospitals report more involvement in hospital affairs than nurses working in low performing hospitals. From the interviews, we learned that high performing hospitals have a flat management structure.

During an interview a CNO of a high performing hospital says: "We find each other on every corner of the hospital; we are very soon up-to-date on what is happening within the hospital (CNO 2)". Another CNO participates each year, together with the Chief Executive Officer, on at least 1 team meeting per nursing unit. The CNO of this hospital said, "we expect from nurses that they express their concerns and questions. They know this (CNO 1)".

From interviews with CNOs from low performing hospitals we learned that CNOs and their middle management prefer to participate themselves on hospital committees: "Here, there are no bedside-nurses represented in committees or working groups... (CNO 6)"; "everyone operates at his own level. Bedside nurses are not involved in the strategic management of the hospital... (CNO 6)".

The items about staffing adequacy (e.g. Enough staff to get the work done) were rated consistently better in the high performing hospitals than the reference population (i.e. the 56 hospitals) (figure not shown). Nurses from low performing hospitals scored these items consistently lower than the reference population.

The CNOs of the high performing hospitals watch carefully that the scheduled patient-to-nurse ratios are met each day: "Nurses know always in advance how many nurses will be on their next shift... In case of absences, bank nurses are called in to replace them... (CNO 2)". From the interviews it is clear high performing hospitals have well established and reliable procedures for filling vacancies (e.g. strict selection criteria, no temporary agency staff) which is in clear contrast with the situation in low performing hospitals. A CNO from a low performing hospital, for instance, says that "they do not want to stop working with temporary agency staff in the future since these nurses work mainly in day shifts. As a consequence, the permanent staff nurses need to do more evening and night shifts (CNO 5)".

Also items assessing satisfaction with opportunities for career development and professional image are rated consistently better in high performing hospitals than the reference population (i.e. 56 hospitals). This is in contrast with low performing hospitals where nurses are less satisfied than the reference population (figure not shown).

Items from the RN4CAST nurse survey about salary, flexible work schedules, days off, sick days and educational leave did not differ between high and low performing hospitals.

3.3.3. Exemplary professional practice

The feedback report illustrates that all six selected hospitals preferred to organize nursing care with a "medical model" rather than a "nursing model". Nevertheless, more nurses in high performing hospitals (93%) compared to nurses in low performing hospitals (80%) were satisfied with the autonomy in their job. It was also shown that two high performing hospitals scored better on nurse–physician relation items compared to the reference population (i.e. 56 hospitals) whereas the four other hospitals have lower scores than the reference population (figures not shown, available on request). A CNO from one of the two high-performing hospitals reports, "Despite the medical model, we have good relationships with the doctors...the medical model is compensated by the culture... (CNO 2)". In this hospital, the medical heads of department have to develop, together with the nurse ward managers, a management plan for their department every three years.

In one of the low performing hospitals a CNO says that nurses have no say in the care or treatment of the patient: "Doctors consider working together with nurses as a time-consuming cost...nurses have to carry out what doctors ask... doctors see their autonomy as very important (CNO 5)".

3.3.4. Innovations and improvements

The satisfaction (i.e. satisfied or very satisfied) with lifelong learning opportunities is 89% and 66% in high and low performing hospitals, respectively. The interviews in the high performing hospitals illustrate that these hospitals have an active policy regarding lifelong learning. In a high performing hospital, for instance, the combination of working and studying is facilitated: "We are very flexible when staff wants to study...for instance, if they want to follow a Bridge program to upgrade their degree from diploma to bachelor level..., or if they want to obtain professional certificates... (CNO 3)"; "this policy is also clearly shown on our website".

A CNO of a low performing hospital does not stimulate lifelong learning, although budgets are made available by the Ministry of Public Health. He argues that lifelong learning activities keep nurses away from the bedside causing a higher workload for the remaining staff (CNO 4).

In addition, the high performing hospitals score, in general, better on preceptor programs for newly hired nurses than low performing hospitals (figure not shown). A CNO of a high performing hospital explains: "Newly hired nurses are not counted as full staff (they are scheduled on top of the normal staffing and scheduled together with their mentor) the first couple of weeks....Their first nights are scheduled after 6 months and always together with an experienced nurse (In Belgium many nursing units are staffed during the nights with only one registered nurse) (CNO 1)". A CNO of a low-performing hospital admits "We have a preceptor program...; however, in practice newly hired nurses have to perform like any other nurse on the team from the start... (CNO 5)".

3.3.5. Empirical outcomes

Nurses' perceptions of quality of care differ between high and low performing hospitals. 93% and 65% of the nurses report the quality of care in their hospital as good or excellent in high and low performing hospitals respectively. In addition, in high performing hospitals 95% of the nurses would recommend their hospital to family and friends when they are in need of care whereas in low

performing hospitals only 67% of the nurses responded in that way.

The feedback report showed a slightly better result for high performing hospitals on the item "nurses are clinically competent". A CNO of a high performing hospital explained that "nurses are modest, we do not use the word excellent (CNO 2)". Another CNO of the high performing group says that a good score on recommendation of the hospital to family and friends "indicates that nurses have great confidence in the organization and their own competency (CNO 3)". A CNO of another high-performing hospital adds "Quality improvement and patient safety is a big issue. . .nobody rated patient safety as excellent (result in feedback report). That's good. . .nurses have to stay alert and critical (CNO 1)". A CNO of a low performing hospital says "Patient safety is not the focus of attention; if problems arise they are covered up (CNO 5)".

4. Discussion

Managing turnover of nurses in hospitals is a critical strategy in conserving scarce human resources in nursing (Stordeur et al., 2006). In this study, which is part of a large European multi-country nursing workforce study, we investigated the relationship between different organizational characteristics and nurses' reported intention-to-leave the hospital in a sample of Belgian acute hospitals. The results show that nurse staffing and the quality of the nurse practice environment (i.e. managerial support of nursing care, good relations between doctors and nurses, nurse participation in decision-making and organizational priorities on quality of care) are significantly associated with intention-to-leave the hospital. This is in line with the international body of evidence (Aiken et al., 2011).

At the same time, our work differs from previous studies in the sense that we enriched the data by adding a qualitative interpretation component to the study. CNOs of hospitals from a selection of high and low performing hospitals on intention to leave were interviewed to better understand the differences illustrated by the nurse surveys. The mix of quantitative and qualitative results provides support for the empirical finding that the nursing work environment affects turnover intention. Hospitals with lower rates of intention-to-leave were, in general, characterized by a participative management style. Nurses in these organizations have diverse opportunities to participate in work groups, hospital committees and organizational innovation projects. From the interviews, we learned that 'managing by walking around' seems not to be the same as 'regularly visiting the nursing units'. It is more important that the leadership is highly accessible during these visits and that they act when staff members report problems to them. The findings from this study point out that providing an environment that allows for nurse autonomy in decision-making, participation in unit and hospital governance, and participative management may be the best strategy for retaining nurses in the hospital setting (O'Brien-Pallas et al., 2010; Gormley and Kennerly, 2011).

A recent review (Schalk et al., 2010) of (quasi-) experimental studies, however, concluded that little is known about the effectiveness of interventions aimed at improving the nursing work environment. The authors of this review recommend that, to advance the field, investigators use controlled studies with pre/post measures to evaluate interventions that are aimed at improving the nursing work environment (Schalk et al., 2010). This conclusion ignores the cumulative body of evidence based on rigorously designed cross sectional comparative studies showing that magnet hospitals have superior work environments and better outcome (including successful nurse retention). Kelly et al. (2011), for instance, studied nursing work environment and nurse outcomes in 567 US hospitals of which 46 were Magnet recognized by the American Nurses Credentialing Centre (ANCC). They found that magnet hospitals have significantly ($p < 0.001$) better work environments and that nurses in magnet hospitals are 18% less likely to be dissatisfied with their job and 13% less likely to report high burnout. In addition, studies in England (Aiken et al., 2008) and Russia/Armenia (Aiken and Poghosyan, 2009), using a before and after design, illustrate that work environments and outcomes improved over time when the ANCC Forces of Magnetism were implemented in a program to develop professional nursing practice.

As such, the program of magnet hospital accreditation can be considered as an effective strategy to retain nurses. Despite, the absence of hospitals in Belgium that formally went through a magnet accreditation process, this study learns that the high performing hospitals in Belgium (hospitals with low intention to leave rates) implicitly adopted the policy components recommended by the magnet hospital program.

Our study has important limitations. Firstly, not all magnet components are fully covered in the RN4CAST nurse survey. Therefore some important elements such as magnet force 11 'Community and the Hospital' were potentially not touched upon during the interviews. Secondly, the selection of hospitals for the qualitative data gathering was limited to six Flemish hospitals and therefore the generalization of our results is limited. Thirdly, the qualitative part of this study was limited in scope. Data triangulation (e.g. field observations management style, focus groups), member checking (e.g. interviewing bedside nurses) and using specific software to analyses the interviews could have contributed to the trustworthiness (Malterud, 2001).

5. Conclusion

We show that the nursing work environment and patient-to-nurse ratios influence nurses' intentions to leave their hospital jobs. The themes identified by Belgian CNOs of hospitals with low intention to leave rates mirror organizational features promoted by the Magnet Recognition program. The elements of the Magnet program can therefore be considered as a valuable strategy to improve the working lives of nurses.

Conflict of interest

None.

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Ethical approval

Ethical approval was obtained from the ethical committees of all participating hospitals and the central ethical committee of the University Hospitals Leuven (Approval No. ML 5879).

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