

DR ANNAMARIA BAGNASCO (Orcid ID : 0000-0002-9079-8460)

PROFESSOR ROGER WATSON (Orcid ID : 0000-0001-8040-7625)

Article type : Original Article

**TITLE: Push and pull factors of nurses' intention to leave**

**Short title: Intention to leave: Push & pull factors**

**Authors:**

Loredana SASSO, MEdSc, MSN, RN, FAAN, FFMRCISI  
Professor of Nursing  
Department of Health Sciences Department  
University of Genoa,  
Via Pastore, 1  
16132 Genoa, Italy  
Tel. 0039 010 3538519  
Email: l.sasso@unige.it

Annamaria BAGNASCO, PhD, MEdSc, MSN, RN  
Associate Professor of Nursing,  
Department of Health Sciences,  
University of Genoa,  
Via Pastore, 1  
16132 Genoa, Italy  
Tel. 0039 010 3538415  
Email: annamaria.bagnasco@unige.it

Gianluca CATANIA, PhD, MSN, RN  
Researcher & Senior Lecturer  
Department of Health Sciences,  
University of Genoa,  
Via Pastore, 1,  
I-16132 Genoa, Italy.  
Tel. 0039 010 3538513  
Email: gianluca.catania@edu.unige.it

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1111/jonm.12745

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Milko ZANINI, PhD, MSN, MSoc, RN  
Researcher & Senior Lecturer  
Department of Health Sciences,  
University of Genoa,  
Via Pastore 1,  
I-16132 Genoa, Italy.  
Tel. 0039 010 3538513  
Email: milko.zanini@edu.unige.i

Giuseppe ALEO, PhD, MA  
Research Fellow & Lecturer  
Department of Health Sciences,  
University of Genoa,  
Via Pastore, 1,  
I-16132 Genoa, Italy.  
Tel. 0039 010 3538513  
Email: giuseppe.aleo@edu.unige.it

Roger WATSON, Ph.D., RN, FRCN, FAAN  
Professor of Nursing  
Faculty of Health Sciences  
University of Hull  
Location: University of Hull, UK, HU6 7RX  
Mobile +447808480547  
Fax: +44 (0) 1482 464695  
Email: R.Watson@hull.ac.uk

and the RN4CAST@IT working group.

#### **Corresponding Author**

Annamaria BAGNASCO, PhD, MEdSc, MSN, RN  
Associate Professor of Nursing,  
Department of Health Sciences,  
University of Genoa,  
Via Pastore, 1  
16132 Genoa, Italy  
Tel. 0039 010 3538415  
Email: annamaria.bagnasco@unige.it

#### **Acknowledgements**

We thank the RN4CAST consortium, funded by European Union's Seventh Framework Programme (FP7/2007–2013, grant agreement no. 223468) to make the design and instruments available for replication in Italy. We thank all the nurses and nursing directors who participated in this study as local facilitators.

We also thank the Liguria Regional Government, NurSind, and Associazione Nazionale Infermieri Medicina Ospedaliera (ANIMO) for funding this study.

### **Author contributions:**

Study conception or design: AB, MZ, GC, LS

Data collection: AB, MZ, GC,

Data analysis and interpretation: RW, GC, MZ

Study supervision: AB, RW, LS

Manuscript writing: RW, GC, GA,

Critical revisions for important intellectual content: AB, RW, GC, GA, LS

Final approval: All authors

### **Funding**

This study was funded by the Liguria Regional Government, NurSind, and Associazione Nazionale Infermieri Medicina Ospedaliera (ANIMO).

### **Conflict of Interest**

The authors declare that there is no conflict of interest.

### **Ethics**

The study received ethical approval by the Liguria Regional ethics committee (#028REG2015).

## **ABSTRACT**

### **Aim**

Expand knowledge about the predictive factors of nurses' intention to leave their job, and consequently to turnover

### **Background**

Nurse turnover is costly and negatively influences quality of care. Understanding the association between intention to leave and modifiable features of hospital organization may inform strategies to reduce turnover.

## **Methods**

A cross-sectional survey of 3667 medical and surgical nurses was conducted in Italy. Measures included intention to leave; work environment; burnout; job satisfaction and missed care using the RN4CAST instruments. Descriptive, logistic regression analysis was used.

## **Results**

Due to job dissatisfaction, 35.5% of the nurses intended to leave their current job, and of these, 33.1% the nursing profession. Push factors included: understaffing, emotional exhaustion, poor patient safety, performing non-nursing care, being male. Pull factors included: positive perception of quality and safety of care, performing core nursing activities.

## **Conclusion**

The present study expands knowledge about the predictive factors of nurses' intention to leave their job, and consequently to turnover, which is one of today's major issues contributing to the shortage of nurses.

## **Implications for Nursing Management**

Nurses' intention to leave their job is the consequence of a poor work environment, characterized by factors such as understaffing and performance of non-nursing activities.

## **Keywords**

intention to leave; work environment; emotional exhaustion; non-nursing activities; job dissatisfaction

## INTRODUCTION

Worldwide, it is acknowledged that there is a nursing shortage (Buchan, Duffield, & Jordan, 2015; Both-Nwabuwe, Dijkstra, Klink, & Beersma, 2018), an issue which is exacerbated by current demographic and healthcare trends such as the ageing of the population, more people with chronic illnesses, and consequently increased healthcare needs (Auerbach & Staiger, 2017). Some of the main reasons that affect nursing shortage are the insufficient numbers of students that enter and completing nursing education (Wray, Aspland, Barrett, & Gardiner, 2017), the ageing of the nursing workforce (Kwok, Bates, & Ng, 2016), poor working environments, and the physical and mental stress of the job (Barrientos-Trigo, Vega-Vázquez, De Diego-Cordero, Badanta-Romero, & Porcel-Gálvez, 2018). Whatever the reason for the shortage of nurses – and this is likely to vary across the world – it is imperative that those nurses who do enter the nursing workforce are encouraged and actively supported to remain in the workforce (Flinkman & Salanterä 2015; Lavoie-Tremblay, Fernet, Lavigne, & Austin 2016).

Shortages of nurses also jeopardise the quality of patient care and safety (Aiken, et al., 2014), therefore it is necessary to identify and address the factors that encourage nurses' intention to stay in the profession, and those that lead to leaving the profession. Hayes et al. (2006) showed how intention to leave is strongly related to actual turnover. Therefore, nurse managers' better understanding of the push and pull factors that affect the intention to leave the profession could encourage the development of appropriate leadership styles and adjust workplace issues to improve nurses' job satisfaction, and prevent intention to leave and high turnover rates. The present study was designed to investigate the push and pull factors of nurses' intention to leave the profession in Italy and suggest possible nursing management strategies to address this issue.

## BACKGROUND

Registered Nurse Forecasting (RN4CAST), conducted in 2009 across 12 European countries and four States of the USA, was the first study involving Europe to explore the association between nurse staffing and its impact on patient outcomes. It showed how a better work environment and appropriate patient-to-nurse ratios ensure higher levels of quality and patient safety (Aiken et al., 2012). When a higher number of registered nurses with a bachelor's degree are present, this produces a positive impact in terms of improved levels of job satisfaction and patient outcomes and safety and lower levels of intention to leave and missed care (Aiken et al. 2017). In addition, the active involvement of nurses in decision-making processes and interprofessional teamwork has been found to be associated with a positive work environment (Aiken et al., 2014; Gkantaras et al., 2017; Van Bogaert et al., 2013).

Many studies have explored the association between 'intention to leave' and the factors mentioned above. Most of these studies found a positive correlation between work environment, emotional exhaustion (i.e. a component of burnout which leads to nurses being unable to cope emotionally with the demands of their job), and the intention to leave their job (Coomber & Barriball, 2007).

In 2015, Bobbio and Manganelli analysed the correlation between 'intention to leave' and work environment: trust in the institution and their leader was negatively correlated with emotional exhaustion and the cynicism factor of burnout, whereas it was positively correlated with professional efficacy. The characteristics of the microenvironment, combined with the leadership style of the nurse manager and the trust nurses have in their leaders, are of paramount importance for nurses' well-being, in terms of reduced levels of emotional exhaustion and 'intention to leave'. For instance, the implementation of a supportive leadership style (i.e. transformational leadership) can improve job satisfaction (Morsiani, Bagnasco, & Sasso 2017) and mitigate intention to leave, leading to high quality care (Lavoie-Tremblay, et al. 2016). Another aspect related to the quality of the work environment

that impacts on job satisfaction and increases the retention of nurses is the opportunity for career advancement and professional development (Leone et al., 2015).

In addition to a respectful and safe work environment, another important factor that impacts on nurses' intention to leave is nurse staffing and ensuring workload levels that allow nurses to balance their job with their private life (Lee, Dai, & McCreary, 2015). Instead, an understaffed work environment with heavy workloads leads to high levels of burnout, job dissatisfaction, and intention to leave the profession, with a negative impact also on the quality of patient care and safety (Nantsupawat et al., 2017).

Although nurses' intention to leave their hospital job has already been investigated in many countries, little is known about its prevalence in Italy and the factors related to it. The RN4CAST@IT study carried out in Italy (Sasso et al., 2017) offered Italian nurse managers the opportunity to investigate on a wide scale the factors related to nurses' intention to leave their job.

## **AIM OF THE STUDY**

The aim of this study was to expand current knowledge about the predictive factors of nurses' intention to leave their hospital job, and consequently to turnover.

## **METHODS**

### **Design**

This study was conducted using a multicentre cross-sectional observational study design according to the RN4CAST consortium study protocol (Sermeus et al., 2011); data were extracted from the main RN4CAST@IT study carried out in Italy (Sasso et al., 2017).

## **Sample and setting**

The study was conducted from September to December 2015. We included all staff nurses in 40 acute hospitals with at least 200 beds across 13 Italian regions. The hospitals were selected to represent Northern, Central, and Southern Italy. Overall, 292 units of general medicine and surgery, and 4135 professional nurses were included (Sasso et al., 2017).

## **Data collection**

Data were collected using validated Italian translations of the original RN4CAST Nurse Survey instruments. The following dimensions were investigated: intention to leave; work environment; burnout; job satisfaction, missed care (full details of the questionnaires are provided in Appendix 1). The demographic data of the Nurse Survey included: age; gender; number years since qualification; number of years worked as a nurse in Italy, in the same hospital and in their current role.

## **Ethical considerations**

The study received ethical approval by the local ethics committee. Before completing the survey, nurses signed the electronic informed consent form.

## **Data analysis**

Data analysis using IBM® SPSS® version 23 examined nurses' and work environment characteristics. Logistic regression analyses were performed to determine possible predictors of the intention to leave nurse's hospital job based on each of the explanatory variables. Logistic regression analysis with a binary qualitative dependent variable, which expresses the intention (1) or non-intention (0) of the nurses to leave was conducted.

Univariable and multivariable logistic regression models were performed to determine possible predictors of the *intention to leave* based on each of the explanatory variables.

The questionnaire used for nurse's survey consisting of several scales that for some elements investigated overlapping phenomena. Before running the analysis, the scale's total scores and sub-scores were calculated and, due to the nature of the tool used for data collection, some collinearity emerged between some of the scale scores and sub-scores of the univariate analysis to be included in the multivariate analysis. Some alternative models were then chosen to find a final model. Thus, all significant variables at the univariable step were considered for the multivariable model, and a stepwise forward approach was used to define the final multivariable model. For this reason, it was deemed appropriate to include only the following subsets in the multivariate model: scores of the Practice Environment Scale of the Nursing Work Index (PES-NWI) subscales, scores of the Maslach Burnout Inventory subscales: 'satisfaction'; 'sex'; and 'setting'.

The independent variables in the model corresponded to the items found in the Nurse Survey. Some of the variables were categorical with a score of 1 means strong disagreement with the statement, 2 = partially disagree, 3 partially agree, and 4 strongly agree; the remaining variables were binary with a 0-1 score.

## **RESULTS**

### **Descriptive findings**

Of the 4135 nurses invited, 3667 responded producing a response rate of 88.7%. The mean age of the respondents was 41.29 years (SD 8.7), the mean number of years worked as nurses was 15.8 years (SD 9.15) and 20.7% were males. The hospitals included in our study had a mean of 771 beds (min= 228; max= 2501). We conducted the analysis on 3542 nurses (96.6% of the nurses surveyed), excluding those with incomplete data.

Of the nurses surveyed, 35.5% (N=1300) declared that they intended to leave their current hospital within the next year due to job dissatisfaction. Of these, 33.1% (n=429 nurses) declared their intention to leave the profession, representing 11.7% of overall respondents.

### **Predictors of “Intention to leave”**

#### *Univariate and multivariate logistic regression*

The results of the analysis of association between nurse’s intention to leave their current hospital and predictive variables are shown in Table 1. For a full account of the odds ratios and respective 95% confidence intervals for the full range of variables (N=79) see Tables 2 and 3. The final multivariate logistic model analysis revealed that male gender, and emotional exhaustion were ‘push’ factors, predicting intention to leave hospital job. On the other hand, good relationships with medical staff, personal accomplishment and job satisfaction were ‘pull’ factors predicting the intention to remain in the current hospital.

### **DISCUSSION**

The Registered Nurse Forecasting study conducted in Italy (RN4CAST@IT) is the largest study ever conducted involving nurses in Italy (Sasso et al., 2016; Sasso et al., 2017). In this paper we presented the analysis of the factors that influence nurses’ intention to leave their current hospital.

More than one third of the nurses in this study intended to leave their job at the hospital within the next year. Of these, a third wanted to leave their profession altogether, representing 11.7% of the overall sample of nurse respondents. Previous reports showed that intention to leave the nursing profession varies from 4 to 54% (Flinkman, Leino-Kilpi, & Salanterä, 2010; Heinen et al., 2013). Our data revealed some ‘push and pull’ factors that influence nurses’ intention to leave.

## Push factors

A significant 'push' factor was nurses' burnout regarding emotional exhaustion and depersonalisation. These findings were consistent with the results of studies conducted on nurses working in various healthcare organisations that were very inclined to leave their job (Heinen et al., 2013; Jiang, Ma, Li, Huang, & Huang, 2017). Likewise, a push factor leading to intention to leave was related to nurses having a poor opinion of patient safety issues in their employment setting. Results revealed that when nurses felt that their mistakes were held against them, when relevant patient care information was often lost during shift changes or when transferring patients from one unit to another, they were more likely to consider leaving their job.

Staffing ratio and the overall number of nurses on the unit on last shift were more likely to leave their current hospital job but after adjusting for other variables in the multivariate risk factors analysis the difference was not statistically significant.

In addition, our results suggested that the correlation between nurses' intention to leave and the quality and safety of hospital care were comparable across Europe and in the US (Aiken et al., 2012). Precisely, nurses' likeliness to leave their job also increased when they indicated that patients encountered negative outcomes while they were hospitalised. Receiving wrong medication, experiencing pressure ulcers after admission, falls with injury, and healthcare-associated infections were significantly related to increased turnover intention. In line with other research, nurses were pushed to leave their job when they were not able to deliver nursing care according to the procedures they recognised as standard care (Carter & Tourangeau, 2012), when performing non-nursing care, such as answering the phone or clerical duties. In turn, nurses' awareness that the care they are providing is not producing positive outcomes for patients, in other words the perception of providing 'non-beneficial' treatment, has also been found to contribute to burnout and intention to leave (Schwarzkopf et al. 2017).

According to previous studies (Barron & West, 2005; Flinkman et al., 2010; Heinen et al., 2013), male nurses are more likely to leave their job. This may be explained by the gender differences that characterise the nursing population (De Oliveira, Griep, Portela, & Rotenberg, 2017). In particular, male nurses experience lower levels of job satisfaction than their female colleagues due to the resistance they encounter in achieving organisational positions or with colleagues (Borkowski, Amann, Song, & Weiss, 2007), or because of the unmet career advancement opportunities of men who chose the nursing profession, which is predominantly female (Williams, 1992). In addition, there are differences in the way the profession is perceived by male and female nurses. Male nurses tend to maintain a defensive attitude towards their values, professional and personal, and their professional choice, because the society identifies these as related to the female gender (Evans & Frank, 2003).

### **Pull factors**

Before adjusting for explanatory variables, nurses were significantly less likely to leave their current hospital job when they were satisfied with all dimensions of the work environment including staffing adequacy, nurse-physician relationship, leadership, quality of care, participation in hospital affairs compared nurses who were dissatisfied with those dimensions. After adjusting for explanatory variables, the odds of intention to leave remained significantly reduced when nurses were satisfied with nurse-physician relationship, leadership, and participation in hospital affairs. Overall, significant pull factors were good relationships with medical staff, leadership, participation in hospital affairs, personal accomplishment and job satisfaction. This is entirely congruent with, for example, work reported above by Lee et al. (2015) who showed that where these things were poor, as in poor staff relationships and poor care for patients (presumably a proxy for job satisfaction and accomplishment) nurses wanted to leave. Similarly, Nantsupawat et al. (2017) and Schwarzkopf et al. (2017) who both studied burnout, found that high levels of burnout –

associated with low sense of accomplishment – predict intention to leave. These findings confirm and expand knowledge about factors on which nurse managers may recognize the existence of practice environment elements that need to be managed to improve nurse retention, and consequently quality and safety of care (Coetzee et al., 2013).

### **Limitations**

Due to the cross-sectional design of this study, we can only imply causality. The main variable in this study – intention-to-leave – was measured with only one question; however, according to Aiken et al. (2012) and the protocol defined by the RN4CAST Consortium (Sermeus et al., 2011) this variable can be considered a good predictor of actual turnover. Alternative variables related to clinical settings may be worth addressing in future research. Finally, the length of the questionnaire might have negatively influenced the response rate.

### **CONCLUSIONS**

The strength of the present study is that it was conducted using an international study protocol (i.e. RN4CAST), which facilitates consistency when comparing the data across the various countries that have implemented the RN4CAST protocol. This has enabled to contribute effectively to the expansion of current knowledge about the predictive factors of nurses' intention to leave their job, and consequently to turnover.

In particular, Italy's population has one of the highest ageing rates in the world, which requires a healthcare system that needs to recognize the high level of healthcare complexity that distinguishes this type of population. Managing increasing healthcare complexity is at the core of nursing, but this requires appropriate numbers of highly competent nurses, who can fully practice their profession in a supportive working environment, which recognizes their specific competences, roles, and positions (ISTAT, 2017). Therefore, our study has highlighted the importance of investing more in improving nurses' work environments,

through better staffing levels, enabling nurses to provide the full range of core nursing activities, and implement strategies to prevent non-nursing activities, which are all factors that significantly contribute to nurses' burnout and consequently to their intention to leave. Moreover, burnout in nurses is also exacerbated by their awareness of providing unsafe care, thus causing a vicious circle. Nurse managers are in the privileged position to interrupt this 'vicious circle', where factors generated by a poor work environment impact on nurses' intention to leave their profession, and consequently on patients' rights to receive safe and high-quality care.

### **Implications for nursing management**

The implications of this study for nursing managers are that policies and practices related to reducing nurse turnover by addressing the issue of nurses' intention to leave requires a holistic and integrated approach to workplace improvement. A more widespread implementation of transformational leadership, for instance, could improve job satisfaction.

The present study highlights the importance of reducing understaffing, avoiding that nurses are forced to perform non-nursing activities, and facilitating better relations with other health professionals, patients, and their families. All these are factors that eventually lead to burnout, which in turn leads to intention to leave. Therefore, while addressing each and any aspect of nurses' working environment and providing psychological support to nurses is important; the multiplicity of factors – both negative (push) and positive (pull) – as identified in this study shows that the time for single issue campaigns related to nurses' work has passed.

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**Table 1. Multivariate risk factors associated with intention to leave**

<b>Variable</b>	<b>OR</b>	<b>95% CI</b>	<b>p value<sup>1</sup></b>
Male sex	1.232	1.002 - 1.515	0.047
Setting	0.91	0.774 - 1.07	0.255
Staffing adequacy	0.971	0.829 - 1.137	0.712
Nurse-Physician Relationship	0.822	0.707 - 0.955	<0.01
Leadership	0.859	0.749 - 0.985	0.03
Quality of Care	1.046	0.827 - 1.324	0.707
Participation in Hospital Affairs	0.598	0.476 - 0.751	<0.01
Emotional Exhaustion	1.053	1.043 - 1.062	<0.01
Depersonalisation	0.992	0.976 - 1.008	0.328
Personal Accomplishment	0.975	0.964 - 0.986	<0.01
Satisfaction with current job	0.391	0.346 - 0.442	<0.01

<sup>1</sup>significant at alpha <0.05

**Table 2. Descriptive data of potential factors for intention to leave.**

<b>Characteristics</b>	<b>Mean (SD)</b>
<b>Staffing ratio*</b>	9.54 (4.92)
<b>Burnout</b>	
• Emotional Exhaustion	23.04 (12.3)
• Depersonalisation	6.55 (6.29)
• Personal Accomplishment	36.38 (8.17)
<b>Work environment</b>	
• Staffing adequacy	2.04 (0.69)
• Nurse-physician relationships	2.52 (0.71)
• Leadership	2.73 (0.77)
• Nurse foundation for quality of care	2.63 (0.57)
• Participation in hospital affairs	2.28 (0.62)
	<b>% (N)</b>
<b>Intention to leave their hospital job</b>	35.5 (1300)
• Nursing in another hospital	47.8 (620)
• Nursing, but not in hospital	19.1 (247)
• Non-nursing profession	33.1 (429)
<b>Perceived quality (very good/ excellent)</b>	7.3 (269)
<b>Perceived safety (very good/ excellent)</b>	30.1 (1104)

SD = standard deviation

\* Number of patients per nurse

**Table 3. Univariate Risk Factors Associated with Intention to Leave**

Variable	OR	95% CI	
<b>Satisfaction</b>			
Satisfaction with current job	0.243 <sup>1</sup>	0.219	0.27
Evaluation professional environment	0.245 <sup>1</sup>	0.219	0.274
Work schedule flexibility	0.502 <sup>1</sup>	0.463	0.544
Opportunities for advancement	0.429 <sup>1</sup>	0.392	0.47
Independence at work	0.398 <sup>1</sup>	0.363	0.435
Professional status	0.347 <sup>1</sup>	0.316	0.381
Wages	0.494 <sup>1</sup>	0.451	0.541
Educational opportunities	0.53 <sup>1</sup>	0.487	0.576
Annual leave	0.545 <sup>1</sup>	0.503	0.589
Sick leave	0.559 <sup>1</sup>	0.513	0.609
Study leave	0.581 <sup>1</sup>	0.537	0.628
<b>Recommendation</b>			
Recommendation hospital as a good place to work	0.177 <sup>1</sup>	0.157	0.201
Recommendation hospital to your friend/ family	0.317 <sup>1</sup>	0.285	0.353

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**Burnout**

Emotional Exhaustion	1.082 <sup>1</sup>	1.075	1.089
Depersonalisation	1.085 <sup>1</sup>	1.073	1.097
Personal Accomplishment	0.94 <sup>1</sup>	0.932	0.948

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**Work environment**

Staffing adequacy	0.347 <sup>1</sup>	0.309	0.39
Nurse-Physician Relationship	0.35 <sup>1</sup>	0.314	0.39
Leadership	0.406 <sup>1</sup>	0.369	0.447
Quality of Care	0.256 <sup>1</sup>	0.223	0.294
Participation in Hospital Affairs	0.256 <sup>1</sup>	0.224	0.292

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**Quality**

Overall quality of nursing care	0.432 <sup>1</sup>	0.389	0.481
Confidence that patients are able to self-care when discharged	0.568 <sup>1</sup>	0.515	0.626
Confidence that hospital management will act to resolve problems in patient care	0.439 <sup>1</sup>	0.395	0.487
Quality of patient care in the last year	0.419 <sup>1</sup>	0.376	0.468

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**Safety**

Overall patient safety	0.596 <sup>1</sup>	0.558	0.637
Staff feel like their mistakes are held against them	1.328 <sup>1</sup>	1.258	1.403
Important patient care information is often lost during shift changes	1.241 <sup>1</sup>	1.179	1.305
Things "fall between the cracks" when transferring patients from one unit to another	1.237 <sup>1</sup>	1.174	1.305
Staff feel free to question the decisions or actions of those in authority	0.734 <sup>1</sup>	0.696	0.773
Staff discusses ways to prevent errors from happening again	0.722 <sup>1</sup>	0.685	0.76
Feedback is given about changes put into place based on event reports	0.722 <sup>1</sup>	0.685	0.762
Actions of hospital management show that patient safety is a top priority	0.683 <sup>1</sup>	0.647	0.72

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**Incident likely occurs**

Patient received wrong medication, time or dose	1.327 <sup>1</sup>	1.249	1.41
Pressure ulcers after admission	1.208 <sup>1</sup>	1.137	1.284
Patient falls with injury	1.308 <sup>1</sup>	1.22	1.403
Healthcare-associated infection	1.243 <sup>1</sup>	1.181	1.308
Healthcare-associated infection: urinary tract infections	1.199 <sup>1</sup>	1.137	1.264
Healthcare-associated infection: bloodstream infections	1.237 <sup>1</sup>	1.167	1.31
Healthcare-associated infection: pneumonia	1.233 <sup>1</sup>	1.167	1.302
Complaints from patients or their families	1.258 <sup>1</sup>	1.205	1.314

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**Staffing**

Staffing ratio	1.017 <sup>1</sup>	1.003	1.031
Number of patients a nurse was directly responsible on last shift	1.009	1	1.018
Overall number of patients on the unit on last shift	1.011 <sup>1</sup>	1.005	1.017
Overall number of nurses on the unit on last shift	0.999	0.95	1.05

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**Tasks**

Delivering and retrieving food trays	1.032	0.924	1.153
Performing non-nursing care	1.281 <sup>1</sup>	1.156	1.419
Arranging discharge referrals and transportation	1.036	0.953	1.127
Routine phlebotomy/blood draw for tests	1.096	0.975	1.232
Transporting of patients within hospitals	1.092	0.99	1.204
Cleaning patients' rooms and equipment	1.085	0.977	1.206
Filling in for non-nursing services not available on off-hours	1.138 <sup>1</sup>	1.044	1.241
Obtaining supplies or equipment	1.174 <sup>1</sup>	1.076	1.281
Answering phones, clerical duties	1.169 <sup>1</sup>	1.006	1.357

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**Missed Care**

Adequate patient surveillance	0.55 <sup>1</sup>	0.478	0.633
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Skin care	0.565 <sup>1</sup>	0.484	0.66
Oral hygiene	0.788 <sup>1</sup>	0.688	0.902
Pain management	0.477 <sup>1</sup>	0.37	0.616
Comfort/talk to patient	0.536 <sup>1</sup>	0.468	0.615
Educating patients and family	0.686 <sup>1</sup>	0.599	0.786
Treatments or procedures	0.615 <sup>1</sup>	0.484	0.78
Administer medications on time	0.595 <sup>1</sup>	0.482	0.735
Preparing patients and their families to discharge	0.616 <sup>1</sup>	0.526	0.721
Adequately document nursing care	0.653 <sup>1</sup>	0.552	0.773
Develop or update nursing care plans/care pathways	0.729 <sup>1</sup>	0.635	0.837
Planning care	0.611 <sup>1</sup>	0.53	0.706
Frequent changing of patient position	0.611 <sup>1</sup>	0.53	0.706

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**Demographic**

Male sex	1.321 <sup>1</sup>	1.121	1.557
Age	1.005	0.997	1.013
Nurse education	0.962	0.84	1.102
Years as nurse	0.986	0.933	1.042

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**Turnover rate**

1.013

0.984

1.043

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OR= Odds Ratio; CI= Confidence Interval

<sup>1</sup>significant at alpha <0.05

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## APPENDIX 1

### Outcome Measures

#### Intention To Leave (ITL)

Intention to leave is the primary outcome for this study. It is defined as the “individual’s own estimated subjective possibility or probability of leaving the organisation or profession shortly” (Bigliardi et al. 2005). Intention to leave the organization was reported as the final phase before leaving occurs (Bigliardi et al. 2005).

For this study intention to leave was measured dichotomously - yes or not option - in terms of chances of leaving their hospital job because of job dissatisfaction; nurses who answered ‘yes’ were asked if they would change with another hospital or sector, or leave their nursing profession.

#### Work Environment (WE)

Measuring elements of nurses’ work environments was performed using The Practice Environment Scale of the Nursing Work Index or PES-NWI. It consists of 32 Likert type questions where 1 means ‘strongly disagree’ to 4 meaning ‘strongly agree’. The questionnaire included 5 sub-scales: Nurse participation in hospital affairs (8 questions); nursing foundations for quality of care (9 questions); nurse manager ability, leadership and support of nurses (4 questions); staffing and resource adequacy (4 questions); and collegial nurse-physician relationships (7 questions) (Lake 2002).

#### Emotional Exhaustion (EE)

Nurse Emotional Exhaustion level was measured with the Italian version of the Maslach Burnout Inventory (MBI) (Maslach et al. 1996). The MBI included 22 items scoring from 1 “never” to 6 “every day”.

#### Job Satisfaction (SAT)

Job satisfaction was measured using a specific single question. The scores ranged from 1 “very dissatisfied” to 4 “very satisfied”. Work schedule flexibility, opportunities for progression, wages, professional autonomy, professional status, education initiatives, leaves for education or illness issues, and days off were also measured with regard to job satisfaction.

Missed Care (MC)

The nurses involved in this study were asked to select from a list of 13 nursing care activities the ones they left undone due to the lack of time. The list included the following nursing care activities: comfort/talk with patients, developing or updating nursing care plans/care pathways, educating patients and families, oral hygiene, adequately documenting nursing care, and patient surveillance, planning care, frequent changing of patient position, skin care, preparing patients and families for discharge, administering medications on time, pain management, treatments and procedures.