

Title: The association of missed nursing care and determinants of satisfaction with current position for direct care nurses - an international study

Running title: Missed nursing care and satisfaction with current position

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The association of missed nursing care and determinants of satisfaction with current position for direct care nurses - an international study

### **Abstract**

**Aim** The purpose of this study is to describe the association of missed nursing care and the determinants of satisfaction with current position for direct care nurses.

**Background** Missed nursing care and job satisfaction are important issues regarding quality patient care and safety in health care, globally.

**Method** This was a cross-sectional quantitative study using MISSCARE Survey data. Participants were 7079 nursing staff providing direct patient care in hospitals in Australia, Iceland, Turkey and the USA. Multivariable nested models were used to identify the relationship between missed nursing care and determinants of nurses satisfaction with current position.

**Results** More missed nursing care was associated with less satisfaction with current position. Other determinants of job satisfaction included country, nursing experience, overtime worked, adequacy of staffing and the number of shifts missed during the previous 3 months.

**Conclusion(s)** Internationally, more missed nursing care is associated with less nursing job satisfaction and is influenced by work experience, overtime worked, levels of staffing and absenteeism.

**Implications for Nursing Management** This study identifies that the association of missed nursing care and satisfaction with nursing position is of global concern. Other factors requiring the attention of nurse managers are staffing levels, absenteeism and work experience.

Key words: International study, job satisfaction, missed nursing care, nursing **Introduction**

Job satisfaction of health professionals has received a growing amount of attention in recent years as evidence shows that job satisfaction is an important workforce issue. More satisfied staff are less likely to leave their positions and are more likely to provide good quality work (Brewer, Kovner, Greene, & Cheng, 2009; Castle, Engberg, Anderson, & Men, 2007; Coomber & Barriball, 2007; Kalisch, Lee, & Rochman, 2010; Murrells, Robinson, & Griffiths, 2008). In nursing and health care this is of major importance, as countries around the world are facing a serious nursing shortage (WHO, 2019).

Missed nursing care, also identified as care left undone and rationing of care, has also become of global concern in recent years as it identifies latent errors affecting both patient and staff outcomes (Griffiths et al., 2019; Jones, Hamilton, & Murry, 2015; Kalisch & Xie, 2014; Papastavrou, Andreou, & Efstathiou, 2014). Indications are that missed nursing care is associated with job satisfaction in nursing as nursing staff who report less missed nursing care also report more job satisfaction (Bekker et al., 2015; Cho, Lee, You, Song, & Hong, 2020; Kalisch et al., 2011; Kalisch & Xie, 2014).

Internationally nurses are recognised as an integral part of health care with a number of reports highlighting the value of nursing (Dall, Chen, Seifert, Maddox, & Hogan, 2009; Needleman, 2016), and the importance of nurses being able to practice to their full potential (IOM, 2011; Page, 2004). The year 2020 is nominated as the Year of the Nurse and Midwife by the World Health Organization, confirming the crucial role nurses play in health care services around the world (ICN, 2019; WHO, n.d.). Irrespective of this deference that nurses encounter, the supply of nurses has never met the worldwide demand (OECD, 2019). In many countries including the United States, nursing is projected to be the top profession in terms of growth, and in America, Iceland, Australia and Turkey, the number of practicing nurses per 1000 population has increased in recent years, but as the need for nursing care increases the nursing shortage is growing (OECD, 2019). The well-being and satisfaction of nurses is therefore more important than ever, for recruitment and retention of the nursing workforce.

The level of satisfaction of nursing staff is a valid outcome as it not only refers to the well-being of the individual staff member and his or her perception of their work life, but also of

how healthy the work environment is. High job satisfaction of nurses is one of the premises of healthy work environment in nursing and healthcare (Estryn-Behar et al., 2007; Kirwan, Matthews, & Scott, 2013; Kutney-Lee, Wu, Sloane, & Aiken, 2013). Society gains from satisfied nurses in healthy work environments, the individual staff member, the team of care providers, the organization and last but not least the patients (Intepeler et al., 2019; Zhao et al., 2019). Indications are that as a phenomenon, job satisfaction is complex, with multiple factors contributing to its level and manifestation. Job satisfaction refers to the extent to which people like or dislike their job and what their expectations are about their job (Lu, Barriball, Zhang, & While, 2012; Spector, 1997). Study findings show that job satisfaction of nurses and nursing staff may be linked to a number of factors such as the type of unit they work on, how well their unit is staffed, whether they work overtime or not, shift length, absenteeism, length of tenure, turnover, intent to leave, and the quality of the nursing care they are able to provide (Ball et al., 2018; Han, Trinkoff, & Gurses, 2015; B. Kalisch, Tschannen, & Lee, 2011; Kalisch et al., 2010; Klaus, Ekerdt, & Gajewski, 2012). Whether being able to work to ones full potential and provide quality nursing care has also been shown to be associated with nurses job satisfaction (Bekker, Coetzee, Kloppe, & Ellis, 2015; Kalisch, 2006).

International differences in nursing care and other factors such as education and regulatory standards between countries may contribute to the job satisfacion of nurses. Previous studies have reported greater job satisfaction for nurses in countries such as USA, Iceland and Australia than for nurses in Turkey, South Korea and Lebanon (Burmeister et al., 2019; Kalisch, Doumit, Lee, & Zein, 2013).

To shed light on the extent to which missed nursing care contributes to satisfaction with current nursing position for nursing staff internationally, we combined data from four different countries: Australia, Iceland, Turkey and the USA. This paper reports on our findings and is an attempt to further characterise the complex phenomenon of job satisfaction and quality of nursing care in nursing around the world.

### **Conceptual framework of study**

The conceptual framework of this study is based on the Missed Nursing Care Model (MNCM) from Kalisch et al. (2011). The model is based on the three dimensional framework defining quality health care by Donabedian (1988). His framework includes structure, process and outcome of health care services. The structure concepts in our study include country, hospital, unit and staff characteristics, missed nursing care being the process concept with j satisfaction with currrent position being the staff outcome concept (see figure 1). The MNCM

assumes that hospital, unit and staff characteristics contribute to the process of nursing care which then again contributes to the outcomes.

Figure 1. The conceptual framework of this study (heavy lines refer to current study)

### **Purpose of study**

This study focuses on missed nursing care (MNC) and satisfaction with current nursing position as reported by direct-care in-hospital nursing staff in four different countries. The purpose of the study is to describe the association of MNC and to identify the determinants of the satisfaction of nursing staff with their current position when controlling background variables such as country, hospital, unit and staff characteristics.

### **Method**

#### **Design, sample and setting.**

This was a cross-sectional quantitative study. The sample consisted of nursing staff, including registered staff nurses (RNs) and assistive nursing personnel providing direct care of patients. Participants worked in adult acute care inpatient medical, surgical, and intensive care hospital settings in four countries: Australia, Iceland, Turkey and the USA. To remove bias participants from units including paediatric, maternity and mental health were excluded as they were only surveyed in one country.

In Australian hospitals direct patient care is primarily carried out by RNs, enrolled nurses (ENs) and assistants in nursing (AIN). ENs in Australia have a nursing diploma, AINs have a certificate in health support and in acute care they work under the supervision of RNs. In Icelandic hospitals direct patient care is primarily provided by RNs and practical nurses (PNs). Licenced practical nurses in Iceland have a three year vocational education and in hospitals they work under the supervision of RNs. In Turkey nursing staff providing direct patient care in acute care settings were all RNs although they have diverse educational backgrounds, some having a vocational nursing education, others a nursing school diploma degree and yet others a bacheloreate degree or higher. The sample from the USA hospitals included RNs and nurse assistants NAs. In the USA most NAs have received from a few

months up to couple of years education/training from a college or hospital. Due to the diversity in education, and the different job titles of nursing staff within and between countries, participants were all grouped in one group; nursing staff providing direct patient care. Direct patient care nursing staff included only those nursing staff members who worked on the hospital wards with direct patient care. Nurses who provided primarily administrative work including nurse managers were excluded from all analyses.

### **Instrument**

Data were collected using the MISSCARE Survey (Kalisch & Williams, 2009) which had been translated to Icelandic (Bragadottir, Kalisch, Smaradottir, & Jonsdottir, 2015) and Turkish (B. J. Kalisch, Terzioglu, & Duygulu, 2012). The original version of the MISSCARE Survey was used in Australia and the USA. The questionnaire which comprises a section on demographic and background variables (20 questions), part-A on elements of missed nursing care (24 items) and part-B on the reasons for missed nursing care (17 items), has tested reliable and valid in all languages (Bragadottir et al., 2015; Kalisch et al., 2012; Kalisch & Williams, 2009). All items from the questionnaire used in this study are multiple choice questions. In this study variables from the demographic and background section as well as all items in part-A on the extent of MNC were used. The demographic and background variables used in this study are: unit type, gender, age, nursing experience, experience on current unit, shift type usually worked, overtime in last three months, number of missed shifts in last three months, perceived staffing adequacy on unit and satisfaction with current position. For part-A participants are asked to rate how frequently each of the nursing elements is missed by the nursing staff on their unit. In the USA part-A initially had a four-point Likert-scale ranging from “rarely missed” to “always missed”. This was then expanded to a five-point Likert-scale to also include the value of “never missed”. This five-point Likert-scale was used in Australia, Iceland and Turkey. For the data analysis in this study the value of “never missed” was combined with the value of “rarely missed”. A concordance correlation between the four or five value Likert scales indicated a concordance coefficient of 0.94, with 96% precision and 98% accuracy (Lin, 1989). The scores for part-A therefore range from 1-4, with a higher score indicating more missed nursing care. The demographic and background section includes questions on job satisfaction including satisfaction with profession, satisfaction with teamwork and satisfaction with current position with a 5-point Likert-type scale ranging from

“very dissatisfied” (1) to “very satisfied” (5). The question on job satisfaction used in this study asks about satisfaction with current position as it was used in all four countries. For satisfaction with current position a higher score indicates more satisfaction.

### **Procedure**

In each country permission of the institutional review boards at each of the participating hospitals was acquired. Survey packets containing an introduction letter explaining the study and ensuring confidentiality, the MISSCARE Survey, and a return envelope were sent to each nursing staff member on the participating units. Participation was entirely voluntary.

### **Data analysis**

Data analysis was conducted by using Stata 14 (Statacorp, Texas). Descriptive statistics including frequencies and proportions were used to describe the cohort of nurses according to country, unit type, age, gender, nursing experience, experience on their current unit, usual shifts worked, how much overtime participants had worked during the last 3 months, how many shifts were missed during the previous 3 months, and the perception by the nurses that the staffing on their unit was adequate (categorized into 100%, 75%, 50%, 25% or 0% of the time). The characteristics are described as simple proportions, with cases with missing data omitted from denominators.

In this study the unit of analysis was the individual nursing staff member who completed the MISSCARE survey.

A total, median and an overall mean score were calculated for each participant for the elements of MNC indicating the total, median and average amount of MNC. The mean MNC score was included in the multivariate models.

Data for the outcome satisfaction with current position was compared with MNC data means and total scores and other independent variables including perceived adequacy of staffing and “missed work”. A distinct difference in effects was observed between the scores of “satisfied” and “neutral”, for satisfaction with current position so this variable was converted to a dichotomous variable by combining the values of “very satisfied” and “satisfied” into “satisfied” and the values of “neutral”, “dissatisfied” and “very dissatisfied” into “dissatisfied” to facilitate parsimonious analyses.

The associations between all nurse, work and hospital characteristics with satisfaction with current position were examined using logistic regression and the crude odds ratios with 95% confidence intervals estimated. Characteristics were then included in multivariable models to estimate adjusted odds ratios. To account for the nested hierarchical structure of country, hospital and unit clustering, mixed effects analyses were completed.

Statistical significance was assumed at a 0.05 level.

### **Ethical approval**

Full ethical approval was gained from human research ethics committees and analogue bodies for each hospital site in Australia, Iceland, Turkey and the USA.

### **Results**

The total number of participants was 7079 nursing staff providing direct patient care from four countries and a total of 49 hospitals.

### **Participant characteristics**

Almost half (45%) of all direct-care nurses included in the analyses worked on mixed surgical medical wards (Table 1). Three-quarters (75.6%) of the total participants were under the age of 45 but age distribution of participants varied by country with most (97.4%) of the Turkish participants under the age of 45 and Iceland having the oldest participants with almost half (46.4%) over the age of 45. Gender also differed between countries with the highest proportion of male participants in Turkey (20.6%) and the lowest in Iceland (1.5%). The majority of participants from Australia (61.6%), Iceland (71.5%) and the USA (52.8%) had 5 years or more nursing experience, compared with 39.6% of Turkish participants. A comparable pattern is seen in the work experience on current unit with more than half (55.6%), of the Icelandic participants having 5 years or more experience on their current unit, 39.3% of the Australian participants, 37.6% of the US participants and 19.1% of the Turkish participants. The most frequently worked shift length in Australia and Iceland was 8 hours, but in Turkey and the USA it was 12 hours. The majority of the Australian participants (62.2%) had not worked any overtime during the last 3 months whereas most of the Turkish participants (93.7%) had worked over 12 hours overtime during that period. Over half the participants from Australia (61.2%), Iceland (52.9%) and the USA (76.1%) had missed none or one shift during the last three months, but the majority of the Turkish participants (65.9%) had missed two or more shifts during that time. When asked about staffing adequacy on their



unit the majority of participants from Australia (81.6%), Iceland (70.4%) and the USA (69.2%) reported staffing being adequate at least 75% of the time, while barely half (49.4%) of the Turkish participants reported comparable staffing on their units. In all the countries most direct care nurses completing the survey were satisfied with their current position, with Icelandic participants being the most satisfied (86.8%) and the USA participants being the least satisfied (76.5%).

Table 1. Characteristics of survey respondents by country (N= 7,079)

### **Missed Nursing Care**

Results indicate that of the four countries, Iceland had the lowest MNC with total mean score (M=30.4, SD=9.0) and the lowest mean score (M=1.31, SD=0.4) while Turkey has the highest MNC with total mean score (M=52.6, SD=17.6) and mean score (M=2.19, SD=0.7).

Participants from Turkey reported more MNC than their counterparts from Iceland, Australia and the USA with the findings showing that the majority of participants from Australia (59.3%), Iceland (83.6%) and the USA (56%) have a total score less than the median for MNC while the majority of participants from Turkey (84.3%) have a total score more than the median total score for MNC with median scores of 34, 29, 35 and 53 respectively (see table 2).

Table 2. Missed Nursing Care survey scores by country (N = 7,079)

### **Determinants of job satisfaction**

Table 3 shows the associations between hospital, unit and staff characteristics as well as MNC with satisfaction with current position. Participants who report higher levels of MNC are less likely to be satisfied with their current position than those with lower mean MNC scores (odds ratio (OR) 0.40; 95% confidence interval (CI) 0.34 – 0.46). These findings that nurses who report less MNC on their unit are more satisfied with their current position than those who report more MNC are confirmed after adjusting for country, hospital, unit type, nursing

experience, missed work and the perceived staffing adequacy in a multivariable nested model (Adjusted OR (AOR) 0.53; 95% CI 0.46 – 0.61).

Nurses from Turkey and Iceland are more likely to be satisfied with their current position than nurses in the USA (AOR 3.32; 95% CI 2.57 – 4.29 and AOR 2.04; 95% CI 1.39 – 2.99 respectively).

Nurses with more nursing experience were less likely to be satisfied with their position than those with less than 2 years' experience, (AOR 0.74; 95% CI 0.62 - 0.89 [2-5 years compared with less than 2 years]). However, nurses experience on their current unit was not statistically significantly associated with satisfaction with current position.

Nurses who worked more overtime were more likely to be satisfied with their current position than those who worked none (AOR 1.25; 95%CI 1.04 – 1.52) while nurses who missed more than 6 shifts during the previous 3 months were less satisfied than those who missed none (AOR 0.35; 95% CI 0.27 – 0.46).

The perception of staffing adequacy on the unit was significantly associated with job satisfaction, those participants who perceived the staffing to be adequate 25% or less of the time were much less likely to be satisfied with their current position than those who perceived the staffing to be adequate 75% or more of the time (OR 0.13; 95% CI 0.11 – 0.16).

No statistically significant association was identified between age-group, gender and shift usually worked with nursing staff satisfaction with current position.

Table 3. Determinants of nursing staff satisfaction with current position (N =7,079)

## **Discussion**

This research confirms that MNC is associated with nurses satisfaction with their current position in nursing. It also highlights the fact that nurses satisfaction with their current position is determined by factors including the country the nurse works in, nursing experience, the amount of overtime, the number of shifts missed and the adequacy of staffing.

While this study did not identify that the type of unit was associated with nurses satisfaction with their current position, in a large cross-sectional study from the USA with nurse

participants from 162 hospitals, those working in medical-surgical units reported significantly higher job satisfaction than nurses working in other type of units (Klaus et al., 2012), however another large cross-sectional study also from the USA with nursing staff participants from 110 inpatient adult hospital units intensive care units had the most satisfied staff and least satisfied in rehabilitation units (Kalisch et al., 2011). These findings support the notion that the association of job satisfaction and type of nursing services provided are more complex with additional variables such as nurses self-realisation, participation in management and representative power, nurse managers attitudes and leadership style and communication between multi-disciplinary teams adding to the whole picture of missed nursing care and job satisfaction of nursing staff in hospitals Alloubani, Akhu-Zaheya, Abdelahafiz, & Almatari, 2019; Kim, Yoo, & Seo, 2018).

The country in which the nurse works is associated with the nurses satisfaction with current position. When nurse survey responses from seven countries were compared, Iceland and Australia reported the highest satisfaction with their current position as well as with their occupation, with nurses in Turkey and South Korea reporting the least satisfaction with current position as well as occupation (Burmeister et al., 2019). Another study comparing job satisfaction of nurses in the USA and Lebanon showed that nurses in the USA were significantly more satisfied with their current position and role than were their counterparts in Lebanon (Kalisch et al., 2013). These differences indicate that high level factors such as social and political factors including social unrest and unstable governments may contribute to job satisfaction.

Our results that higher staffing levels are associated with more job satisfaction are confirmed by previous studies (Kalisch et al., 2011). A recent systematic review and meta-analysis confirms the association of nurse staffing and nurse outcomes showing that higher nurse-to-patient ration is significantly related to more burnout, more job dissatisfaction and higher intent to leave among nurses (Shin, Park, & Bae, 2018).

After adjusting for country and other factors our findings show that nursing staff's satisfaction with their current position is significantly more when they work more overtime. This contradicts previous research which reports less job satisfaction with more overtime (Han et al., 2015; Klaus et al., 2012). This may be explained by the potential for increased earnings due to overtime improving nurses satisfaction with current position.

Similarly, we found that shift length was not associated with job satisfaction contradicting previous research which suggested less nursing job satisfaction when their working shift length is over 12 hours (Ball et al., 2018). We however, found that more shifts missed led to less job satisfaction which has been previously reported (Roelen et al., 2013). In most hospitals included in this research shift-lengths are negotiated therefore nurses choose to and are not obliged to work the longer shifts. Previous research may have been conducted with nurses who were contracted to work the longer shifts reducing the satisfaction with their position of these nurses.

Indications are that the first months and years of employment in nursing are critical as to whether nurses stay in the profession or not (Murrells et al., 2008). Younger nurses have reported less job satisfaction than older ones (Goh, Lee, Chan, & Chan, 2015), but we found no association between age or gender with job satisfaction.

The findings of this study show that MNC is significantly associated with satisfaction with current position of nursing staff, after adjusting for country, hospital, unit type, nursing experience, missed work and perceived staffing adequacy. This is in concordance with findings from previous studies where nursing staff who report less missed nursing care also reported more job satisfaction (Bekker et al., 2015; Kalisch et al., 2011; Kalisch & Xie, 2014). Nurses generally want to provide comprehensive care for their patients, leaving them frustrated and dissatisfied when they are not able to do so (Karlsson, Gunningberg, Backstrom, & Poder, 2019), and having to attend to non-nursing tasks and not being able to carry out all necessary nursing care of patients, has previously been identified to be related to less job satisfaction of nurses (Bekker et al., 2015).

This study has both strengths and weaknesses. The main strengths of the study are the large dataset with data from four different countries collected with a reliable and valid questionnaire. The main challenges of the study are that the data was collected independently in each country with each country having its own culture and language. The results can also not be attributed to each country as not all states and hospitals in each country were included in the research. Yet another limitation is the fact that the educational background of participants varied between and even within countries, even though they shared a common role and responsibility. A further limitation of the research is that MNC data were collected using different Likert scales, both the 4- and 5-point versions of the scale have been validated reliable (Bragadóttir et al., 2015; Kalisch & Williams, 2009). Dichotomizing the outcome

“satisfaction with current position” response may have caused some loss of information but following data mining the relationships reported were not weakened by the change.

### **Conclusions**

This study demonstrates that a number of factors determine job satisfaction of nursing staff, with missed nursing care among them. Missed nursing care is significantly associated with satisfaction with current position of nursing staff, irrespective of country, organizational, unit and staff characteristics. This study supports the theory reflected in the MNMCM that structure as well as process of nursing care significantly contributes to staff outcomes.

### **Implications for practice**

This study identifies that the association of missed nursing care and satisfaction with current position is of global concern. Other factors influencing satisfaction with current position that require special attention of nurse managers are direct care nurse staffing levels, absenteeism and work experience. Nurse managers, their leadership style and the work environment they manage play key roles in the quality of the nursing care provided in their units as well as staff outcomes (Alloubani et al., 2019; Pishgooie, Atashzadeh-Shoorideh, Falcó-Pgueroles, & Ltfi, 2018; Saleh, O'Connor, Al-Subhi, Alkattan, Al-Harbi, & Patton, 2018). The findings highlight the importance of acknowledging satisfaction with nursing position as a complex phenomenon, requiring the full attention of nurse managers, continuing attention and further research of nurse scholars, and awareness of nurse clinicians and other nursing staff of what factors contribute to their well being and satisfaction at work.

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Table 1. Characteristics of survey respondents by country (N= 7,079)

	<b>Australia</b> n = 419	<b>Iceland</b> n = 532	<b>Turkey</b> n = 1,453 n (%)	<b>USA</b> n = 4,675	<b>Total</b> N = 7,079
<b>Unit<sup>1</sup></b>					
Medical	56 (13)	182 (34)	176 (12)	1039 (22)	1453 (21)
Surgical	23 (5)	167 (31)	329 (23)	795 (17)	1314 (19)
Surg/Med	302 (72)	90 (17)	292 (20)	2375 (51)	3059 (45)
ICU	38 (9)	93 (17)	656 (45)	205 (4)	992 (15)
<b>Gender</b>					
Female	368 (87.8)	522 (98.5)	1153 (79.4)	4233 (91.0)	6277 (88.9)
Male	51 (12.2)	8 (1.5)	300 (20.6)	444 (9.0)	780 (11.1)
<b>Age group (yrs)</b>					
< 25	69 (16.6)	22 (4.5)	921 (63.4)	674 (14.5)	1686 (23.9)
25 – 34	138 (33.3)	129 (24.3)	326 (22.4)	1448 (31.1)	2041 (28.9)
35 – 44	107 (25.8)	138 (24.9)	168 (11.6)	1158 (24.9)	1565 (22.8)
45 – 54	76 (18.3)	151 (28.5)	30 (2.0)	940 (20.2)	1197(17.0)
≥ 55	25 (6.0)	96 (18.1)	8 (0.6)	437(9.4)	566 (7.9)
<b>Nursing experience</b>					
< 6 months	14 (3.4)	4 (0.8)	76 (5.2)	215 (4.6)	309 (4.4)
6 months - 2 years	51 (12.2)	67 (12.8)	439 (30.2)	1028 (22.2)	1585 (22.5)
2-5 years	95 (22.8)	79 (15.1)	363 (25.0)	948 (20.4)	1486 (21.1)
5-10years	83 (19.9)	97 (18.5)	271 (18.7)	871 (18.8)	1322 (18.8)
>10 years	174 (41.7)	278 (53.0)	304 (20.9)	1580 (34.0)	2336 (33.2)
<b>Experience on current unit</b>					
< 6 months	35 (8.4)	28 (5.3)	195 (13.4)	369 (8.0)	627 (8.9)
6 months - 2 years	73 (17.6)	93 (17.7)	609 (41.9)	1395 (30.1)	2171 (30.9)
2-5 years	144 (34.7)	113 (21.4)	372 (25.6)	1128 (24.3)	1757 (25.0)
5-10 years	95 (22.9)	109 (20.7)	226 (15.6)	884 (19.1)	1314 (18.7)
> 10 years	68 (16.4)	184 (34.9)	51 (3.5)	859 (18.5)	1162 (16.5)
<b>Shift – usually worked</b>					
8 hour	354 (84.9)	484 (91.8)	5 (0.3)	896 (19.2)	1739 (24.6)
10 hour	4 (1.0)	7 (1.3)	0	23 (0.5)	34 (0)
12 hour	30 (7.2)	0	1357 (93.4)	3520 (75.5)	4908 (69.5)
8 and 12 rotating	14 (3.4)	23 (4.4)	91 (6.3)	197 (4.2)	325 (4.6)

	<b>Australia</b>	<b>Iceland</b>	<b>Turkey</b>	<b>USA</b>	<b>Total</b>
	<b>n = 419</b>	<b>n = 532</b>	<b>n = 1,453</b>	<b>n = 4,675</b>	<b>N = 7,079</b>
Other	15 (3.6)	13 (2.5)	0	26 (0.6)	54 (0.8)
<b>Overtime last 3 months</b>					
None	257 (62.2)	133 (25.5)	4 (0.3)	1419 (30.5)	1813 (25.7)
1 – 12 hours	141 (34.1)	231 (44.3)	87 (6.0)	2006 (43.1)	2465 (35.0)
> 12 hours	15 (3.6)	158 (30.3)	1362 (93.7)	1229 (26.4)	2765 (39.3)
<b>Shifts missed last 3 months</b>					
None	113 (27.2)	153 (28.9)	227 (15.6)	2040 (44.0)	2533 (36.0)
1	141 (34.0)	127 (24.0)	269 (18.5)	1489 (32.1)	2026 (28.8)
2 - 3	122 (29.4)	150 (28.4)	379 (26.1)	870 (18.8)	1522 (21.6)
4 – 6	23 (5.5)	65 (12.3)	302(20.8)	158 (3.4)	548 (7.8)
More than 6	16 (3.9)	34 (6.4)	276 (19.0)	81 (1.8)	407 (5.8)
<b>Staffing adequate (% time)</b>					
100%	96 (23.4)	35 (6.7)	216 (14.9)	633 (13.7)	980 (14.0)
75%	239 (58.2)	333 (63.7)	502 (34.5)	2572 (55.5)	3646 (51.9)
50%	48 (11.7)	118 (22.6)	451 (31.0)	955 (20.6)	1573 (22.4)
25%	23 (5.6)	26 (5.0)	284 (19.5)	400 (8.6)	733 (10.4)
0%	5 (1.2)	11 (2.1)	0	74 (1.6)	90 (1.3)
<b>Satisfied with current position<sup>2</sup></b>					
No	81 (19.5)	70 (13.2)	294 (20.2)	1096 (23.6)	2568 (36.4)
Yes	334 (80.5)	460 (86.8)	1159 (79.8)	3557 (76.5)	4484 (63.6)

<sup>1</sup> Category of unit that the direct-care nurse was working on when they completed the survey.

<sup>2</sup>Responses dichomitted into not satisfied (very dissatisfied, dissatisfied and neutral) and satisfied (satisfied and very satisfied)

Missing data: Unit type USA n = 261; Age group USA n =18, Iceland n = 2, Aus n = 4 ; Sex USA n =21; Nursing experience USA n = 33, Iceland n = 7, Australia n = 2; Current unit experience USA n = 40, Iceland n = 5, Australia n = 4; Shift USA n =13, Iceland n = 5, Aus n = 2 ; Overtime USA n =21, Iceland n = 10, Australia n = 6; Missed shifts USA n = 37, Iceland n = 3, Australia n = 4; Staffing USA n = 41, Iceland n = 9, Australia n = 8; Satisfied with current position USA n = 23, Iceland n =2, Australia n = 4.

Table 2. Missed Nursing Care survey scores by country (N = 7,079)

<b>MNC<sup>1</sup></b>	<b>Australia</b>	<b>Iceland</b>	<b>Turkey</b>	<b>USA</b>	<b>Total</b>
	n = 419	n = 532	n = 1,453	n = 4,675	N = 7,079
Total score mean (standard deviation)	35.7 (9.9)	30.4 (9.0)	52.6 (17.6)	36.6 (9.6)	39.4 (12.5)
Total score median (range)	34 (19 – 66)	29 (14 – 88)	48 (24-96)	35 (24-96)	37 (14 - 96)
Mean score (standard deviation)	1.50 (0.4)	1.31 (0.4)	2.19 (0.7)	1.52 (0.4)	1.64 (0.6)
Frequency less than median total score (%)	248 (59.3)	443 (83.6)	228 (15.7)	2616 (56.0)	3535 (50.0)
Frequency more than median total score (%)	170 (40.7)	87 (16.4)	1225 (84.3)	2059 (44.0)	3541 (50.0)

<sup>1</sup> MNC = Missed Nursing care. Total MNC score ranges from 24 – 96 with a higher score indicating greater missed nursing care. Scores 1= rarely/never missed; 2 = occasionally missed; 3 = frequently missed; 4 = always missed

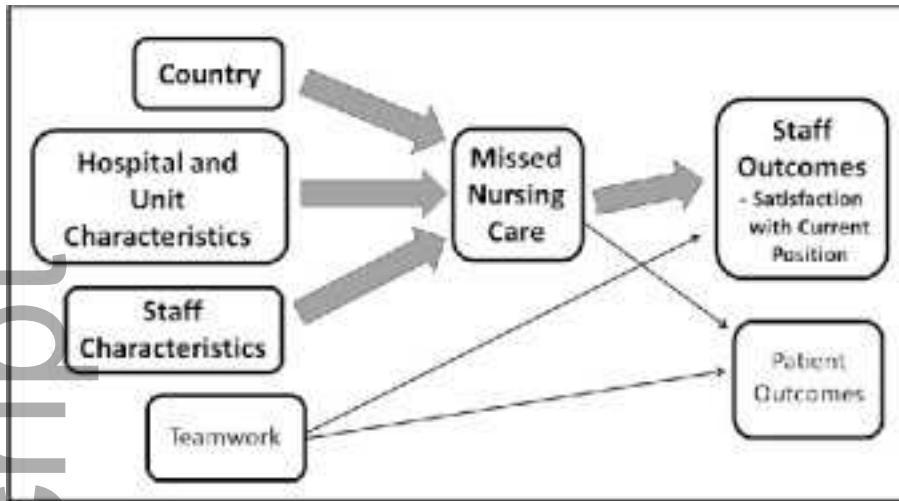
Table 3. Determinants of nursing staff satisfaction with current position (N =7,079)

	<b>Satisfaction with current position</b>	
	Odds ratio (95% confidence interval); p value	
	Bivariate model	Multivariate nested model <sup>2</sup>
<b>Missed nursing care</b>		
Mean score	1.00	1.00 <sup>a</sup>
1 point increase mean score	0.40 (0.34 – 0.46); <0.001	0.56 (0.49 – 0.64); <0.001
<b>Country</b>		
USA (ref)	1.00	1.00 <sup>b</sup>
Iceland	2.02 (1.56 – 2.63); <0.001	2.04 (1.39 – 2.99); <0.001
Australia	1.27 (0.99 – 1.63); 0.06	1.10 (0.68 – 1.77); 0.69
Turkey	1.21 (1.05 – 1.40); 0.01	3.32 (2.57 – 4.29); <0.001
<b>Unit type</b>		
Medical (ref)	1.00	1.00 <sup>b</sup>
Surgical	0.84 (0.70 – 1.00); 0.05	0.88 (0.70 – 1.11); 0.30
Surg/Med	0.97 (0.83 – 1.12); 0.65	1.02 (0.82 – 1.27); 0.87
ICU	1.11 (0.91 – 1.36); 0.32	1.00 (0.76 – 1.31); 0.99
<b>Age group (yrs)</b>		
< 25 (ref)	1.00	1.00 <sup>b</sup>
25 – 34	0.96 (0.82 – 1.12); 0.57	1.06 (0.86 – 1.30); 0.60
35 – 44	0.92 (0.78 – 1.09); 0.34	1.05 (0.82 – 1.34); 0.71
45 – 54	1.06 (0.88 – 1.27); 0.54	1.20 (0.90 – 1.59); 0.21
≥ 55	0.93 (0.74 – 1.16); 0.51	1.14 (0.81 – 1.61); 0.44
<b>Gender</b>		
Female (ref)	1.00	1.00 <sup>b</sup>
Male	1.05 (0.88 – 1.26); 0.58	0.95 (0.77 – 1.16); 0.60
<b>Nursing Experience</b>		
< 2 years	1.00	1.00 <sup>c</sup>
2-5 years	0.77 (0.66 – 0.91); 0.01	0.74 (0.62 – 0.89); 0.002
5-10years	0.83 (0.70 – 0.99); 0.04	0.82 (0.68 – 1.00); 0.05
>10 years (ref)	0.90 (0.77 – 1.04); 0.16	0.86 (0.72 – 1.02); 0.08
<b>Experience on current unit</b>		
< 2 years (ref)	1.00	1.00 <sup>b</sup>
2-5 years	0.94 (0.82 – 1.09); 0.42	0.92 (0.78 – 1.08); 0.32
5-10 years	0.90 (0.77 – 1.05); 0.17	0.86 (0.72 – 1.03); 0.09

> 10 years	1.26 (1.06 – 1.51); 0.01	1.16 (0.95 – 1.42); 0.15
<b>Shift – usually worked</b>		
8 hour	1.19 (1.04 – 1.37); 0.01	0.91 (0.75 -1.11); 0.35
10 hour	2.18 (0.77 – 6.20); 0.14	1.97 (0.58 – 6.69); 0.28
12 hour (ref)	1.00	1.00 <sup>b</sup>
8 and 12 rotating	0.97 (0.74 – 1.26); 0.80	0.89 (0.66 – 1.20); 0.45
Other	0.81 (0.44 – 1.50); 0.50	0.85 (0.42 – 1.71); 0.64
<b>Overtime last 3 months</b>		
None (ref)	1.00	1.00 <sup>b</sup>
1 – 12 hours	1.07 (0.93 – 1.24); 0.35	1.16 (0.98 – 1.37); 0.08
>12 hours	1.12 (0.97 – 1.29); 0.13	1.25 (1.04 -1.52); 0.02
<b>Shifts missed last 3 months</b>		
None (ref)	1.00	1.00 <sup>b</sup>
1	0.93 (0.81 – 1.07); 0.31	0.86 (0.73 – 1.02); 0.08
2-3	0.79 (0.68 – 0.92); 0.01	0.74 (0.62 – 0.88); 0.001
4-6	1.04 (0.82 – 1.31); 0.77	0.93 (0.71 – 1.23); 0.61
>6	0.38 (0.30 – 0.47); <0.001	0.35 (0.27 – 0.46); <0.001
<b>Staffing adequate (% time)<sup>1</sup></b>		
100% or 75 % (ref)	1.00	1.00 <sup>d</sup>
50%	0.36 (0.32 – 0.42); <0.001	0.36 (0.31 – 0.41); <0.001
25% or 0%	0.13 (0.11 – 0.15); <0.001	0.13 (0.11 – 0.16); <0.001

Notes: <sup>1</sup> For analyses combined the perceived adequacy groups of 75% and 100% (reference group) and the 25% and 0% of the time group.

<sup>2</sup> Adjusted odds ratios reported - Nested models for departments in hospitals in countries and adjusted for: <sup>a</sup> Nursing experience, missed work, perceived adequate staffing; <sup>b</sup> Missed nursing care, nursing experience, missed work, perceived adequate staffing; <sup>c</sup> Missed nursing care, missed work, perceived adequate staffing; <sup>d</sup> Missed nursing care, nursing experience, missed work.



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