

# Comparison of reports of missed nursing care: Registered Nurses vs. practical nurses in hospitals

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## Comparison of reports of missed nursing care: Registered Nurses vs. practical nurses in hospitals

**Background:** Missed nursing care is an error of omission defined as standard, required nursing care that is not completed or is seriously delayed. Study findings from around the world show that missed nursing care is a global concern.

**Purpose:** The purpose of this study was to compare reports of missed nursing care by two types of nurses – registered nurses and practical nurses – in acute care hospitals in Iceland. Former studies in the USA indicate a variance in reports of missed nursing care by staff with different roles.

**Methods:** This was a cross-sectional descriptive study using the *MISSCARE Survey-Icelandic* questionnaire for data collection. The questionnaire asks about the amount of missed nursing care on the unit for 24 nursing elements (Part A) and 17 reasons of care being missed (Part B). Participants were nursing staff from medical, surgical and intensive care units in all hospitals in Iceland.

**Findings:** A *t*-test for independent groups showed a significant difference for the overall missed nursing care score

(Part A) between registered nurses ( $M = 2.09$ ,  $SD = 0.51$ ) and practical nurses ( $M = 1.82$ ,  $SD = 0.59$ ) [ $t(541) = 5.703$ ,  $p < 0.001$ ]. A comparison of the overall mean score for reasons of missed nursing care (Part B) between registered nurses ( $M = 2.32$ ,  $SD = 0.38$ ) and practical nurses ( $M = 2.21$ ,  $SD = 0.62$ ) indicated a significant difference in their reporting [ $t(299) = 2.210$ ,  $p = 0.028$ ]. In spite of the overall significant difference in ratings of the elements and reasons for missed nursing care by registered nurses and practical nurses, a pattern is evident in the ranking of the elements of nursing care being missed and reasons.

**Conclusions:** The findings of this study point to the need to acknowledge certain aspects of missed nursing care and the different roles within nursing. They indicate a need to improve open, sincere and structured communication and mutual respect and trust within healthcare teams in Icelandic hospitals.

**Keywords:** cross-sectional study, hospitals, inpatient units, missed nursing care, nursing, practical nurse, registered nurses.

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## Introduction

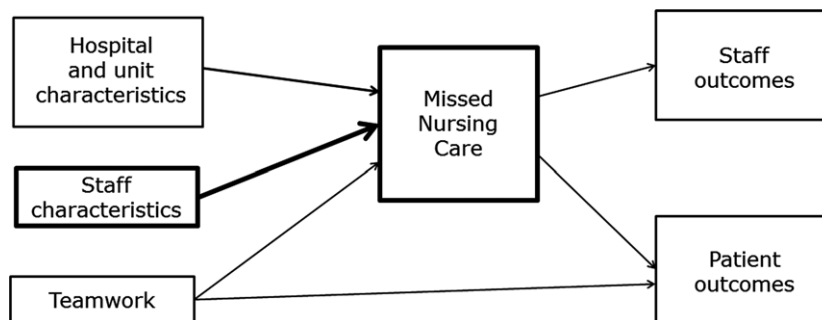
Patient safety has been on the healthcare agenda since the publication of *To Err is Human* by the Institute of Medicine (1). In this movement, the attention has largely been on errors of commission but errors of omission are also a major patient safety problem. An act of commission (doing something wrong), or omission (failing to do the right thing), can lead to undesirable outcomes. For a nurse, administering a medication to a patient with a documented allergy to that medication would be an act

of commission while not giving a medication at all is an act of omission. Acts of omission are believed to be greater in number than acts of commission (2).

Missed nursing care (MNC), coined by Kalisch in 1986, is the construct we utilised to describe errors of omission in nursing. It is defined as standard, required nursing care that is not completed or is seriously delayed. Development of this construct was based on numerous studies which demonstrated that the level and type of nurse staffing predicts patient outcomes (3–6). But these studies did not explain what was (or was not) happening in the process of nursing care which led to these outcomes. The Missed Nursing Care Model (MNCM) (Fig. 1) attempts to display the interaction of contributing variables such as organisational, unit and staff characteristics, as well as teamwork to missed nursing care and the staff and patient outcomes (7). The

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**Figure 1** The Missed Nursing Care Model (7).

model is based on Donabedian's three-dimensional framework on quality health care, structure, process and outcomes (8). The conceptual framework of this study is the MNCM where the focus is on staff characteristics and missed nursing care.

## Background

Study findings from around the world show that necessary nursing care is being omitted (9–14), indicating that missed nursing care is a global concern. In spite of variations in findings among studies, countries, groups of participants and settings, certain patterns have been identified such as the most and least common nursing care activities being missed and the reasons for omitting care.

Elements of nursing care requiring time and involvement of more than one staff member are reported to be more frequently missed, such as mobilising and turning patients (10, 11). Other studies identify contributing variables to the extent of missed nursing care such as hospital setting, unit type, work hours, roles, staffing levels and teamwork (7, 9, 15–17). A previous study from Iceland using data from the same data set as this study identified contributing hospital, unit and staff characteristics to missed nursing care (15). Studies from a number of countries have revealed the patient and staff outcomes of missed nursing care (9, 10, 18, 19). Inadequate labour and material resources are ranked the most common reasons for missed nursing care followed by communication (10, 16, 20). Previous studies have identified relationships of missed nursing care and patient outcomes such as falls, nosocomial infections, mouth care and patient satisfaction, as well as staff outcomes such as job satisfaction (10, 12–14). To shed further light on missed nursing care, we examine how nursing staff members with different roles identify nursing care that is missed and reasons for missing care.

### Study purpose

The purpose of this study was to compare reports of MNC by two types of nurses – registered nurses (RNs)

and practical nurses (PNs) – in acute care hospitals in Iceland. Former studies in the USA indicate a variance in reports of MNC and its reasons by staff with different roles. With the exception of one study in the USA, RNs reported more MNC than did assistive personnel (10, 16, 20) and nurse leaders reported more MNC than nursing staff (21). In a previous Icelandic study, role was identified as a contributing factor to missed nursing care supporting exploration of how nursing staff with different roles view omitted care (15). A comparable study has not previously been carried out in Iceland.

Nursing care in Icelandic hospitals is almost entirely carried out by RNs and PNs. These two staff members work side by side at the patient's bedside, and their roles both differ and overlap. The PNs work as assistants to RNs who are responsible for the development of the plans of care.

Practical nurses education is a 3-year vocational programme, while RNs have earned a 4-year baccalaureate degree. In Iceland, about 71% of RNs have at least a 4-year baccalaureate degree in nursing (personal information from the Icelandic Nurses Association, 26 September 2017). In Iceland, RNs and PNs are licensed healthcare professionals.

### Research questions

The research questions for this study are as follows:

- 1 How do the demographic and other characteristics of RNs and PNs compare (i.e. gender, age, work experience, work hours, unit type, number of working hours per week, overtime, absenteeism and job satisfaction)?
- 2 To what extent do the reports of the amount and types of missed nursing care vary between RNs and PNs?
- 3 To what extent do the reasons for missed nursing care vary between RNs and PNs?

## Methods

This was a cross-sectional quantitative descriptive study. Data were collected at one point in time using a paper-and-pencil questionnaire.

## Participants

The study was conducted in all eight acute care hospitals in Iceland. Every RN and PN in participating units in these eight hospitals was asked to complete the *MISSCARE Survey-Icelandic*. The response rate was 69%. Data from 334 RNs and 210 PNs providing direct patient care are used in this study (Table 1).

**Table 1** Sample characteristics (N = 544)

Variable	RN (n = 334) n (%)	PN (n = 210) n (%)	$\chi^2$	p
Gender				
Female	330 (98.8)	204 (98.1)	0.464	0.490
Male	4 (1.2)	4 (1.9)		
Age				
≤34 years	118 (35.5)	29 (13.8)	112.327	<0.001
35–44 years	107 (32.2)	30 (14.3)		
45–54 years	86 (25.9)	70 (33.3)		
≥55 years	21 (6.3)	81 (38.6)		
Experience in role				
≤2 years	48 (14.7)	22 (10.6)	12.631	0.006
>2–5 years	55 (16.8)	23 (11.0)		
>5–10 years	67 (20.5)	31 (14.8)		
>10 years	157 (48.0)	133 (63.6)		
Experience on unit				
≤2 years	79 (24.0)	40 (19.1)	9.659	0.022
>2–5 years	73 (22.2)	42 (20.1)		
>5–10 years	76 (23.1)	36 (17.2)		
>10 years	101 (30.7)	91 (43.5)		
Work hours				
Days only	19 (5.7)	11 (5.2)	3.688	0.297
Evenings only	14 (4.2)	7 (3.3)		
Nights only	21 (6.3)	6 (2.9)		
Rotating shifts	280 (83.8)	186 (88.6)		
Unit				
Medical	116 (34.7)	73 (34.8)	23.370	<0.001
Surgical	101 (30.2)	69 (32.9)		
Mixed medical–surgical	43 (12.9)	50 (23.8)		
ICU	74 (22.2)	18 (8.6)		
Hours worked per week				
≥30	250 (75.1)	158 (75.6)	0.019	0.891
<30	83 (24.9)	51 (24.4)		
Overtime in past 3 months				
None	59 (18.0)	76 (37.1)	27.223	<0.001
1–12 hours	169 (51.5)	69 (33.7)		
>12 hours	100 (29.3)	60 (29.3)		
Absenteeism in past 3 months				
None	86 (25.7)	75 (36.2)	6.840	0.077
1 days/shifts	82 (24.6)	46 (22.2)		
2–3 days/shifts	101 (30.2)	52 (25.1)		
>3 days/shifts	65 (19.5)	34 (16.4)		

## Setting

This study was conducted in all eight hospitals in Iceland and included all 27 medical, surgical and intensive care units (ICUs) in Iceland. This consisted of staff from 11 medical, eight surgical, five mixed medical and surgical units and three intensive care units (N = 925). From the university hospital located in the capital area in southwest Iceland, 17 units participated (nine medical, six surgical and two intensive care units). The other hospitals were located outside the capital area, one teaching hospital in the northern part of Iceland (with one medical unit, one surgical unit and one ICU) and six small hospitals from rural settings around the country (one hospital with one medical and one surgical unit, and each of the remaining hospitals with one mixed medical–surgical unit). All of the mixed medical–surgical units were within the small nonteaching hospitals.

## Instrument

The data collection instrument for this study was the *MISSCARE Survey-Icelandic*, an Icelandic version of the *MISSCARE Survey* developed and tested for its psychometric properties (22). The translation and psychometric testing of the *MISSCARE Survey-Icelandic* have been described elsewhere (22). This Survey has two parts – elements of care missed (Part A with 24 questions) and reasons for missing care (Part B with 17 questions). In Part A, participants are asked how frequently each of the nursing care elements listed is missed on their unit on a 5-point Likert-type scale ranging from ‘always missed’ (5) to ‘never missed’ (1). A higher score indicates greater extent of missed nursing care. In Part B, on reasons for missed nursing care, participants answered on a 4-point Likert-type scale ranging from ‘significant reason’ (4) to ‘not a reason for missed nursing care’ (1). A higher score indicates a stronger reason for missed nursing care. Part B has three subscales on the following: (i) reasons related to labour resources (five items), (ii) reasons related to material resources (three items) and (iii) communication reasons (nine items).

The *MISSCARE Survey* was translated from US English to Icelandic using a rigid back-translation method and tested for acceptability, reliability and validity (22). The psychometric testing of Part A indicated good acceptability with 78% of participants answering all items. An overall test–retest measure in a pilot study, based on data from 37 nursing staff members answering the questionnaire with a two-week interval, revealed Pearson’s correlation coefficient of 0.782 (p < 0.001). As Part A contains a list of nursing elements which are not necessarily related to one another (i.e. a nurse may not give a bath but may ambulate a patient), neither Cronbach’s alpha

reliability testing nor factor analysis were appropriate for the testing of Part A (22, 23).

For Part B, the psychometric testing indicated good acceptability with 86% of participants answering all items. A test–retest measure in a pilot study, based on data from 37 nursing staff members answering the questionnaire with a two-week interval, revealed an overall test–retest Pearson’s correlation coefficient for all 17 items in Part B as 0.530 ( $p < 0.05$ ), and the three subscales had a test–retest coefficient ranging from 0.437 to 0.600 ( $p < 0.01$ ). A confirmatory factor analysis based on the model identified by Kalisch and Williams (23) revealed a good fit, with factor loadings ranging from 0.47 to 0.89 [comparative fit index (CFI) = 0.971; root-mean-square error of approximation (RMSEA) = 0.070; incremental fit index (IFI) = 0.971; and standardised root-mean-square residuals (SRMR) = 0.0756]. For each subscale, the Cronbach’s alpha reliability coefficient was 0.795–0.825 with 0.873 overall Cronbach’s alpha for part B (22).

In order to understand the differences in ratings of MNC between the two groups, the 24 elements of care in Part A of the *MISSCARE Survey* were categorised as those more likely to be completed by RNs and those nursing actions typically accomplished by nursing assistants, in this case, PNs. Elements of nursing care completed by both were labelled combined responsibilities. This categorisation was based on Kalisch’s study (16) and is validated as appropriate to the Icelandic setting.

#### Data collection

Data collection was completed in March–April 2012. Prior to the data collection, all unit managers were contacted and their agreement to carry out the study in their unit gained. A unit liaison person distributed the surveys to all nursing staff on their units, with an invitation letter and a response envelope (22).

#### Data analysis

Data were analysed using SPSS version 24.0 (IBM Corp., Armonk, NY, USA). Frequencies and correlations were used to answer the research questions. The chi-square test was used to compare RNs and PNs on dichotomous and categorical demographic and background variables. For those variables, where the count in each cell did not reach the required minimal number of five cases, the Fisher’s exact test was used. Job satisfaction was measured with three questions, one on satisfaction with current position, one on satisfaction with being a RN/PN and one on satisfaction with the level of teamwork on the unit. For the satisfaction questions, participants answered on a 5-point Likert scale ranging from ‘very satisfied’ (5) to ‘very dissatisfied’ (1). A *t*-test for

independent groups was used to compare job satisfaction of RNs and PNs.

For both missed nursing care (Part A) and reasons for missed nursing care (Part B), an overall mean score was calculated, a mean score for each of the three subscales in Part B, as well as mean scores for each of the items in both parts. The *t*-test for independent groups was used to calculate the differences in missed nursing care between RNs and PNs. For all correlations, the confidence interval was set at 95%.

#### Ethical considerations

Prior to data collection, the study was approved by each hospital Institutional Review Board, or analogue body in the smaller hospitals, and the Data Protection Authorities of Iceland (S5388/2011). Participation equalled a written informed consent.

## Findings

#### Demographic and background characteristics

Table 1 shows the characteristics of the participating RNs and PNs. The RNs in this study were primarily female (98.8%), 44 years of age or younger (67.7%) and worked 30 hours or more a week (75.1%). About half of the RN respondents had >10 years of experience (48%) with the majority having a bachelor’s or higher degree in nursing (88.1%). The majority of the RNs worked rotating shifts (83.8%). The PNs were predominately female (98.1%), 45 years or older (71.9%), worked 30 hours or more a week (75.6%) and held a vocational certificate as their highest education (99%). The majority of the PNs had more than 10 years of work experience (63.6%) and worked rotating shifts (88.6%).

The RNs and PNs differed significantly in regards to age, experience in role, experience on their current unit, type of unit and overtime worked during the past three months. The PNs were significantly older in age than the RNs and also had a significantly longer work experience in role and on their unit. Few PNs worked in the ICUs but a relatively larger portion of the PNs worked in the mixed medical–surgical units than did RNs. There was no significant difference in RNs and PNs as to gender, work hours, number of hours worked per week and absenteeism.

Job satisfaction had three measures, satisfaction with current position, satisfaction with being a RN/PN and satisfaction with teamwork on unit. There was a statistically nonsignificant difference between RNs ( $M = 4.10$ ,  $SD = 0.72$ ) and PNs ( $M = 4.10$ ,  $SD = 0.69$ ) as to satisfaction in their current position [ $t(540) = -3.689$ ,  $p = 0.985$ ]. Satisfaction with the level of teamwork on the unit of RNs ( $M = 3.78$ ,  $SD = 0.85$ ) and PNs ( $M = 3.73$ ,

SD = 0.79) was also statistically nonsignificantly different [ $t(538) = 0.647, p = 0.518$ ]. For satisfaction with being a RN ( $M = 4.50, SD = 0.66$ ) or PN ( $M = 4.38, SD = 0.69$ ), a statistically significant difference was identified [ $t(540) = 2.057, p = 0.040$ ] with RNs being more satisfied.

### Elements of missed nursing care

A *t*-test for independent groups showed a statistically significant difference for the overall MNC score (Part A) between RNs ( $M = 2.09, SD = 0.51$ ) and PNs ( $M = 1.82, SD = 0.59$ ) [ $t(541) = 5.703, p < 0.001$ ]. RNs rated more missed nursing care than PNs. As can be seen in Table 2, RNs identified more missed nursing care than did PNs for 19 of the 24 elements of nursing care. The elements of missed nursing care in Table 2 are ranked according to the mean score from the RN ratings from the nursing element perceived by RNs as most frequently missed to the least missed within each of the three categories. Four of the eleven nursing care elements usually carried out by RNs were nonsignificantly different between RNs and PNs: (i) 'attend interdisciplinary care conferences whenever held' [RNs,  $M = 2.46, SD = 0.97$ ; PN,  $M = 2.37, SD = 1.03$ ;  $t(488) = 0.985, p = 0.325$ ], (ii) 'focused reassessments according to patient condition' [RNs,  $M = 1.99, SD = 0.80$ ; PNs,  $M = 1.85, SD = 0.84$ ;  $t(383) = 1.852, p = 0.065$ ], (iii) 'patient assessments performed each shift' [RNs,  $M = 1.87, SD = 0.86$ ; PNs,  $M = 1.79, SD = 0.86$ ;  $t(530) = 1.030, p = 0.304$ ] and (iv) 'PRN medication requests acted on within 15 minutes' [RNs,  $M = 1.73, SD = 0.72$ ; PNs,  $M = 1.87, SD = 0.89$ ;  $t(310) = -1.718, p = 0.087$ ]. The elements of nursing care usually completed by the PNs (e.g. ambulation bathing and feeding.) were all rated (9 elements) significantly higher (more missed) by the RNs than by the PNs. For those elements of nursing care that are shared between RNs and PNs, three of four were reported as significantly more missed by RNs than PNs. The only shared nursing activity with nonsignificant rating was 'response to call light is initiated within 5 minutes' [RNs,  $M = 1.54, SD = 0.77$ ; PNs,  $M = 1.55, SD = 0.84$ ;  $t(534) = -0.112, p = 0.911$ ].

Although most of the elements in Part A were rated as more frequently missed by the RNs than the PNs, a pattern of the amount and type of missed nursing care is evident, especially within the categories of shared nursing care activities and nursing care activities usually carried out by PNs. Within the category of nursing care activities usually completed by RNs, there was more variation. The same elements of nursing care were reported as most frequently missed by both RNs ( $M = 2.63, SD = 0.88$ ) and PNs ( $M = 2.45, SD = 0.84$ ), 'ambulation three times per day or as ordered'. However, the nursing activity reported as least missed by RNs and PNs differed. RNs reported 'response to call light is initiated within 5 minutes' to be the least missed (RNs,  $M = 1.54,$

SD = 0.77; PNs,  $M = 1.55, SD = 0.84$ ), and PNs identified 'setting up meals for patients who feed themselves' as the least missed element of nursing care (RNs,  $M = 1.64, SD = 0.87$ ; PNs,  $M = 1.40, SD = 0.87$ ).

### Reasons for missed nursing care

A comparison of the overall mean score for reasons of missed nursing care (Part B) between RNs and PNs indicated a significant difference in their reporting [RNs,  $M = 2.32, SD = 0.38$ ; PNs,  $M = 2.21, SD = 0.62$ ;  $t(299) = 2.210, p = 0.028$ ]. When looking at each of the three subscales of reasons for missed nursing care, a statistically significant difference was found between RNs and PNs for the mean score of labour resources [RNs,  $M = 3.03, SD = 0.53$ ; PNs,  $M = 2.79, SD = 0.82$ ;  $t(310) = 3.635, p < 0.001$ ] and for the mean score of material resources [RNs = 2.18, SD = 0.63; PNs,  $M = 2.03, SD = 0.75$ ;  $t(349) = 2.285, p = 0.023$ ]. The mean score for RNs ( $M = 1.96, SD = 0.43$ ) and PNs ( $M = 1.88, SD = 0.60$ ) for the subscale of communication was not significantly different [ $t(324) = 1.500, p = 0.135$ ] (see Table 3).

For items under labour resources, three of the five questions were rated significantly higher by RNs than PNs: (i) 'unexpected rise in patient volume and/or acuity on the unit' [RNs,  $M = 3.32, SD = 0.67$ ; PNs,  $M = 3.03, SD = 0.98$ ;  $t(313) = 3.653, p < 0.001$ ], (ii) 'urgent patient situations (e.g. a patient's condition worsening)' [RNs,  $M = 2.93, SD = 0.94$ ; PNs,  $M = 2.57, SD = 1.12$ ;  $t(343) = 3.781, p < 0.001$ ] and (iii) 'heavy admission and discharge activity' [RNs,  $M = 2.76, SD = 0.79$ ; PNs,  $M = 2.46, SD = 0.99$ ;  $t(330) = 3.640, p < 0.001$ ]. One of three items under the subscale of material resources was rated significantly higher by RNs ( $M = 2.32, SD = 0.82$ ) than PNs ( $M = 1.99, SD = 0.86$ ), 'medications were not available when needed' [ $t(499) = 4.150, p < 0.001$ ]. The comparison of items under the subscale of communication, RNs rated two of nine significantly higher than did PNs, 'tension or communication breakdowns with the medical staff' [RNs,  $M = 2.04, SD = 0.79$ ; PNs,  $M = 1.77, SD = 0.84$ ;  $t(359) = 3.546, p < 0.001$ ] and 'practical nurse did not communicate that care was not provided' [RNs,  $M = 1.97, SD = 0.75$ ; PNs,  $M = 1.62, SD = 0.73$ ;  $t(400) = 5.110, p < 0.001$ ]. In spite of the overall significant difference in ratings of reasons for MNC by RNs and PNs, a pattern of the rating and type of reasons is evident, especially within the subscale of labour resources.

## Discussion

The findings of this study show similarities as well as differences in the characteristics of RNs and PNs, and their reports of MNC and reasons for MNC in hospitals in Iceland. The RNs had worked more overtime during the

**Table 2** Comparison of RNs (n = 334) and PNs (n = 210) mean scores for elements of missed nursing care (Part A: nursing care activities)

Item	RN (n = 334)		PN (n = 210)		t	p
	Mean (SD)	Rank	Mean (SD)	Rank		
Nursing care usually carried out by RNs						
Patient teaching about illness, tests and diagnostic studies	2.58 (0.88)	1	2.03 (0.91)	2	6.599	<0.001
Attend interdisciplinary care conferences whenever held	2.46 (0.97)	2	2.37 (1.03)	1	0.985	0.325
Full documentation of all necessary data	2.42 (0.88)	3	1.88 (0.82)	5	7.201	<0.001
Patient discharge planning and teaching	2.36 (0.92)	4	1.69 (0.83)	10/11	8.464	<0.001
Assess effectiveness of medications	2.32 (0.87)	5	1.92 (0.90)	4	0.985	<0.001
IV/central line site care and assessments according to hospital policy	2.25 (0.85)	6	1.72 (0.80)	9	6.797	<0.001
Medications administered within 30 minutes before or after scheduled time	2.24 (0.79)	7	1.95 (0.83)	3	3.860	<0.001
Focused reassessments according to patient condition	1.99 (0.80)	8	1.85 (0.84)	7	1.852	0.065
Skin/Wound care	1.90 (0.69)	9	1.69 (0.80)	10/11	3.117	0.002
Patient assessments performed each shift	1.87 (0.86)	10	1.79 (0.86)	8	1.030	0.304
PRN medication requests acted on within 15 minutes	1.73 (0.72)	11	1.87 (0.89)	6	-1.718	0.087
Nursing care usually carried out by PNs						
Ambulation three times per day or as ordered	2.63 (0.88)	1	2.45 (0.84)	1	2.369	0.018
Mouth care	2.37 (0.91)	2	2.05 (0.84)	2	4.233	<0.001
Monitoring intake/output	2.22 (0.82)	3	1.98 (0.88)	3	3.177	0.002
Turning patient every 2 hours	2.18 (0.83)	4	1.88 (0.93)	4	3.862	<0.001
Feeding patient when the food is still warm	2.02 (0.86)	5	1.74 (0.93)	5	3.524	0.001
Patient bathing/skin care	1.97 (0.75)	6	1.71 (0.82)	6	3.694	<0.001
Assist with toileting needs within 5 minutes of request	1.84 (0.72)	7	1.68 (0.83)	7	2.239	0.026
Setting up meals for patients who feed themselves	1.64 (0.87)	8	1.40 (0.87)	9	3.112	0.002
Bedside glucose monitoring as ordered	1.65 (0.65)	9	1.47 (0.76)	8	2.925	0.004
Nursing care carried out by both RNs and PNs						
Emotional support to patient and/or family	2.39 (0.88)	1	1.98 (0.88)	1	5.175	<0.001
Vital signs assessed as ordered	1.83 (0.79)	2	1.64 (0.93)	2	2.379	0.018
Hand washing	1.82 (0.83)	3	1.62 (0.81)	3	2.771	0.006
Response to call light is initiated within 5 minutes	1.54 (0.77)	4	1.55 (0.84)	4	-0.112	0.911

Rank: The ranking of most missed (1) to least missed nursing care elements as reported by RNs and PNs within each category.

past three months, the PNs being older with longer work experience and not as satisfied in their role as RNs. The global shortage of nurses exists in Iceland, especially in the university hospital where approximately half of the RN workforce in Iceland is employed (24). It also needs to be noted that the two teaching facilities, the university hospital in the capital area and the teaching hospital in north Iceland, both serve a different role than the small regional hospitals, as they are the only healthcare facilities with a number of subspecialties in the country. More PNs than RNs worked in the mixed medical-surgical units which are contained in the small regional hospitals, while more RNs worked in the ICUs which are all located in the university and teaching hospitals.

The RNs and PNs reports of the extent to which the elements of MNC listed in Part A of the *MISSCARE Survey-Icelandic* were missed, differed significantly, but the sequence of what elements were most and least missed were similar and in many ways the same. RNs rated all nursing elements usually carried out by PNs and the

majority of the shared elements as significantly more missed than did the PNs. These findings are in concordance with findings from a USA study comparing the reports of RNs and nursing assistants (NAs), where RNs rated all elements of MNC significantly being more missed than did NAs within the categories of nursing care usually carried out by NAs and shared activities (16). Regarding nursing elements usually carried out by RNs, there was less difference; however, as in our study, most of the elements were significantly rated as more missed by RNs than PNs. This also is in concordance with the findings from the USA study, where there was also less difference between RNs and NAs for elements of nursing care usually carried out by RNs (16). Comparison between the actual scores from our study with the scores from the USA study is difficult as the Icelandic version of the *MISSCARE Survey* had a 5-point Likert scale and the USA version a 4-point scale (16, 22).

Even if they are trained and work in the same facilities with the common goal of meeting patients care needs, the

**Table 3** Comparison of RNs (n = 334) and PNs (n = 210) mean scores for reasons for missed nursing care (Part B)

Factor	Item	RNs		PNs		t	p
		Mean (SD)	Rank	Mean (SD)	Rank		
Labour resources		3.03 (0.53)		2.79 (0.82)		3.635	<0.001
	Unexpected rise in patient volume and/or acuity on the unit	3.32 (0.67)	1	3.03 (0.98)	1	3.653	<0.001
	Inadequate number of staff	3.16 (0.78)	2	3.01 (0.98)	2	1.845	0.066
	Inadequate number of assistive and/or clerical personnel (e.g. nursing assistants, techs and unit secretaries.)	2.98 (0.73)	3	2.89 (0.95)	3	1.161	0.246
	Urgent patient situations (e.g. a patient's condition worsening)	2.93 (0.94)	4	2.57 (1.12)	4	3.781	<0.001
	Heavy admission and discharge activity	2.76 (0.79)	5	2.46 (0.99)	5	3.640	<0.001
Material resources		2.18 (0.63)		2.03 (0.75)		2.285	0.023
	Medications were not available when needed	2.32 (0.82)	1	1.99 (0.86)	2	4.150	<0.001
	Supplies/equipment not available when needed	2.18 (0.70)	2	2.08 (0.86)	1	1.344	0.180
	Supplies/equipment not functioning properly when needed	2.03 (0.72)	3	1.98 (0.85)	3	0.710	0.478
Communication/teamwork		1.96 (0.43)		1.88 (0.60)		1.500	0.135
	Unbalanced patient assignments	2.34 (0.72)	1	2.41 (0.89)	1	-0.887	0.376
	Inadequate handoff from previous shift or sending unit	2.13 (0.67)	2	2.03 (0.87)	2	1.324	0.186
	Tension or communication breakdowns with the medical staff	2.04 (0.79)	3	1.77 (0.84)	6	3.546	<0.001
	Practical nurse did not communicate that care was not provided	1.97 (0.75)	4	1.62 (0.73)	9	5.110	<0.001
	Other departments did not provide the care needed (e.g. physical therapy did not ambulate)	1.94 (0.66)	5	1.92 (0.76)	4	0.334	0.739
	Lack of backup support from team members	1.92 (0.70)	6	1.97 (0.89)	3	-0.706	0.481
	Tension or communication breakdowns with other ancillary/support departments	1.81 (0.71)	7	1.69 (0.79)	7	1.777	0.076
	Caregiver off unit or unavailable	1.73 (0.68)	8	1.83 (0.86)	5	-1.318	0.188
	Tension or communication breakdowns within the nursing team	1.69 (0.70)	9	1.66 (0.81)	8	0.409	0.683

Rank: The ranking of strongest reason (1) to least of a reason for missed nursing care as reported by RNs and PNs within each subscale.

education, training, role and responsibilities of RNs and PNs are substantially different. RNs may have a more holistic or comprehensive picture of patient situations and needs which may lead to RNs having a more thorough evaluation of how well the nursing care requirements are being met. The role and responsibilities of RNs are extensive as can be seen on the homepage of the International Council of Nurses: 'The nurse is prepared and authorized (i) to engage in the general scope of nursing practice, including the promotion of health, prevention of illness, and care of physically ill, mentally ill, and disabled people of all ages and in all health care and other community settings; (ii) to carry out health care teaching; (iii) to participate fully as a member of the health care team; (iv) to supervise and train nursing and health care auxiliaries; and (v) to be involved in research.' (25).

However, this difference in reporting of RNs and PNs may also reflect role ambiguity among different levels of nursing staff (26), as well as lack of communication or even lack of mutual trust (16). RNs on the one hand and assistive nursing personnel on the other hand may not share entirely the same culture and understanding of work-related issues. In their qualitative study, Danielsson et al. (27) interviewed RNs and NAs in Swedish hospitals to explore the subcultures among these two types of nurses as to their assumptions, values and norms

regarding practice that influences patient safety. Their findings indicated a substantial difference between RNs and NAs regarding responsibility, administration issues, communication and trust.

Overall, there was a significant difference between RNs and PNs in the ratings of reasons for MNC. When looking at each of the three subscales of reasons, two turned out to be significantly different between RNs and PNs, namely labour resources and material resources. The total score for the subscale of communication was not significantly different between the two nursing groups. When looking at individual items under each subscale, it can be seen that those items showing a statistically significant difference between RNs and PNs may be because these two reasons impact RNs more than PNs work. Labour resources such as unexpected rise in patient volume or acuity, urgent patient situations and heavy admissions and discharges, all affect the role of RNs in acute care more than PNs. RNs serve as team leaders and charge nurses and are therefore in charge of administering the flow of patients, patient assignments and delegation of tasks to other personnel (28, 29), and RNs in collaboration with physicians are in charge of admissions and discharges.

The single reason for missed nursing care under the subscale of material resources rated significantly higher

by RNs than PNs regards medication supplies. In Iceland, RNs are in charge of medication administration in hospitals, not PNs, and a substantial amount of RNs time and effort goes into that aspect of care (28). Interruptions and systems failures due to, for example, lack of supplies is also known to impact RNs work in acute care inpatient units in Iceland (30).

Although the reasons due to communication, overall, were nonsignificantly different between RNs and PNs, two of nine single reasons differed significantly, RNs reporting them as more of a problem than did PNs. One of the reasons has to do with communication with medical staff, which in Icelandic healthcare facilities is primarily within the role and responsibility of RNs. Although RNs and physicians make up the largest groups of healthcare professionals with the longest history of collaboration in healthcare services, tension and lack of trust are known to exist between these groups (31–33). Even though Icelandic RNs repeatedly report high job satisfaction (29, 34, 35), there may be potential for improvement in physician–nurse communication. Collaboration between RNs and physicians contributes to the satisfaction of RNs and to quality of patient care (34).

The second item within the subscale of communication that was significantly different between RNs and PNs was that PNs did not communicate that care was not provided. This indicates a lack of collaboration and mutual trust. Good teamwork has been identified as a key element in patient and staff outcomes (36, 37), contributing substantially to missed nursing care of patients (7, 15, 38). In a study from the USA looking at the differences in reports of RNs and NAs for missed nursing care and reasons for missed nursing care, it was found that lack of teamwork explained the discrepancy of RNs and NAs ratings to a large extent (16).

### Study limitations

This study has both strengths and limitations. The high response rate and a national sample representing the whole population of the nursing staff in medical, surgical and intensive care inpatient units in one country are considered to be the main strength of this study. Also using a well-tested tool, the *MISSCARE Survey*, is a strength, although the first time use of its Icelandic version is identified as a certain limitation. However, the *MISSCARE Survey-Icelandic* revealed good psychometric properties (22).

### Conclusion and relevance to clinical practice

The findings of this study clearly point to the need to acknowledge certain aspects of missed nursing care and the different roles within nursing. Certain elements of

nursing care are more frequently missed than others such as ambulation and turning of patients which probably have more negative impact on outcomes than other elements of missed care. (37, 39). The different roles and responsibilities of RNs and PNs, based on their education and training, may cause them to have different mental models as to the priority of various elements of nursing care. This could influence the way they answered the survey questions, but more important, it could influence their choice as to which aspects of care to omit if they cannot do everything (40).

The gravity of reasons for MNC reported by RNs and PNs in Icelandic hospitals differed. RNs felt that labour resources and material resources were significantly higher than PNs did. This finding may be due to the fact that these areas have a greater impact on RNs who manage the units and consequently are more responsible for determining patient acuity, completing admissions and discharges and determining medication supplies, than PNs. The shortage of RNs is severe in Icelandic hospitals, not the least the university hospital which is by far the largest and most acute healthcare facility in Iceland. It is also noteworthy that there was not a significant difference in the reporting of RNs and PNs regarding the overall rating of communication reasons indicating a consensus between these groups on how much of a reason communication breakdowns occur. However, the two communication items rated significantly higher by RNs indicate a potential for improvement in communication and trust between RNs and physicians on the one hand and RNs and PNs on the other hand. These findings indicate a need for interventions to improve open, sincere and structured communication and mutual respect and trust within healthcare teams in Icelandic hospitals.

Our findings have implications for clinical nurses, nurse leaders and educators as well as researchers. The importance of prioritising basic nursing care is evident (41) and acknowledging nursing care as value-added services not cost (42). Even if RNs reported more missed nursing care than did PNs and saw human and material resource reasons having more gravity than did PNs, there was a similar sequence of what elements were most and least missed as well as reasons for missed nursing care. These findings point to common elements of importance for all stakeholders to work on.

### Author contribution

Beatrice J. Kalisch and Helga Bragadóttir contributed to the conception and design of the study. Data collection and data analysis were carried out by Helga Bragadóttir. Both authors contributed to the writing of the manuscript.



## Ethical approval

Prior to data collection, the study was approved by each hospital Institutional Review Board (3/2012), or analogue body in the smaller hospitals, and the Data Protection Authorities of Iceland (S5388/2011). Participation equalled a written informed consent. The participating hospitals were as follows: Landspítali Háskólasjúkrahús, Heilbrigðisstofnun Suðurnesja, Heilbrigðisstofnun Suðurlands, Fjórðungssjúkrahúsið á Neskaupsstað,

Heilbrigðisstofnun Þingeyinga, Sjúkrahúsið á Akureyri, Fjórðungssjúkrahúsið á Ísafirði, Heilbrigðisstofnun Vesturlands.

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