Original Article

Prevalence and reasons for the occurrence of missed nursing care in medical and surgical departments: A cross-sectional study

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ABSTRACT

Background & Aim: Missed care is a serious problem in healthcare. This study aimed to measure the prevalence of missed nursing care and determine the reasons and risk factors for its occurrence in surgical and medical departments.

Methods & Materials: A cross-sectional design was used. All registered nurses who had worked for more than six months were included. The MISSEDCARE survey tool was used to determine missed nursing care (Part A) and the reasons for its occurrence (Part B). Logistic regression was used to determine risk factors for missed nursing care. The significance level was set at p<0.05.

Results: A total of 165 nurses were included. The response rate was 81.2%. The prevalence of missing nursing care ranged from 4.8% to 84.8%. Nurses with a high turnover intention had a great risk of the following missed nursing care: 'medications administered within 30 min before or after the scheduled time' [OR=11.60, CI 95%: 3.76-35.75; p<0.0001], 'assess the effectiveness of medications' [OR=3.79, CI 95%: 1.79-8.04; p<0.0001]. Urgent patient situations were the main reasons for missing patient-specific reassessment to verify improvement or deterioration during the shift [OR=6.82, CI 95%:1.84-25.26; p =0.008] and assess the effectiveness of medications.

Conclusions: This study showed a high prevalence of missed nursing care in surgical and medical departments. Urgent patient situations and unexpected increases in patient volume and acuity in the unit increased the reasons for missed nursing care. Nursing managers can promote the adoption of care models such as Primary nursing to reduce and manage missed nursing care.

Introduction

Safety and quality are foundational components of the nursing care process and are also used as indicators to measure the quality of care in hospitals (1, 2). Registered nurses provide continuous 24-hour patient care throughout various night and day shifts (3). Some nursing activities may be missed during work shifts, reducing the quality of patient care (1). Missed nursing care (MNC) is defined as delayed, partially completed, or incomplete nursing activities (4).

Studies have reported different MNC prevalence rates (3,5,6). In the United States, registered nurses reported a prevalence of MNC per shift higher than 70% (7), while this percentage has significantly decreased to 15.9% in Latin American countries (3). Conversely, in Central Europe, Zeleníková et al. observed a prevalence of MNCs higher than 90% (8), whereas in Northern Europe, the values range from 0.4% to 30% (9). In Italy, most research on MNC has focused on the prevalence of missed care and the reasons for its occurrence (5,10). In 2015, Palese and colleagues reported that the prevalence of MNCs in medical departments was 91.4 %. Subsequently, Sist and colleagues, in 2017, in a multicentre study conducted in medical, surgical, and mixed departments, reported a prevalence of 74.8%. Previous studies have shown that the most common MNCs are 'ambulation three times per day or as ordered' and 'turning patient every two hours' (5,6).

Several studies have confirmed the relationship between MNCs and organizational or unit reasons, staff characteristics (e.g. age, gender, intention to leave, and turnover intention), and teamwork (e.g. communication, material resources, and labour resources) (5,6). Intention to leave was considered a significant predictor of nurse turnover, as described in the literature. Elevated levels of nurse turnover cause a lack of nurses in the healthcare system and increase the costs of hiring and training new nurses (11). Few studies have explored the relationship between turnover intentions and MNC (12).

According to Kalich's missed nursing care model, antecedent variables such as demand for patient care, resource allocation (labour and materials), and relationships/communication can influence MNCs (1). Kalisch's concept analysis of MNC showed that the antecedents of MNC can influence the nursing process. The antecedents of MNC within the care environment are external to nurses and include labour resources, material resources, and communication (1). Kalisch and colleagues defined labour resources as an unexpected rise in patient volume and acuity on the unit, urgent patient situations (e.g. a patient's condition worsening), inadequate nursing staff, and assistive personnel (e.g. nursing assistants and technicians) (13). Bragadóttir and colleagues, in a study conducted on 544 nurses, showed the relationship between MNCs and labour resources. Inadequate labour and material resources were the most common reasons for missed nursing care, followed by communication (14).

Previous studies reported that nurses' work satisfaction and intention to leave are negatively associated with MNCs (5). Several authors have described MNCs in northern Italy (5,6,15); conversely, we have no data on MNCs from the southern Italian regions. From this perspective, in Italy, MNC and labour resources have still not been explored in depth. In our study, we hypothesized that in the medical and surgical departments of a southern hospital in Italy, there was a high prevalence of MNCs, and that it could be influenced by labour resources, material resources, and communication.

This study aimed to measure the prevalence of missed nursing care and to analyze the reasons for missed nursing care in the medical and surgical departments of a public hospital in South Italy.

Methods

Study design and reporting

A descriptive cross-sectional design was used in this study. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist was utilized to report this study.

Setting and Participants

Data collection was carried out from 16 December 2021 to 20 February 2022 in two different departments (medical and surgical). The medical department includes inpatient specialty wards such as urology, cancer, neurology, orthopedics/trauma, and two general medicine units, whereas the surgical department includes general surgery, cardiac surgery, and vascular surgery units.

We enrolled a convenience sample of nurses. After contacting the head nurses of each ward to explain and share the study protocol, the researcher informed the participants about the aims of the study, invited them to participate, and collected their signed informed consent. Two researchers distributed a paper-based questionnaire. The tool was self-administered anonymously. Each nurse who decided to participate completed the questionnaires individually. Subsequently, one researcher uploaded the answers to a Microsoft Excel © 2016 sheet.

The criteria for selecting nurses were as follows: (a) registered nurses who worked for more than six months, and (b) working in the medical or surgical department of the hospital. Nurse managers and head nurses were excluded from the study.

Sample size

To calculate an adequate sample size, we used the following formula: $N = \frac{Z^2 P(1-P)}{D^2}$ (16). N represents the adequate sample size of our study, Z is the statistic corresponding to the

confidence level, and P expresses the expected prevalence of MNC (P=30%) reported by Campagna et al. in 2020 (10), and D is the level of accuracy (D=0.07). The minimum sample size required was 165 nurses, resulting in a 95% confidence interval (95% CI) of 23–37%.

Outcomes and instruments

The primary outcome measure was the presence of missed nursing care, defined as 'the failure to provide the required care as anticipated' (1). Researchers recorded missed nursing care using the Italian version of the Missed Nursing Care Survey (MISSCARE) (6). The MISSCARE survey includes (1) General information, (2) Nurse activity/missed nursing care (Part A), and (3) Reasons for missed care (Part B).

General information about participants was collected, such as age, gender, education (bachelor's or master's degree), department (medical or surgical), years working as a nurse, years of working in the current department, work schedules (24-hour time, daily time), according to the Italian version of the MISSCARE survey (6). The questionnaire collected some participants' information about the last three months: working days or shifts missed due to illness, accidents at the workplace, extra rest, etc. (excluding previously agreed upon days of absence), hours worked per week (on average), accumulated overtime work hours, turnover intention, how often the department has the appropriate nursing resources for patients in the current or last work shift; number of admitted patients (including transfers from other departments) managed in the current or last work shift; and discharge management (including transfers to other departments) in the current or last work shift. The variables included in the general information were collected for all participants following the MISSCARE survey. Additionally, the researchers measured the participants' personal, role, and teamwork satisfaction levels using a 5-point Likert scale (1-very dissatisfied, 5-very satisfied).

The MISSCARE Survey–Part A consisted of 24 items to measure the frequency of missed nursing care on a five-point Likert scale ranging from 1 to 5 (1= always missed, 2=

frequently missed, 3= occasionally missed, 4= rarely missed, and 5= never missed).

Part B described the reasons for missed care. This section includes 17 items across four dimensions: communication (six items), material resources (five items), labour resources (four items), and unexpected events (two items). Each item has a four-point Likert scale answer option ranging from 0 to 3 (3=significant reason; 2=moderate reason; 1=minor reason; and 0=not a reason for missed care). For each item in Parts A and B, participants were asked to check the response that best described their level of agreement (6,13).

The Italian version of the MISSCARE survey showed a Keiser-Meyer-Olkin test of 0.896, and Bartlett's sphericity test was significant (p<0.001) (6). The reliability of the MISSCARE Survey regarding its consistency was evaluated by the value of the Cronbach alpha coefficient (α). For Part A, α was 0.87, while for Part B, α was 0.94 (6,13).

Data analysis

The distribution of quantitative variables was checked using the Shapiro-Wilk test. These variables were presented as mean and standard deviations (SD) when normally distributed, and median and interquartile ranges when the distribution was not normal. The absolute frequencies and percentages were used for dichotomous variables. Subsequently, we analyzed all items in parts A and B through dichotomization of their values (presence of missed nursing care or reasons vs. absence of missed nursing care or reasons). Based on the Italian version of the MISSCARE survey (6), we considered the presence of missed nursing care for the following values: "always missed", "frequently missed", and "occasionally missed". Conversely, values such as 'rarely missed' and 'never missed' were considered to indicate the absence of missed nursing care. Regarding the reasons, we considered the presence of reasons in the values such as: *"significant reason"* and *"moderate reason"*, while the absence of reasons was coded as *"minor reason"* and *"not a reason for missed care"*.

The relationship between missed nursing care and reasons was explored using logistic regression analysis. The researcher selected the variables using a stepwise backward approach, and the limit of significance for entering the model was 0.10. The significance level was set at $p \leq 0.05$. Data analysis was performed using Stata © 13 software (Stata Corp.).

Ethical consideration

Data was collected after obtaining approval from the university's institutional review board No.2021/26766, 16/11/2021. All nurses who voluntarily agreed to participate in the study were enrolled. All the ethical concerns of the study were stated in the first part of the questionnaire in agreement with the principles of the Data Protection Authority (DPA). Head nurses were unable to identify whether individual nurses participated or not. The researchers obtained anonymous written informed consent before participating in the study.

Results

Among 203 nurses working in medical and surgical departments, 165 participated in the study, giving a response rate of 81.2% (n=165) . All the nurses completed the questionnaire. The most prevalent sex was male (52.1%; n=86), with an average age of 46.72 (SD±10.71) in the medical (68.9%; n=107) and surgical departments (31.1 %; n=58). The participants cared for an average of 11 patients by shift (SD±5.6) and managed an average of 3.1 (SD±3.0) of new patient admissions and an average of 2.5 patient discharges by shift (SD±2.3) (Table 1).

Table 1. Sociodemographic characteristics of the sample and workload (N=165)

Characteristics	Mean (SD)	N	(%)
Gender			
Male		86	(52.1)
Female		79	(47.9)
Age			
<25		4	(2.4)
25-34		32	(19.4)
35-44		25	(15.2)
45-54		58	(35.2)
55-64		46	(27.9)
Education			
Bachelor		124	(75.2)
Master's degree		41	(24.8)
Department			
Medical		107	(68.9)
Surgical		58	(31.1)
Years working as a nurse			
<1		2	(1.2)
1-2		17	(10.3)
3-5		29	(17.6)
6-10		13	(7.9)
>10		104	(63.0)
Years of working in that department			
<1		5	(3.0)
1-2		45	(27.3)
3-5		35	(21.2)
6-10		35	(21.2)
>10		45	(27.3)
Work schedules (Time)			
24 h time		152	(92.1)
Daily time		13	(7.9)
Workload			
Patients cared	11 (± 5.6)		
Patients managed	3.1 (± 3.0)		
Patients discharged by shift	2.5 (± 2.3)		
Response rate		165	(81.2)

Prevalence of missed nursing care and reasons

The prevalence of MCN ranged from 7.9% (n=13) to 84.8% (n=140), according to the different types of nursing activities. The most frequent missed nursing care were '*Ambulation three times a day or as ordered*', (83.6%; n=138), '*Turning patient every two hours*', (84.8%; n=140), '*Wound care and pressure ulcer control*', (68.5%; n=118), '*Mouth care*', (54.5%; n=90), '*Feeding patient when food is still warm*' (45.5%; n=75) and '*Preparing the meal and setting (Table, tray) for self-sufficient patients*' (43.6%; n=72) (Table 2).

The main reasons (MISSCARE Part B) for the occurrence of missed nursing care were '*Other departments did not provide the care needed*' (69.1%; n=114), '*Inadequate number of assistive personnel (e.g., nursing assistants, technicians, etc.)*' (69.1%; n=114), '*Inadequate number of staff*' (68.5%; n=113), '*Inadequate hand-off from previous shift or sending unit*' (65.5%; n=108), '*Urgent patient situations (e.g., a patient's condition worsening)*' n=100, (64.8%) and '*Unexpected rise in patient volume and/or acuity on the unit*', (63.6; n=105) (Table 3).

Table 2. Prevalence of missed nursing care (n=165)

Missed Care - Part A	N	(%)
Ambulation 3 times per day or as ordered	138	(83.6)
Turning patient every 2 h	140	(84.8)
Feeding patient when the food is still warm	75	(45.5)
Preparing the meal and setting (table, tray) for self-sufficient patients	72	(43.6)
Medications administered within 30 minutes before or after the scheduled time	27	(16.4)
Detection of vital signs	8	(4.8)
Water balance monitoring (in / out)	13	(7.9)
Full documentation of all necessary data	41	(24.8)
Education for patients and their families	49	(29.7)
Emotional support to patient and/or family	43	(26.1)
Patient bathing/skincare	24	(14.5)
Mouth care	90	(54.5)
Hand washing	15	(9.1)
Teach patient about plans for their care after discharge and when to call after discharge	63	(38.2)
Bedside glucose monitoring as ordered	17	(10.3)
Patient assessments performed each shift	31	(18.8)
Patient-specific reassessment to verify improvement or deterioration during the shift	34	(20.6)
IV/central line site care and assessments according to hospital policy	29	(17.9)
Response to call ring is initiated within 5 min	27	(16.4)
PRN medication requests were acted on within 15 min	17	(10.3)
Assess the effectiveness of medications	29	(17.9)
Attendance at multidisciplinary department meetings or business whenever required	48	(29.1)
Assist with toileting needs within 5 minutes of request	13	(7.9)
Wound care and pressure ulcer control	118	(68.5)

Table 3. Prevalence of Reasons (n=165)

Reasons - Part B	N	(%)
Inadequate number of staff	113	(68.5)
Urgent patient situations (eg, a patient's condition worsening)	100	(64.8)
Unexpected rise in patient volume and/or acuity in the unit	105	(63.6)
Inadequate number of assistive personnel (eg, nursing assistants, technicians, etc)	114	(69.1)
Assignment of an unbalanced number of patients to each nurse	83	(50.3)
Medications were not available when needed	75	(45.5)
Inadequate hand-off from previous shift or sending unit	108	(65.5)
Other departments did not provide the care needed	114	(69.1)
Supplies/equipment not available when needed	80	(48.5)
Supplies/equipment do not function properly when needed	87	(52.7)
Lack of backup support from team members	85	(51.5)
Tension or communication breakdowns with other support departments	71	(43.0)
Tension or communication breakdowns within the nursing team	69	(41.8)
Tension or communication breakdowns with the medical staff	71	(43.0)
The nursing assistant did not communicate that care was not done	73	(44.2)
Care caregiver is off the unit or unavailable	54	(32.7)
Unbalanced patient assignments	67	(40.5)

Socio-demographic characteristics and workload to occur for missed care nursing

Tables 4A and 4B show the relationships between missed nursing care, sociodemographic characteristics, and workload. regression showed a trend towards the associations between male nurses and the missed care nursing *'Medications administered within 30 min before or after the scheduled time'* (OR= 2.52; 95% CI:0.92-6.89; Pseudo R2= 0.21; p= 0.07), even though this result was not statistically significant. Furthermore, the probability of missed nursing care about *'Patient bathing/skin care'* (OR= 0.38; 95% CI: 0.14-1.00; Pseudo R2=0.02; p= 0.05) and *'Mouth care'* (OR= 0.53; 95% CI: 0.28-0.99; Pseudo R2=0.03; p= 0.04) was decreased in the male gender.

Older nurses, compared to younger ones, had a higher probability of missed nursing care *'PRN medication requests acted on within 15 min'* (OR= 1.62; 95% CI:1.00-2.63; Pseudo R2=0.16; p= 0.04), in contrast to *'Medications administered within 30 min before or after the scheduled time.'* (OR=0.43; 95% CI: 0.24-0.79; Pseudo R2=0.21; p= 0.006) (Table 4A).

Nurses' personal satisfaction has a negative impact on missed nursing care. Nurses with low personal satisfaction reported likelier MNC, such as *'Ambulation 3 times per day or as ordered.'* (OR= 2.62; 95% CI:1.47-4.67; Pseudo R2=0.09; p= 0.001) and *"Turning patient every two hours.'* (OR= 1.90; 95% CI:1.11-3.23; Pseudo R2=0.04; p= 0.01) and *"Response to call ring is initiated within 5 min"* (OR= 1.76; 95% CI:1.08-2.87; Pseudo R2=0.15; p= 0.02) and *'PRN medication requests acted on within 15 min'* (OR= 2.38; 95% CI:1.21-4.66; Pseudo R2=0.16; p= 0.01).

An important association was found between turnover intention and missed nursing care. In some cases, this relationship was very strong, such as *'Medications administered within 30 min before or after the scheduled time'* (OR= 11.60; 95% CI:3.76-35.75; Pseudo R2=0.21; p<0.0001). Furthermore, high levels of turnover intention were associated with missed nursing care (OR= 5.37; 95% CI:2.00-14.37; Pseudo R2=0.10; p<0.001) (Table 4B).

A significant positive association was found between high levels of turnover intention and '*Teach patient about plans for their care after discharge and when to call after discharge'* (OR=5.13; 95% CI:1.89-13.97; Pseudo R2=0.13; p<0.001). Nurses with a high turnover intention were also at greater risk of reporting the missing of *'Assess the effectiveness of medications'* (OR=3.79; 95% CI: 1.79-8.04; Pseudo R2=0.19; p<0.0001) and *'IV/central line site care and assessments according to hospital policy'* (OR=2.74; 95% CI: 1.35-5.56; Pseudo R2=0.13; p=0.005). Nurses who managed a higher number of patients' discharges and admissions had a higher probability of missing nursing care in the *'PRN medication requests acted on within 15 min' activities'* (OR =1.38; 95% CI:1.00-1.92; Pseudo R2= 0.16; p =0.04) and *'Medications administered within 30 min before or after scheduled time'* (OR =1.59; 95% CI: 1.09-2.32; Pseudo R2=0.21; p=0.01).

The Logistic analysis showed an interesting relationship between nursing activities (MISSCARE Part A) and reasons for missed nursing care (MISSCARE Part B). The occurrence of '*Urgent patient situations (e.g., a patient's condition worsening)'* significantly increased the probability that nurses failed to accomplish *'Patient-specific reassessment to verify improvement or deterioration during the shift'* (OR= 6.82; 95% CI:1.84-25.26; Pseudo R2= 0.21; p=0.004*)*. Furthermore, the probability of missing *'Assess the effectiveness of medications'* was highly associated with *'Unexpected rise in patient volume and/or acuity on the unit'* (OR=5.75; 95% CI: 1.57-21.08; Pseudo R2= 0.19; p=0.008) (Table 5).

Table 4A. Multivariate regression of Missed care (Part A) (n=165)

Missed Care - Part A	Gender			Age			Personal satisfaction			Role satisfaction		
	OR*	CI**	P value	OR*	CI**	P value	OR*	CI**	P value	OR*	CI**	P value
Ambulation 3 times per day or as ordered							2.62	1.47-4.67	*0.001*			
Turning patient every 2 h							1.90	1.11-3.23	*0.01*			
Feeding patient when the food is still warm							1.46	1.01-2.11	*0.04*			
Preparing the meal and setting (table, tray) for self-sufficient patients				0.66	0.48-0.91	*0.01*						
Medications administered within 30 min before or after scheduled time	2.52	0.92-6.89	*0.07*	0.43	0.24-0.79	*0.006*						
Full documentation of all necessary data							2.85	0.82-9.80	*0.09*			
Patient bathing/skin care	0.38	0.14-1.00	*0.05*									
Mouth care	0.53	0.28-0.99	*0.04*									
Hand washing				0.58	0.33-1.03	*0.06*						
Teach patient about plans for their care after discharge and when to call after discharge				0.65	0.46-0.91	*0.01*						
Bedside glucose monitoring as ordered	0.35	0.11-1.08	*0.06*									
Patient assessments performed each shift							0.56	0.30-1.06	*0.07*	2.39	1.16-4.94	*0.01*
Patient specific reassessment to verify improvement or deterioration during the shift	0.34	0.13-0.84	*0.02*									
IV/central line site care and assessments according to hospital policy	1.50	0.98-2.32										
Response to call ring is initiated within 5 min							1.76	1.08-2.87	*0.02*			
PRN medication requests acted on within 15 min				1.62	1.00-2.63	*0.04*	2.38	1.21-4.66	*0.01*			
Assess effectiveness of medications							1.67	1.03-2.71	*0.03*			
Attendance at multidisciplinary department meetings or business whenever required							0.67	0.45-1.00	*0.05*			

The selection of the variables was carried out with a forward stepwise approach, * OR = Odds Ratio, ** CI = Confidence Interval, 95%,

Multivariate analysis (y=no missed nursing care Vs presence of missed nursing care; p<0.05), Gender (y=female vs male), Age (y=younger vs older)

Table 4B. Multivariate regression of Missed care (Part A) (n=165)

Missed Care - Part A	Turnover intention			Adequate nursing resources			Number of patients			Number of discharge			Number of admissions		
	OR*	CI**	P value	OR*	CI**	P value	OR*	CI**	P value	OR*	CI**	P value	OR*	CI**	P value
Feeding patient when the food is still warm	2.37	1.09-5.13	*0.02*				0.89	0.83-0.94	*<0.0001*						
Preparing the meal and setting (table, tray) for self-sufficient patients	5.37	2.00-14.37	*0.001*				0.93	0.88-0.99	*0.03*						
Medications administered within 30 min before or after scheduled time	11.60	3.76-35.75	*<0.0001*							0.65	0.44-0.97	*0.03*	1.59	1.09-2.32	*0.01*
Detection of vital signs	2.33	0.89-6.09	*0.08*												
Water balance monitoring (in/out)	2.67	1.22-5.85	*0.01*												
Education for patients and their families	1.78	0.92-3.42	*0.08*												
Emotional support to patient and/or family				0.61	0.42-0.89	*0.01*									
Patient bathing/skin care							0.90	0.83-0.98	*0.02*						
Mouth care	2.23	1.03-4.83	*0.04*												
Teach patient about plans for their care after discharge and when to call after discharge	5.13	1.89-13.97	*0.001*	0.55	0.37-0.80	*0.002*									
Patient assessments performed each shift							0.93	0.86-1.00	*0.06*						
Patient specific reassessment to verify improvement or deterioration during the shift	2.26	1.11-4.57	*0.02*	0.56	0.36-0.88	*0.01*	0.93	0.86-1.01	*0.09*						
IV/central line site care and assessments according to hospital policy	2.74	1.35-5.56	*0.005*				0.91	0.83-0.99	*0.03*						
Response to call ring is initiated within 5 min	2.44	1.20-4.97	*0.01*							0.83	0.69-0.98	*0.03*			
PRN medication requests acted on within 15 min							0.89	0.78-1.00	0.06	1.38	1.00-1.92	*0.04*	0.81	0.67-0.97	*0.02*
Assess effectiveness of medications	3.79	1.79-8.04	*<0.0001*												

Table 5. Logistic regression of missed care (Part A) Vs reasons (Part B) (n=165)

Missed Care	Urgent patient situations (eg, a patient's condition worsening)			Unexpected rise in patient volume and/or acuity on the unit			Pseudo R2
	OR*	CI**	P value	OR*	CI**	P value	
Feeding patient when the food is still warm	1.87	0.89-3.92	*0.09*				0.12
Education for patients and their families	2.35	1.05-5.30	*0.03*				0.05
Emotional support to patient and/or family				0.61	0.42-0.89	*0.01*	
Teach patient about plans for their care after discharge and when to call after discharge				2.02	0.94-4.32	*0.06*	0.17
Patient assessments performed each shift	2.49	0.92-6.69	*0.07*				0.08
Patient-specific reassessment to verify improvement or deterioration during the shift	6.82	1.84-25.26	*0.004*				0.21
IV/central line site care and assessments according to hospital policy				4.00	1.26-12.66	*0.01*	*0.13*
Response to call ring is initiated within 5 min	2.93	0.89-9.62	*0.07*				
PRN medication requests were acted on within 15 min				4.10	1.00-16.79	*0.04*	0.15
Assess the effectiveness of medications				5.75	1.57-21.08	*0.008*	0.19
Attendance at multidisciplinary department meetings or business whenever required				2.67	1.20-5.92	*0.01*	*0.05*

The selection of the variables was carried out with a forward stepwise approach, * OR = Odds Ratio, ** CI = Confidence Interval, 95%

Logistic regression analysis (y=no missed nursing care Vs presence of missed nursing care; p<0.05)

Discussion

This study aimed to measure the prevalence of missed nursing care and to analyze the reasons for its occurrence. The most important aspects that emerged were the high prevalence of MNCs in medical and surgical settings and their association with personal nurses' satisfaction and turnover intention. Furthermore, Logistic analysis reported strong relationships between reasons, such as labour resources (MISSCARE Part B) and MNCs (MISSCARE Part A).

Prevalence and type of Missed nursing care

Our findings showed that 83,6 % of the nurses commonly missed at least one essential element of nursing care– '*ambulation three times per day or as ordered*' in the medical–surgical ward; in addition, approximately 84.8% (n=140) of nurses reported an MCN in the items, '*turning the patient every two hours'*.

Several authors have described the prevalence of MNCs in different settings (3,17–19). Using the same instrument, Cho et al., in a study conducted on 3037 nurses from 51 Korean hospitals, reported a rate of 81% (18). A similar prevalence of MNCs (74%) has been reported in obstetric and gynecological units (19). In contrast, Zárate-Grajales and colleagues reported a low prevalence of MNCs (15.9%) among Mexican nurses (3).

As reported in previous studies, ambulation of patients three times per day is considered the most common form of MNC (17). In 2021, Al-Faouri and colleagues (17) showed that MCN, such as *"ambulation three times per day or as ordered"*, was rated as the most common MCN among Jordanian nurses. Failure to ambulate has been associated with the onset of delirium (20), pneumonia, increased pain and discomfort (21), delayed wound healing and pressure ulcers (22), hospital mortality (18), and healthcare costs (22). The high prevalence of missing "ambulation in patients three times per day" could be explained by the nurses' understanding and increased workload. Additionally, registered nurses may consider this activity unimportant for patient care or perceive it as not part of their responsibilities (17), because, in Italy, the basic nurse care of patients in general wards is often asked of nurse assistants.

Our analysis also showed a significant relationship between the turnover intention of nurses and MNCs. In our results, several activities, such as *'medications administered within 30 min before or after scheduled time'* and *'assess the effectiveness of medications'*, were influenced by the turnover intention of the nurses. Nurses are responsible for administering medications to hospitalized patients. Furthermore, incorrect medication administration can negatively affect patients' health (17). This finding aligns with those of

previous studies. A recent study on 347 nurses reported a positive relationship between turnover intention and MNC (23). Stemmer and colleagues showed that units with higher missed care rates had more staff intending to leave and subsequent turnover (12). The relationship between MNCs and nurse turnover intention can be explained by the triggers of turnover intention. A meta-analysis by Xu and colleagues explored the global prevalence of turnover intention. The authors reported a mean prevalence of 27.7% (95% CI]:21.6%-34.3%) (24). Job (e.g. routine job), involvement, job commitment, and family connections are directly related to turnover intention (12). Nursing managers can promote job satisfaction and work motivation by preventing the risk factors that trigger turnover intention (12).

The results of this study showed that Logistic regression directly relates missed nursing care to gender, older age, and personal and role satisfaction. Al-Faouri and colleagues described no significant relationship between MNC and gender, but in Jordanian nurses, an important correlation was reported with older age (17), while Bragadóttir and colleagues found no correlation between MNC and age (2). Furthermore, some studies have confirmed a relationship between personal and role satisfaction and MNC (14,17), with the exception of a study performed in a university hospital in Jordan (17). It can be assumed that a highly satisfied registered nurse can deliver high-quality care; consequently, low turnover could influence work commitment (12).

Regarding workload variables, such as adequate nursing resources, number of patients, and number of discharges and admissions, the present study found a direct relationship with MNC. These findings are consistent with those of earlier studies (2,14). Some studies have demonstrated that MNCs can be influenced by an increased nurse-to-patient ratio (25). This result could be explained by the fact that there is a deficit of nursing staff and an increase in the nurse-to-patient ratio in Italy compared to the European nurses employed in healthcare systems (25).

Relationship between missed nursing care (Part A) and reason (Part B)

Regarding the reason for the occurrence of MNCs, nurses who reported urgent patient situations (e.g. a patient's condition worsening) as a significant reason reported an increase in the number of MNCs. Furthermore, we found a significant positive correlation between *an unexpected rise in patient volume and/or acuity on the unit'* and *the effectiveness of medications*. Similar findings were reported in previous studies (14,17). Patients admitted to medical wards often report multiple morbidities and have a poorer functional status (2). Their conditions may change rapidly owing to an increasing number of urgent patient situations and an unexpected rise in patient volume and/or acuity on the unit.

Our findings reported only two reasons ("*an unexpected rise in patient volume and/or acuity on the unit and the effectiveness of medications*") are associated with MNCs. Similar results are reported by Al-Faouri and colleagues, who explain how, in Jordan, the family follows the patient throughout the hospitalization, helping considerably with care activities in the case of many patients (17). In Italy, there is no uniformity in patient visit policies; in Southern Italy, there are very restricted visit policies, where to make up for the lack of health workers, nurses are forced to increase the work volume (13). The international panorama describes how different reasons can be related to MNCs (2,13,14,21). In our case, a larger sample in different settings could add other reasons for MNCs.

Implications for nursing practice

Describing the risk factors and reasons for the occurrence of MNCs can help nursing managers promote risk prevention models to reduce the onset of MNCs. Furthermore, as described in the literature, several factors, such as nurse job burnout, can impact the onset of MNCs, but future research could explore the relationship between nurses' quality of life or workplace violence and MNCs (26, 27).

Nursing managers should introduce interventions to reduce the prevalence and incidence of MNCs in the medical and surgical departments. Regarding teamwork and staffing levels, Cho and colleagues suggested increasing nurse staffing to reduce the onset of MNCs (28). Another intervention, the "train-the-trainer", was based on an increase in teamwork (29). In this study (29), 242 nurses were trained using a training intervention based on the communication software Team Strategies and Tools to Enhance Performance and Patient Safety (STEPPS). Kalisch and colleagues reported that the intervention increased teamwork (F = 6.91, df = 259.01; p = 0.001) and decreased missed care (F = 3.59, df= 251.29, p=.03) over time (29). Furthermore, the use of team STEPPS resulted in higher satisfaction with teamwork and increased teamwork knowledge after the intervention. Some studies have demonstrated the effectiveness of interventions such as reminders within the nursing process (30). In 2015, Piscotty and colleagues reported that reduced MNCs use Nursing Care Reminders (30).

Finally, nursing managers should promote the implementation of a nursing model based on patient-centered primary nursing and adopt a personalized care delivery model based on care continuity and the relationship between nurses and patients (2,14,21). As the literature describes, implementing the primary nursing model has reduced missing care by approximately 80.0 %, increasing the quality of patient care. Furthermore, this model is widely used in medical and surgical departments to increase care safety to reduce and prevent MNC (2,14,21).

Limitations

We cautiously interpret these results because the present study has some limitations. This study was conducted in only one hospital. Future research should focus on large-scale multicenter studies to fully understand the phenomenon of MNCs in the medical and surgical departments. However, we achieved the minimum calculated sample size, preventing an incorrect sample size bias. Some variables in the study depended on subjective responses, which may have provided information bias. Finally, the major limitation of this study was the instrument used. A questionnaire is always prone to the risk of recall bias, socially desirable bias, and other cognitive biases probably related to the respondent's emotional status at the moment of filling (e.g. nurses with low satisfaction levels or intention to leave could have had a perception of worse condition at work and a tendency to increase occurrence of MNCs). The potential biases due to the use of self-reported data were addressed by ensuring the anonymity of the participants; thus, the nurses felt more accessible in answering what could correspond to the reality of the description of the phenomenon.

Conclusion

This study showed that MNCs can be largely diffused in the medical and surgical departments of South Italy. The most common MNCs reported were *"ambulation three times per day or as ordered"* and *"turning the patient every two hours"*.

Socio-demographic characteristics such as gender, age, personal satisfaction, role satisfaction, turnover intention, adequate nursing resources, number of patients, number of discharges, and number of admissions may affect the occurrence of MNCs. Urgent patient situations, unexpected patient volume, and acuity increases were the reasons significantly associated with an increase in MNC.

These results emphasize the importance of preventing MNCs in surgical and medical departments through the design, implementation, and evaluation of adequate professional and management strategies.

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