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RESEARCH ARTICLE

The Relationship between Nursing Job Satisfaction and Missed Nursing Care in Critical Care Units

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Abstract:

Background:

Missed nursing care is a common occurrence that has a negative impact on the standard of patient care. Missed care is indicative of nurses' affected work satisfaction in times of workflow. The purpose of this study was to determine the prevalence of missed nursing care (MNC), and the reasons for its occurrence among Jordanian nurses. The study sought to assess the level of job satisfaction and missed nursing care among Jordanian nurses and their association with demographic variables.

Methods:

A descriptive, cross-sectional design was used in this study. A convenience sample of 181 registered nurses working in different critical care units in one teaching hospital and two government hospitals was recruited. Three tools were used to collect the data: a sociodemographic data form, a survey of missed nursing care (MISSCARE Survey) consisting of two parts (part A was designed to measure missed nursing care (MNC), and part B addressed the reasons for MNC), and the nursing-workplace satisfaction questionnaire (NWSQ).

Results:

The results of the study revealed Jordanian nurses in critical care units to have a moderate level of job satisfaction (45.50±9.09). In addition, the total mean score of the MNC was found to be 2.18±0.40 out of 5, which is a low level of missed nursing care. The most commonly occurring missed nursing care aspects were turning patients every 2 hours (2.53 ±1.43), mouth care (2.37 ±1.36), and teaching patients about illness, tests, and diagnostic studies (2.36 ±1.47). Moreover, among the reasons for missed nursing care with respect to teamwork, the caregiver being off the unit or unavailable was the most significant one (24.3%, n=44); with respect to the material resources, the unavailability of medications, when needed, was the most significant factor (21.5%, n=39) for missed nursing care, and regarding the labor resources, an unexpected rise in patient volume and acuity on the unit was the most significant factor influencing missed nursing care (23.8%, n=43). Finally, a statistically significant weak negative correlation was found between nurses' job satisfaction and missed nursing care score (R=-0.177, P=0.012).

Conclusion:

The study concluded that nurses in critical units have a low level of missed nursing care and a moderate level of job satisfaction.

Keywords: Missed nursing care, Job satisfaction, Critical care units, NWSQ, CCUs, Nursing.

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1. INTRODUCTION

Job satisfaction, particularly in critical care units (CCUs), significantly impacts patient care, nurse retention, and the effectiveness of healthcare services [1, 2]. Research has demonstrated the direct correlation between job satisfaction and the quality of the work environment [1]. However, our understanding of this relationship in the unique and demanding context of CCUs remains incomplete. This gap in knowledge forms the premise of our investigation, with a particular focus on the phenomenon of missed nursing care (MNC).

CCUs are highly specialized units, designed for the care of critically ill patients or those at risk of developing acute organ dysfunction [3 - 6]. These units create distinct working conditions for nurses, characterized by continuous alerts, rapid movements, and high-stake decision-making [7]. Such a work

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environment can lead to elevated stress levels and potential burnout, consequently affecting job satisfaction and the quality of patient care [8].

Evidence from studies, such as Kumar *et al.*'s work, suggests that younger nursing staff tend to experience higher stress levels in these environments due to their relative inexperience in navigating such demanding conditions [9]. Moreover, nurses exposed to stressful events either at work or home are likely to face compounded stress, which could potentially impede their performance [9]. Such stressors may lead nurses to seek employment in less intense environments, impacting staff retention in CCUs [10].

Further dimensions of job satisfaction include education, professional development, and working conditions [11 - 13]. Specific indicators of job satisfaction in the CCU context have been identified as physical comfort in the workplace, availability of job promotion opportunities, job security, fair task distribution, stable working hours, and adequacy of resources [14, 15]. Conversely, factors, such as unfavorable working conditions, inadequate rewards, and nursing shortages contribute to job dissatisfaction and are recognized as major global concerns [16].

Particularly, this study aimed to investigate the phenomenon of missed nursing care (MNC) and its implications on job satisfaction and patient care quality. MNC refers to the neglect or postponement of vital patient care activities and is considered a critical part of the nursing workflow [17 - 20]. It is a pervasive issue that has a negative impact on the quality of patient care and can lead to feelings of guilt, frustration, and reduced job satisfaction among nursing staff [21].

With respect to the relationship between job satisfaction and the quality of patient care, it is generally acknowledged that they exhibit a positive correlation [17 - 19]. Job satisfaction, being a vital outcome of nursing practice, can influence the quality of the work environment, and consequently, the care provided to patients [18].

The present study will further explore the issues surrounding job satisfaction within CCUs, with a particular focus on MNC. Our objective is to fill the gap in understanding how job satisfaction, the work environment in CCUs, and MNC intersect and influence one another. We aim to contribute to the existing body of knowledge and provide actionable solutions to enhance job satisfaction, improve patient care, and promote staff retention in CCUs.

1.1. Problem Statement

As a result of job dissatisfaction, nurses experience excruciating stress, which lowers the quality of care that is provided to critically ill patients, thereby leading to missed nursing care [22]. Jordanian nursing practice environment is characterized by a heavy workload, inter-professional conflicts, lack of decision-making ability, a non-supportive work environment, and unavailability of staff support [23]. Such inadequacy is attributed to the negative work environment, which affects the nurses' job satisfaction and the intent to stay. Therefore, there is an increasing demand for health care due to the constant nursing shortage [24]. In addition, weak or low salary compression has been reported to avert Jordanian nurses from career promotion and professional advancement opportunities [24].

Nurses' job dissatisfaction can be due to a variety of reasons, such as high patient ratios, a heavy workload, a low-income package, or a lack of job stability. Besides, the feeling of demoralization and disempowerment among nurses indicate missed care and the absence of support [11].

Among the above-mentioned factors for job dissatisfaction of Jordanian nurses, physicians' domination and unclear job descriptions are major issues that result in job dissatisfaction and turnover [24]. As a result, satisfied nurses, in turn, tend to stay longer in their job than dissatisfied nurses. This positively influences patients' satisfaction levels and health status through high-quality nursing care [25]. The major reasons behind missed nursing care in Jordanian hospitals are a lack of labor resources and a low number of nurses per shift [26].

MNC is a prevalent issue in a variety of healthcare settings. Patient safety is always a top issue in nursing practice, and MNC poses a risk to it [27, 28]. Additionally, MNC and its contributing components provide crucial benchmarks for determining the standard of nursing care. Nurses' employee satisfaction may rise when patient care is of higher quality. As a result, finding the effective elements is more crucial than only MNC [27].

Within the Jordanian context, and up to the researcher's knowledge, there is a significant lack of studies addressing the association between job satisfaction and missed nursing care, especially among nurses working in critical care units of public Jordanian hospitals, which is the overwhelming concern of the present study. The present study is expected to fill this research gap and provide research-based evidence regarding the association between job satisfaction and missed nursing care.

1.2. Purpose of the Study

The purpose of this study was to investigate the relationship between job satisfaction and missed nursing care (MNC) within critical care units (CCUs).

1.3. Research Questions

This study aimed to seek answers to the following research questions:

1. What is the level of job satisfaction among Jordanian nurses?

2. What are the reasons for the prevalence of MNC among Jordanian nurses?

3. What is the association between job satisfaction and MNC among Jordanian nurses?

4. Is there a relationship between MNC and factors leading to missed care among Jordanian nurses?

5. What is the relationship between MNC, job satisfaction, and certain socio-demographic variables among Jordanian nurses?

2. METHODOLOGY

2.1. Design

A descriptive, cross-sectional study design was used to assess the relationship between nursing job satisfaction and missed nursing care in critical care units.

2.2. Population and Sample

The nurses working in critical care units in Jordan were the target population for this study. All accessible nurses who were employed at one teaching hospital and two government hospitals were recruited to participate in the study if they met the inclusion criteria. The inclusion criteria included a bachelor's degree in nursing or higher qualification, 1-year experience of working in the critical care areas and being involved in direct patient care in critical care units (CCUs), such as intensive care units (ICUs), cardiac care units (CCUs), surgical intensive care unit (SICU), general intensive care unit (GICU), long term intensive care unit (LTICU) and medical intensive care unit (MICU). The exclusion criteria included participants with academic degrees lower than bachelor's, nurses with less than one year of experience, nurses in directing or managerial positions, and those not working in critical care units (CCUs). All nurses working in critical care units who met the inclusion criteria were invited to participate in the study. A convenience sampling technique was used to recruit critical care nurses participating in this study. The convenience sampling method was used due to the limited time window for conducting this research. The sample size was calculated based on power analysis. The sample size for the study was calculated by the G*Power electronic application version 3.0, using a small to medium effect size, alpha equal to 0.05, and 0.80 as a statistical level of power [10,28]. So, 165 participants were acquired from three hospitals. Another 10% of participants were added to compensate for the expected attrition, and the number of participants was increased to 181 to reduce the chance of sample error due to technical issues, such as dropout or incomplete data sheets, and increased sample representation. A total of 186 questionnaires were distributed by the researcher. However, a total of 183 questionnaires were received back by the researcher and three questionnaires did not return as they were lost by the participants. Out of these, a total of 181 questionnaires were found to be valid for the data analysis as two questionnaire sheets were found to have incomplete data. Therefore, the final number of participants who completed the study was 181 out of 186 nurses from different critical care units, which revealed a response rate of 97.3%.

2.3. Setting

The first teaching hospital, situated on the Jordan University of Science and Technology campus in northern Jordan, encompasses a total area of 95,583 m2 with a capacity of 683 beds. The critical care units include the neurosurgical intensive care unit, medical intensive care unit, cardiac intensive care unit, catheterization laboratory unit, intermediate cardiac care unit, and cardiac care unit. The second hospital, a government facility in the Irbid governorate, has a capacity of 230 beds with critical care units located in the main building. Lastly, the third government hospital in the Ma'an governorate, south of Amman, has a capacity of 146 beds with critical care units housed in the main building. Middle region hospitals were excluded from this study due to approval constraints, and the hospitals that were chosen involved the highest number of critical care unit nurses.

2.4. Study Instrument

This study utilized a three-part questionnaire: A) demographic data; B) the MISSCARE Survey to assess missed nursing care (MNC); and C) the nursing-workplace satisfaction questionnaire (NWSQ) for job satisfaction.

Section A involved 14 items covering socio-demographic and professional aspects, like unit name, gender, age, marital status, experience in the critical care unit, education level, working hours, years of nursing experience, missed shifts, intent to leave current position, patient care adequacy, and recent admissions and discharges.

Section B, the MISSCARE survey, involved 41 items split into parts A and B. Part A, with 24 items on a 5-point Likert scale, evaluated the frequency of missed care, while Part B identified reasons for MNC across three domains: labor resources, material resources, and communication/teamwork. A pilot study with 40 nurses established reliability coefficients of 0.81, 0.76, and 0.79 for parts A and B, and the whole survey, respectively.

Section C, the NWSQ, involved the use of a 5-point Likert scale across 17 items to assess job satisfaction. It covered three domains: job satisfaction, doing the job, and work environment.

The questionnaires were administered in English. The participating nurses were proficient in English as English language proficiency is a pre-requisite in most nursing programs in Jordan. The institutions involved in this study, in particular, mandate English competency. It is worth noting that English is the medium of instruction in Jordanian nursing schools; therefore, the nurses were able to understand and accurately respond to the questionnaire. No translation was required, preserving the integrity of the questionnaire's language and ensuring the consistency of responses.

2.5. Data Collection Procedure

The study, post obtaining IRB approval from the Jordan University of Science and Technology (JUST) (IRB number 652/2021), the hospital administration, and the Jordanian Ministry of Health, was conducted between February 2, 2022, and April 2, 2022. The researcher personally distributed the questionnaires during the nurses' break times to ensure minimal disruption to their work schedules.

The questionnaire, designed for manual completion, took approximately 10-15 minutes. The researcher was present during different shifts from 8 AM to 11 PM to cater to the varied working hours of the critical care unit staff and to provide any needed assistance or clarification regarding the study.

An initial meeting was held with head nurses to explain the

study's objectives and significance and to give an overview of the data collection tool. Nurses expressing interest were asked for oral consent, following which they received the questionnaire with instructions for completion and providing written consent. They were reassured about the confidentiality of their responses and their sole use for research purposes.

The completed questionnaires were collected by either dropping them in a designated box at the nursing supervisor's office or directly handing them over to the researcher, ensuring a seamless process despite its seemingly labor-intensive nature. The presence of the researcher during this period provided participants with immediate support and facilitated the timely completion and collection of responses.

2.6. Data Analysis

The data were stored and analyzed on a suitable personal computer. Version "26" of the Statistical Package for Social Studies (SPSS) was used. The descriptive statistics (frequencies, percentages, means, and standard deviations) were used to analyze the socio-demographic characteristics of the enrolled nurses working in the critical care units and their responses to the study questionnaire. In particular, means and standard deviations were used to answer the first research question: what is the level of job satisfaction among Jordanian nurses? In addition, means, standard deviations, frequencies, and percentages were used to answer the second research question: what are the reasons for the prevalence of MNC among Jordanian nurses? To answer the third research question (what is the association between job satisfaction and MNC among Jordanian nurses?), we used Pearson's correlation coefficient. Furthermore, we used regression analysis to answer the fourth question (is there a relationship between MNC and factors leading to missed care among Jordanian nurses?) and the fifth one [what is the relationship between MNC, job satisfaction, and socio-demographic variables (age, gender, marital status, educational level, working hours, nursing experience, experience at the current unit, missed days or shifts, the number of patients cared for, the number of patient admissions or discharges, and their plans for staying at work or leaving the current position) among Jordanian nurses?]. A significance level of $\alpha \leq 0.05$ was used as a statistical significance threshold in this study.

3. RESULTS

3.1. Participants

A total of 186 eligible participants were recruited in this research study as follows: 121 participants were from the teaching hospital, 35 participants were from the first government hospital, and 30 participants were from the second government hospital. However, a total of 183 questionnaires were retrieved by the researcher and three questionnaires did not return. Thus, a total of 181 questionnaires were found to be valid for the data analysis as two questionnaire sheets were found to have incomplete data. Therefore, the final number of participants who completed the study was 181 nurses from different critical care units, which revealed a response rate of 97.3%.

3.2. Participant's Demographic and Clinical Related Characteristics

The socio-demographic characteristics of the participating nurses, as presented in Table **1**, indicated an average age of 29.6±4.04 with male nurses slightly predominating at 54.1% (n=98). Most participants worked in ICU (50.8%, n=92), were married (69.1%, n=125), worked full-time in their units, and held a bachelor's degree (89%, n=161). The average experience was 4.4±2.2 years overall, with 3.5±1.9 years in the current unit. While 40.3% (n=73) reported at least one day or shift missed due to illness, injury, or extra rest in the past three months, 87.8% (n=159) were not planning job changes. Staffing inadequacy was perceived 75% of the time by 44.8% (n=81) of nurses. The average workload involved caring for 2.9±1.53 patients per shift, admitting 1.7±1.38, and discharging 1.5±1.29.

Table 1. Socio-demographic characteristics of the enrolled critical care nurses (n=181).

Variable	M (SD)	F (%)
Age (years)	29.6 (4.04)	-
Gender 1. Female 2. Male	-	83 (45.9%) 98 (54.1%)
Name of the unit you work in 1. Intermediate CCU 2. Intensive care unit (ICU) 3. Critical care unit (CCU)	-	47 (26%) 92 (50.8%) 42 (23.2%)
Marital status 1. Single 2. Married	-	55 (30.4%) 126 (69.7%)
I spend the majority of my working time in the unit I work in 1. Yes 2. No	-	181 (100%) 0 (0%)
Educational level 1. Bachelor degree 2. Master's degree	-	161 (89%) 20 (11%)

(Table 1) contd.....

Variable	M (SD)	F (%)
Work hours 1. Fixed shift (morning, night, evening) 2. Rotation between morning, night, or evening	-	28(15.5%) 153 (84.5%)
Years of experience as a nurse	4.4 (2.2)	-
Years of experience in the current unit	3.5 (1.9)	-
In the past 3 months, how many days or shifts did you miss work due to illness, injury, extra rest, etc. (exclusive of approved days off)? 1. None 2. 1 day or shift 3. 2 - 3 days or shifts 4. 4 – 6 days or shifts 5. Over 6 days or shifts	-	55 (30.4%) 73 (40.3%) 24 (13.3%) 16 (8.8%) 13 (7.2%)
Do you plan to leave your current job? 1. Yes, plan to leave 2. No plans to leave	-	22 (12.2%) 159 (87.8%)
How often do you feel the unit staffing is adequate? 1. 100% of the time 2. 75% of the time 3. 50% of the time 4. 25% of the time 5. 0% of the time	-	46 (25.4%) 81 (44.8%) 24 (13.3%) 17 (9.4%) 13 (7.2%)
On the current or last shift you worked, how many patients did you take care of?	2.9 (1.53)	-
How many patient admissions did you have (*i.e.*, including transfers into the unit)?	1.7 (1.38)	-
How many patient discharges did you have (*i.e.*, including transfers out of the unit)?	1.5 (1.29)	-

Note: [F] Frequency, [M] Mean, [SD] Standard Deviation.

Table 2. Means and standard deviation scores for the missed nursing care (n=181).

MNCS	Never Missed	Rarely Missed	Occasionally Missed	Frequently Missed	Always Missed	M ± SD
Monitoring intake/output	95 (52.5)	46 (25.4)	18 (9.9)	5 (2.8)	17 (9.4)	1.91 ±1.26
Vital signs assessed as ordered	98 (54.1)	36 (19.9)	22 (12.2)	3 (1.7)	22 (12.2)	1.98 ±1.35
Assist with toileting needs within 5 minutes of request	90 (49.7)	43 (23.8)	27 (14.9)	3 (1.7)	18 (9.9)	1.96 ±1.27
Assess the effectiveness of medications	74 (40.9)	60 (33.1)	27 (14.9)	7 (3.9)	13 (7.2)	2.03 ±1.17
Attend interdisciplinary care conferences whenever held	78 (43.1)	55 (30.4)	25 (13.8)	7 (3.9)	16 (8.8)	2.05 ±1.24
Bedside glucose monitoring as ordered	88 (48.6)	47 (26)	16 (8.8)	5 (2.8)	25 (13.8)	2.07 ±1.39
PRN medication requests being acted on within 15 minutes	71 (39.2)	62 (34.3)	25 (13.8)	6 (3.3)	17 (9.4)	2.09 ±1.22
Skin/wound care	82 (45.3)	49 (27.1)	23 (12.7)	3 (1.7)	24 (13.3)	2.10 ±1.36
Medications administered within 30 minutes before or after the scheduled time	84 (46.4)	46 (25.4)	24 (13.3)	1 (0.6)	26 (14.4)	2.11 ±1.38
Hand washing	81 (44.8)	49 (27.1)	22 (12.2)	7 (3.9)	22 (12.2)	2.12 ±1.34
Emotional support to patient and/or family	79 (43.6)	46 (25.4)	29 (16)	5 (2.8)	22 (12.2)	2.14 ±1.33
Response to call light is initiated within 5 minutes	70 (38.7)	60 (33.1)	25 (13.8)	6 (3.3)	20 (11)	2.15 ±1.28
Patient bathing/skincare	78 (43.1)	51 (28.2)	20 (11)	8 (4.4)	24 (13.3)	2.17 ±1.38
Feeding patient when the food is still warm	76 (42)	49 (27.1)	23 (12.7)	5 (2.8)	28 (15.5)	2.22 ±1.41
IV/central line site care and assessments according to hospital policy	78 (43.1)	40 (22.1)	32 (17.7)	5 (2.8)	26 (14.4)	2.23 ±1.40
Setting up meals for patients who feed themselves	73 (40.3)	48 (26.5)	25 (13.8)	8 (4.4)	27 (14.9)	2.27 ±1.41
Full documentation of all necessary data	70 (38.7)	55 (30.4)	20 (11)	6 (3.3)	30 (16.6)	2.29 ±1.43
Patient assessments performed each shift	67 (37)	51 (28.2)	31 (17.1)	4 (2.2)	28 (15.5)	2.31 ±1.39
Ambulation three times per day or as ordered	67 (37%)	49 (27.1)	31 (17.1)	8 (4.4)	26 (14.4)	2.32 ±1.38
Patient discharge planning and teaching	62 (34.3)	54 (29.8)	32 (17.7)	7 (3.9)	26 (14.4)	2.34 ±1.36
Focused reassessments according to patient condition	67 (37)	51 (28.2)	27 (14.9)	7 (3.9)	29 (16)	2.35 ±1.42

(Table 2) contd.....

MNCS	Never Missed	Rarely Missed	Occasionally Missed	Frequently Missed	Always Missed	M ± SD
Patient teaching about illness, tests, and diagnostic studies	71 (39.2)	44 (24.3)	27 (14.9)	7 (3.9)	32 (17.7)	2.36 ±1.47
Mouth care	59 (32.6)	56 (30.9)	32 (17.7)	8 (4.4)	26 (14.4)	2.37 ±1.36
Turning patient every 2 hours	53 (29.3)	57 (31.5)	25 (13.8)	14 (7.7)	32 (17.7)	2.53 ±1.43
Total	-	-	-	-	-	2.18±0.40

Table 3. Reported reasons for the missed nursing care (n=181).

Reason	Significant Reason	Moderate Reason	Minor Reason	Not a Reason
Communication/Teamwork Reasons	**296 (51.6%)**	**796 (54%)**	**263 (44.8%)**	**125 (45.8%)**
Unbalanced patient assignments	29 (16%)	93 (51.4%)	45 (24.9%)	14 (7.7%)
Inadequate handoff from the previous shift or sending unit	34 (18.8%)	90 (49.7%)	38 (21%)	19 (10.5%)
Other departments did not provide the care needed (*e.g*., physical therapy did not ambulate)	27 (14.9%)	92 (50.8%)	41 (22.7%)	21 (11.6%)
Lack of backup support from team members	34 (18.8%)	84 (46.4%)	42 (23.2%)	21 (11.6%)
Tension or communication breakdowns with other ancillary/support departments	24 (13.3%)	91 (50.3%)	51 (28.2%)	15 (8.3%)
Tension or communication breakdowns within the nursing team	30 (16.6%)	88 (48.6%)	46 (25.4%)	17 (9.4%)
Tension or communication breakdowns with the medical staff	41 (22.7%)	89 (49.2%)	38 (21%)	13 (7.2%)
The nursing assistant did not communicate that care was not provided	33 (18.2%)	93 (51.4%)	44 (24.3%)	11 (6.1%)
Caregiver being off the unit or unavailable	44 (24.3%)	76 (42%)	46 (25.4%)	15 (8.3%)
Material resources reasons	**103 (17.9%)**	**253 (17.2%)**	**130 (22.1%)**	**57 (20.9%)**
Medications were not available when needed	39 (21.5%)	77 (42.5%)	45 (24.9%)	20 (11%)
Supplies/equipment not available when needed	31 (17.1%)	83 (45.9%)	49 (27.1%)	18 (9.9%)
Supplies/equipment not functioning properly when needed	33 (18.2%)	93 (51.4%)	36 (19.9%)	19 (10.5%)
Labor resources reasons	**175 (30.5%)**	**425 (28.8%)**	**194 (33.1%)**	**91 (33.3%)**
Inadequate number of staff	26 (25.4%)	83 (45.9%)	31 (17.1%)	21 (11.6%)
Urgent patient situations (*e.g*., patient's condition worsening)	31 (17.1%)	88 (48.6%)	46 (25.4%)	16 (8.8%)
Unexpected rise in patient volume and/or acuity in the unit	43 (23.8%)	85 (47%)	38 (21%)	15 (8.3%)
An inadequate number of assistive and/or clerical personnel (*e.g*., nursing assistants, techs, unit secretaries, etc.)	37 (20.4%)	87 (48.1%)	37 (20.4%)	20 (11%)
Heavy admission and discharge activity	38 (21%)	82 (45.3%)	42 (23.2%)	19 (10.9%)

3.3. Participant's Responses to the Missed Nursing Care Scale (MNCS)

Table **2** presents the mean scores and standard deviations for responses to the missed nursing care scale (MNCS). The most frequently missed care activities included turning patients every 2 hours (2.53 ±1.43), mouth care (2.37 ±1.36), patient education on illness and tests (2.36 ±1.47), focused reassessments (2.35 ±1.42), and discharge planning (2.34 ±1.36). Less commonly missed care included monitoring intake/output (1.91 ±1.26), assessing vital signs as ordered (1.98 ±1.35), timely toileting assistance (1.96 ±1.27), medication effectiveness assessments (2.03 ±1.17), and attending interdisciplinary care conferences (2.05 ±1.24). The overall MNCS score was 2.18±0.40 out of 5, indicating care was rarely missed.

The results presented in Table **3** represent the reported reasons for the missed nursing care as perceived by the enrolled critical care nurses. The results showed that among the teamwork or communication reasons, "caregiver being off the unit or unavailable" was the most significant reason for missed nursing care (24.3%, n=44), followed by tension or communication breakdowns with the medical staff (22.7%, n=41), inadequate handoff from previous shift or sending unit (18.8%, n=34), and lack of back up support from team members (18.8%, n=34).

The results showed that with respect to material resources, "medications being not available when needed" was the most significant factor (21.5%, n=39) for missed nursing care. In addition, it was found that among the reasons concerning labor resources, an unexpected rise in patient volume and/or acuity on the unit was the most significant factor influencing missed nursing care (23.8%, n=43), followed by heavy admission and discharge activity (21%, n=38).

3.4. Level of Nursing Job Satisfaction

In addition, Table **4** shows that 39.8% (n=72) of the nurses had a good satisfaction level, whereas 58% (n=105) had a moderate level of job satisfaction, and 2.2% (n=4) had a poor level of job satisfaction.

Table 4. Distribution of study participants based on satisfaction level (n=181).

Satisfaction	F	%
Good satisfaction (17-42)	72	39.8%
Moderate satisfaction (43-64)	105	58%
Poor satisfaction (65-85)	4	2.2%
Total	181	100%

Table 5. Pearson's correlation coefficient between the nursing-workplace satisfaction questionnaire (NWSQ) and missed nursing care survey (MNCS).

Variables	MNCS	Sig.
Total satisfaction	R= -0.177	0.012

Table 6. Summary of the linear regression model for missed nursing care.

Model	R	R-square	Adjusted R Square	Std. Error of the Estimate
1	.265[a]	.070	-.008	.40527

Table 7. One-way ANOVA analysis of the regression model for missed nursing care.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.067	14	.148	.899	.561[b]
	Residual	27.265	166	.164	-	-
	Total	29.332	180	-	-	-

Note: a. Dependent variable: MNCS.

Table 8. Estimated linear regression model coefficients.

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	2.142	.420	-	5.103	.000
Name of the unit you work on	-.015	.045	-.026	-.334	.739
Gender	.026	.066	.032	.393	.695
Age	-.006	.008	-.058	-.707	.481
Marital status	.013	.071	.015	.182	.855
Education level	.088	.100	.069	.879	.381
Work hours	.060	.041	.115	1.470	.143
Years of experience as a nurse	.044	.028	.240	1.599	.112
Years of experience in the current unit	-.066	.032	-.308	-2.071	.060
In the past 3 months, how many days or shifts did you miss work due to illness, injury, extra rest, etc. (exclusive of approved days off)?	.018	.027	.053	.673	.502
Do you plan to leave your current job?	-.075	.073	-.079	-1.022	.308
How often do you feel the unit staffing is adequate?	.024	.028	.070	.887	.377
On the current or last shift, you worked, how many patients did you care for?	.010	.020	.039	.501	.617
How many patient admissions did you have (*i.e.*, including transfers to the unit)?	-.008	.024	-.027	-.324	.746
How many patient discharges did you have (*i.e.*, including transfers out of the unit)?	.004	.024	.013	.167	.868

Note: a. Dependent variable: MNCS.

3.5. Association between Nursing Job Satisfaction and Missed Nursing Care

The results presented in Table **5** represent the Pearson's correlation coefficient between the nursing-workplace satisfaction questionnaire (NWSQ) and missed nursing care scale (MNCS, Part A). The results have shown a statistically significant weak negative correlation between nurses' total score job satisfaction and missed nursing care score (R=-0.177, P=0.012). This indicates that as job satisfaction increases, missed nursing care decreases.

The results presented in Tables **6 - 8** represent the linear regression model for the missed nursing care dependent variable based on the enrolled critical nurses' demographic characteristics. Multiple linear regression was calculated to predict missed nursing care based on the enrolled nurse's demographic characteristics. A non-significant regression equation was found [F (14,166) =0.899, p>0.05], with an R^2 of 0.070.

3.6. Predictors of Missed Nursing Care

The results presented in Tables **9** and **10** represent the linear regression model for the nursing job satisfaction dependent variable based on the enrolled critical nurses' demographic characteristics. Multiple linear regression was calculated to predict nursing job satisfaction based on the enrolled nurse's demographic characteristics. A non-significant regression equation was found [F (14,166) =1.406, p=0.155], with an R^2 of 0.106.

3.7. Predictors of Nursing Job Satisfaction

The summary of the linear regression model for nursing job satisfaction is given in Tables **9 - 11**.

Table 9. Summary of the linear regression model for nursing job satisfaction.

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.326[a]	.106	.031	8.95178

Table 10. Estimated linear regression model coefficients for nursing job satisfaction.

Coefficients[a]					
Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**T**	**Sig.**
	B	**Std. Error**	**Beta**		
(Constant)	42.491	9.271	-	4.583	.000
Name of the unit you work on	1.356	.984	.105	1.378	.170
Gender	.233	1.460	.013	.160	.873
Age	-.217	.180	-.097	-1.202	.231
Marital status	-2.068	1.578	-.107	-1.311	.192
Education level	-1.571	2.215	-.054	-.709	.479
Work hours	1.058	.902	.090	1.172	.243
Years of experience as a nurse	-.422	.607	-.102	-.695	.488
Years of experience in the current unit	.733	.703	.152	1.042	.299
In the past 3 months, how many days or shifts did you miss work due to illness, injury, extra rest, etc. (exclusive of approved days off)?	.518	.591	.067	.877	.382
Do you plan to leave your current job?	.745	1.616	.035	.461	.645
How often do you feel the unit staffing is adequate?	1.281	.608	.163	2.105	.067
On the current or last shift, you worked, how many patients did you care for?	.393	.450	.066	.874	.384
How many patient admissions did you have (*i.e.*, including transfers to the unit)?	-.660	.532	-.100	-1.241	.217
How many patient discharges did you have (*i.e.*, including transfers out of the unit)?	.511	.535	.073	.956	.341

Note: a. Dependent variable: Nursing job satisfaction.

Table 11. One-way ANOVA analysis of the regression model for nursing job satisfaction.

Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1	Regression	1576.931	14	112.638	1.406	.155[b]
	Residual	13302.317	166	80.134	-	-
	Total	14879.249	180	-	-	-

Note: a. Dependent variable: Nursing job satisfaction.

4. DISCUSSION

The primary purpose of this study was to investigate the relationship between missed nursing care (MNC) and nursing workplace satisfaction (NWS) in a Jordanian context, particularly focusing on critical care unit (CCU) nurses. Prior studies had explored MNC in relation to various factors, like nursing staffing, turnover, and training capacity, but the link between MNC and NWS has not been deeply analyzed [20, 29, 30].

Understanding the demographic and work context of the participating nurses was an essential part of this study. The research showed that ICUs employed more nurses compared to intermediate critical care units, reflecting the higher staffing requirements due to larger bed capacity in ICUs [29]. Bachelor degree holders dominated the sample, illustrating the minimum educational requirement for employment. Furthermore, the majority of participants worked rotating shifts, as determined by scheduling systems in the investigated settings [30].

Examining nurses' perceptions and experiences of MNC was another key aspect of this study. We discovered that patient-specific care tasks were the most frequently missed, possibly due to their longer time intervals and the demand for immediate patient care in critical conditions [7, 8]. Communication difficulties within the medical team and lack of available resources, particularly medications, were identified as significant reasons for MNC [3, 6, 24].

The study also examined nursing job satisfaction, which seemed moderate among critical care nurses. This result might be associated with the demanding nature of working in ICUs or CCUs [2]. The moderate level of job satisfaction might be due to a balance between the pressures of the job and the benefits associated with nursing, especially in the public health sector [16, 27, 31, 32].

The main findings revealed a weak negative correlation between MNC and NWS. The study suggested that higher satisfaction levels might lead to a decrease in MNC due to increased commitment, engagement, and organizational loyalty [19, 21, 33 - 35].

However, none of the examined variables proved to be significant predictors of both MNC and NWS. This could be due to the limited sample size and the exclusion of certain potential predictor variables [36]. Further research may help to explore these associations more thoroughly.

Despite the significant findings of the present study and despite it being a multi-centric study, still there are a number of limitations that might limit the generalization of the study findings. These limitations include the low sample size, as only 181 critical care nurses were enrolled in this study, which limited the generation of a regression model for the predictors of missed nursing care and nursing job satisfaction. Another limitation is that this study included critical care nurses, which prevents the generalization of the study findings to other units, wards, or departments within the healthcare setting. Moreover, the study questionnaire was a self-report questionnaire that was filled out by the respondents and might be limiting the findings of the present study due to the non-checking of the respondents' responses at the time they filled out the questionnaire.

Based on the outcomes of this study, we underscore the importance of further research to delve deeper into the relationship between missed nursing care and nursing job satisfaction. In particular, we suggest the implementation of longitudinal studies that could offer a more comprehensive and nuanced understanding of these dynamics over time, instead of a single snapshot. A longitudinal study may identify temporal patterns and causality, addressing questions such as 'does increased job satisfaction lead to decreased instances of missed care or *vice versa*?'

Furthermore, we encourage the expansion of the research framework to encompass additional variables related to the nursing work environment. Specifically, the patient-to-staff ratio is one such factor that could significantly impact both nursing job satisfaction and missed care. As a tangible measure of workload and staffing adequacy, this ratio may play a pivotal role in shaping nurses' job satisfaction levels, stress, burnout, and consequently, the likelihood of missed nursing care.

Considering the weak correlation between missed nursing care and nursing job satisfaction that our study revealed, expanding the variable set could help shed light on other significant influencers in this complex relationship. These proposed additions to future research endeavors are crucial to unraveling more of the intricate interactions within nursing work environments, ultimately leading to more effective strategies to enhance job satisfaction and minimize missed care in nursing practices.

5. NURSING IMPLICATIONS

The findings of this study may have a significant impact on professional nursing practice in Jordan, with a particular emphasis on the importance of job satisfaction and workplace conditions. The study confirms the presence of moderate job satisfaction levels among critical care nurses in Jordan. Job satisfaction is critical as it directly impacts patient outcomes, nurse retention rates, and the overall quality of healthcare delivery. Therefore, the importance of strategies to enhance job satisfaction cannot be overstated. These might include providing opportunities for career advancement, maintaining a supportive and respectful work environment, and recognizing the dedication and hard work of nurses.

The identified negative correlation between nursing workplace satisfaction questionnaire (NWSQ) scores and missed nursing care survey (MNCS) implies that workplace conditions significantly influence the quality of care provided. This underlines the necessity to improve workplace conditions, which may include strategies, such as managing appropriate staff levels to avoid caregiver unavailability, ensuring immediate availability of essential medications, and planning for unexpected increases in patient numbers or acuity levels. Furthermore, the study's revelation of communication breakdowns among medical staff as a leading cause of missed care necessitates the implementation of effective team communication strategies. These could be achieved through professional development programs focusing on conflict resolution, interprofessional communication skills, and fostering a collaborative team environment.

The unique cultural context of Jordan is also a crucial consideration in interpreting the study's findings. Tailored interventions that respect cultural norms, recognition of the role of family in patient care, and addressing any language barriers that could affect communication are needed to effectively overcome the issues highlighted in the study. A focus on enhancing job satisfaction, improving workplace conditions, and promoting effective communication, could significantly improve the quality of nursing care in critical care units throughout Jordan, ultimately contributing to better patient outcomes and a more effective healthcare system.

CONCLUSION

This study's findings have revealed a moderate level of job satisfaction among the critical care nurses in Jordan. A statistically significant but weak negative correlation has been noted between the nursing workplace satisfaction questionnaire (NWSQ) and the missed nursing care survey (MNCS). The principal reasons contributing to missed nursing care were observed to include breakdowns in communication among the medical staff, caregiver unavailability, unexpected increases in patient numbers and/or acuity on the unit, and unavailability of medications. These issues stand out as significant challenges faced by nurses working in critical care units.

From a professional nursing practice perspective, these results present valuable insights that can guide us toward enhancing nursing practice in critical care settings. By addressing the identified areas of concern, we can build an environment where nursing job satisfaction is prioritized, communication is strengthened, and necessary resources are consistently available. These steps not only hold the potential to reduce instances of missed care but also boost the overall quality of care that is delivered.

These findings motivate nursing professionals to foster a culture of continuous learning and adaptation. By doing so, they can better respond to unexpected changes in patient numbers or acuity, ensuring that every patient receives the necessary attention and care. Furthermore, this study encourages nursing professionals to enhance their communication strategies in order to minimize tensions and misunderstandings within the team that could lead to missed nursing care.

In conclusion, the evidence derived from this study underscores the importance of the role of nurses in proactively shaping their working environment. By addressing these identified areas, job satisfaction can be collectively improved, missed nursing care can be reduced, and thus, the standard of healthcare services in critical care units can be elevated.

LIST OF ABBREVIATIONS

ICUs	=	Intensive care units
CCUs	=	Cardiac care units
SICU	=	Surgical intensive care unit
GICU	=	General intensive care unit
LTICU	=	Long term intensive care unit
MICU	=	Medical intensive care unit
CCUs	=	Critical care units

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was approved by the Jordan University of Science and Technology (JUST) (IRB number 652/2021).

HUMAN AND ANIMAL RIGHTS

No animals were used in this study. All procedures performed in studies involving human subjects were in accordance with the ethical standards of the institutional and/or research committee and with the 1975 Declaration of Helsinki as revised in 2013.

CONSENT FOR PUBLICATION

Informed consent was obtained from all the participants.

AVAILABILITY OF DATA AND MATERIAL

The data supporting the findings of the article is available in the Zenodo Repository at https://zenodo.org/record /8174281, reference number 8174281.

STANDARDS OF REPORTING

STROBE guidelines were followed.

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CONFLICT OF INTEREST

The authors declared no conflict of interest financial or otherwise.

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