

## Research Article

# An Overview of Missed Nursing Care and Its Predictors in Saudi Arabia: A Cross-Sectional Study

Essa H. Al Muharraq <sup>1</sup>, Sultan M. Alallah <sup>2</sup>, Saad A. Alkhayrat <sup>3</sup> and Ali G. Jahlan <sup>1</sup>

<sup>1</sup>Nursing Administration Department, Al Darb General Hospital, Jazan Health Affairs, Jazan, Saudi Arabia

<sup>2</sup>Nursing Education Department, Prince Mohammed Bin Nasser Hospital, Jazan Health Affairs, Jazan, Saudi Arabia

<sup>3</sup>Regional Nursing Administration, Jazan Health Affairs, Jazan, Saudi Arabia

Correspondence should be addressed to Essa H. Al Muharraq; [ealmuharraq@moh.gov.sa](mailto:ealmuharraq@moh.gov.sa)

Received 25 May 2022; Revised 12 September 2022; Accepted 27 September 2022; Published 12 October 2022

Academic Editor: Xu Tian

Copyright © 2022 Essa H. Al Muharraq et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**Background.** Nursing care is holistic, and missing any aspect of care can be critical to patients' health. However, due to the complex and intense nature of the nursing practice, nurses have to unintentionally prioritize some activities, forcing them to omit some aspects of nursing care. **Aim.** To explore the dimensions of missed nursing care and its predictors within the Saudi Arabian healthcare system. **Methods.** Quantitative, cross-sectional study used the MISSCARE survey by utilizing nonprobability convenience sampling to collect the data of 604 staff nurses working in inpatient wards in Jazan, Saudi Arabia. **Results.** The overall mean of missed nursing care is ( $m = 1.37$ ,  $SD = 0.45$ ). Missed nursing care activities were mostly failure to attend interdisciplinary care conferences ( $m = 1.66$ ,  $SD = 0.96$ ) and patient ambulation thrice a day ( $m = 1.63$ ,  $SD = 0.97$ ). Missed nursing care was mainly caused by human resource shortage ( $m = 3.53$ ,  $SD = 0.88$ ). Missed nursing care is predicted by the turnover intention ( $B = 2.380$ ,  $t = 3.829$ ,  $p < 0.001$ ) and job satisfaction ( $B = -0.864$ ,  $t = -4.788$ ,  $p < 0.001$ ). **Conclusion.** Although missed nursing care is evident in Saudi Arabia, it is significantly lower than the international rates, and it is mainly caused by labor resource shortage which directly influences nurses' job satisfaction and intention to leave. Optimizing the recruitment process, resource allocation and effective nurses' retention programs are proposed solutions that may be beneficial to mitigate missed nursing care.

## 1. Introduction

Ensuring optimum care and safe practice is the core objective of all healthcare organizations. The World Health Organization (WHO) defines patient safety as the prevention or mitigation of errors and harms to patients associated with the provision of health care (2017). The Institution of Medicine encourages surveillance and reporting of errors in healthcare, with several initiatives, to measure and mitigate errors [1]. These errors are classified into two major types: errors of the commission as a result of the wrong action taken and errors of omission as a result of actions not taken or missed [2].

Nurses play a crucial role in preserving patient safety [3], considering that they constitute the largest portion of healthcare providers [4]. They also play an active role in

detecting and preventing errors [5]. Furthermore, the holistic merit of nursing practice demands direct interaction and intervention with patients. This complex and intense nature of nursing practice make nurses prone to committing unintentional errors [6], and as a result of time constraint and insufficient manpower and resources, they often have to consciously prioritize some activities over others [7].

Missed nursing care is an omission error wherein some aspects of required nursing care are partially or totally delayed or unfulfilled [8]. It occurs in all cultures and countries [9] and is an important indicator of nursing care quality and patient safety [10]. This phenomenon has several names that are used interchangeably. Among them are missed nursing care [11], implicitly rationed care [12, 13] and nursing care left undone [14, 15]. Nevertheless, all of them denote the omission or delay of parts of nursing care [16].

A pioneer qualitative study [11] interviewed nurses to determine the frequency and reasons behind missed nursing care and reported the following nine major elements of nursing care that are usually missed: ambulation, position change, feeding, patient teaching, discharge planning, emotional support, hygiene, intake, and output documentation. According to Kalisch et al. [9], missed nursing care is an omission error in which its antecedents include labor resources, material resources, and communication/teamwork, with serious consequences and threats to patient safety.

However, factors associated with missed nursing care still remain poorly explored. Ausserhofer et al. [14] reported that the frequency of missed nursing care is clearly associated with both the nursing work environment and the nurse-to-patient ratio. Working under pressure with time and resource restrictions leads nurses to commit errors of omission and neglect of care [17]. Kalisch [11] enumerated different reasons behind missed nursing care; among them are staffing inadequacy, time restriction, poor delegation, and insufficient material resources. In 2021, Al-Fauri, Obaidat, and AbuAlRub explored the types and reasons for missed nursing care among Jordanian nurses and inferred that inadequate manpower is the most frequent cause of missed nursing care and that a low nursing staffing ratio is associated with high missed nursing care. Furthermore, Alsubhi et al. [18] conducted an extensive review to identify factors associated with missed nursing care and nurses' voluntarily turnover; they found that missed nursing care is highly prevalent in many countries and is linked to negative patient outcomes, poor nursing satisfaction, and a high tendency for turnover.

Moreover, missed nursing care has detrimental consequences for both patients and healthcare organizations, and it is associated with poor nursing care, job dissatisfaction, absenteeism [7], poor retention, and staff morale [19]. Most importantly, it has a negative effect on patient safety [20, 21]. It leads to increased length of hospital stay, undesirable complications (e.g., bed sores, falls, and hospital-acquired infection) [22], ineffective pain management, malnourishment, and high mortality [23].

In Saudi Arabia, few studies explored missed nursing care and mainly focused on its relationship with the practice environment and safety. To the best of our knowledge missed nursing care and its predictors in Saudi Arabia have not yet been investigated. Hence, this study aimed to explore the most common types and reasons behind missed nursing care and its predictors in a unique multinational nursing workforce in Saudi Arabia.

## 2. Methods

**2.1. Design.** This cross-sectional, observational, quantitative study explored the most common types and reasons for missed nursing care and its predictors.

**2.2. Settings.** The study was conducted among nurses working in inpatient wards in the Jazan area (2 tertiary and 8

general hospitals) with 1565 bed capacity and 1566 nurses working as staff nurses in inpatient wards in total.

**2.3. Participants and Sampling.** Data were collected from participating nurses between June 1, 2021, and September 30, 2021. As COVID-19 pandemic precautions demand physical distancing, the study used an online data collection method. The study questionnaire was created using Google Forms, and the link was shared with the regional nursing administration in Jazan and consecutively forwarded to Directors of Nursing in the proposed hospitals, and they distributed to their nurses. Convenience sampling was utilized. Inclusion criteria for participation required nurses to be working in inpatient wards and provide direct nursing care. Meanwhile, nurses working in the outpatient department, administration, and those who are not involved in providing direct nursing care were excluded. Yamane's sample size formula:  $n = N/(1 + N * e^2)$  [24], used to determine the appropriate sample size with 95% confidence level, 5% margin of error and study population of 1566,  $n = 319$ . Out of 1566 projected participants, only 604 participants completed the survey.

**2.4. Study Questionnaire.** The study employed the MISSCARE survey, which was developed by Kalisch and Williams in 2009. It consists of two main sections: the first section measures missed nursing care, which has 24 items. The participants were asked to indicate how often the nursing care is missed for each item, using a 5-point Likert scale ranging from never missed = 1 to always missed = 5. The second section of the MISSCARE survey which consists of 17 items aims to explore the reasons that drive nurses to MISSCARE. The survey requires participants to rate the reason for missed nursing care as significant, moderate, minor, or not a reason for missed nursing care. Participants' demographic characteristics, including age, gender, level of education, work experience, overtime, and working shifts were also included. The survey designates 3 items to measure nurses' job satisfaction which are the level of nurse satisfaction in the current position, the level of nurse satisfaction with being a nurse, and nurse satisfaction with the level of teamwork in the unit. In addition, nurses' intention to leave is measured by 1 item that asks participating nurses to report their intention to leave their current work within 6 months, within one year, or no intention to leave. In the present study, the study questionnaire was tested by 15 nurses in a pilot study to confirm the reliability and applicability, and Cronbach's  $\alpha$  was 0.93 and 0.95 for the first and second sections, respectively, of the MISSCARE survey.

**2.5. Ethical Considerations.** Prior to data collection, permission to use the MISSCARE survey was granted by the original author. The electronic survey began with informed consent, all participants needed to read and chose to agree option to start filling out the questionnaire. The data collection method did not pose any health risk, and the participants' privacy was carefully preserved. Ultimately, to

further enhance anonymity, the participants and their responses were coded so that their data could not be readily used for nonresearch purposes.

**2.6. Statistical Analysis.** All statistical data were analyzed using SPSS version 25.0. The data collected from the MIS-SCARE survey were analyzed using descriptive statistics, including mean and standard deviation (SD). Internal consistency of the study tool and the association of missed nursing care with job satisfaction and intention to leave were evaluated by correlational analysis including Pearson correlation coefficient and Spearman's rho correlation coefficient. Linear regression was used to test if variables can predict missed nursing care.

### 3. Results

Out of 1566 projected participants, the study recruited only 604 participants (response rate = 39%), 89.1% were female, 69.9% aged 25–34 years, and 51.3% had a bachelor's degree in nursing. In addition, 30.1% of the participants had been working for a period extended between 5 and 10 years. Meanwhile, 47% had been working overtime for 1–2 hours in the last 3 months, and 80.1% had no plans of leaving their current work (Table 1).

7.3% of participants reported that “attending interdisciplinary care conferences whenever held” was the most frequently missed element of nursing care (mean ( $m$ ) = 1.66). Another element that was also frequently missed by 6.6% of participants was “facilitating ambulation thrice per day or as ordered” with  $m = 1.63$ ). Conversely, “bedside glucose monitoring as ordered” recorded the least missed care activities as 90.7% of participants never missed ( $m = 1.12$  (Table 2).

Table 3 summarizes the common reasons behind missed nursing care. The most frequently reported was “inadequate number of staff” ( $m = 3.53$ ). This reason was reported to be significant. Other significant reasons were “inadequate number of assistive and/or clerical personnel (nursing assistants, technicians, and unit secretaries)” ( $m = 3.36$ ), “unexpected rise in patient volume and/or acuity on the unit” ( $m = 3.29$ ), and “heavy admission and discharge activity” ( $m = 3.15$ ).

Correlation analysis was rendered between the study's main variables and missed nursing care. Missed nursing care had a significantly positive relationship with nurses' intention to leave ( $r = 0.199$ ,  $p < 0.001$ ) and a significantly negative relationship with nurses' job satisfaction ( $r = -0.297$ ,  $p < 0.001$ ) (Table 4).

Variables of age, gender, qualification, level of experience, adequate staffing, overtime, turnover intention, and level of satisfaction were tested if they predict missed nursing care among participants using multiple regression. Results show that 21% of the variance in missed nursing care can be accounted for by the seven predictors collectively  $F(10,593) = (16.319)$ ,  $p < 0.001$ . The results shows that the turnover intention ( $B = 2.380$ ,  $t = 3.829$ ,  $p < 0.001$ ) and the

level of satisfaction ( $B = -0.864$ ,  $t = -4.788$ ,  $p < 0.001$ ) positively predict missed nursing care (see Table 5).

### 4. Discussion

Missed nursing care is a multifaceted phenomenon that has a direct impact on patients' health outcomes. This study aimed to determine the most common types and reasons behind missed nursing care and its predictors. The overall mean of missed nursing care in Saudi Arabia, as shown in this study (1.37), is significantly lower than those in the US (1.71) [25], South Korea (1.40) [26], and Australia (2.02) [27] as well as among middle eastern countries, such as Jordan (2.78) [28] and Egypt (2.26) [29].

The most frequently missed nursing care activities were failure to attend interdisciplinary care conferences, patient ambulation for three times a day, and turning and positioning every 2 hours, consistent with the results of several studies, including Gravlin and Bittner [30], Kalisch et al. [31], Papastavrou et al. [32], and Tubbs-Cooley et al. [33]. Nurses may perceive that these tasks are not a priority and that missing them will not cause serious impacts on patients' health. The most frequently missed task by nurses was attending interdisciplinary conferences, which can be attributed to work overload and lack of time to participate in such meetings [34]. In addition, nurses may probably have an unclear perception toward their role in the process of shared clinical decision and their contribution to the therapeutic process as a whole. Meanwhile, missing basic tasks including patient ambulation for three times and turning and positioning every 2 hours are often associated with the lack of supportive services and personnel such as aid nurses. These physical tasks require a certain level of strength and teamwork cooperation. Possibly, nurses missed these tasks because of their overdependence on family involvement in basic care. In Saudi Arabia, the healthcare system allows admitted patients to be accompanied by a family member to provide psychological support and ease the patients' hospitalization experience. Nurses may delegate under supervision some simple nursing tasks to patient attendants and request to assist in providing care, including ambulation, turning, and positioning.

The least common missed nursing care activities were bedside glucose monitoring and vital signs assessment. This result is consistent with several studies [10, 29, 31]. Nurses may perceive that such tasks are crucial and serious indicators of any deterioration in the general condition of patients and that they have a direct impact on patients' health outcomes. Nurses may also prioritize these tasks because it requires less time and effort to perform and needs precise documentation of results.

Furthermore, the most significant reasons for missed nursing care were inadequate number of staff, inadequate number of assistive personnel, patient volume/acuity, and heavy admission/discharge activity. Human resource shortage in hospitals is often regarded as one of the main factors of failure to provide comprehensive and quality care by nurses and nursing assistants. The gap between nursing workforce supply and demand reflects some

TABLE 1: Sample statistics.

Characteristics	Frequency	Percentage
Gender		
Male	66	10.9
Female	538	89.1
Age (years)		
<25	24	4.0
25–34	422	69.9
35–44	128	21.2
45–54	30	5.0
Highest educational attainment		
RN diploma	220	36.4
AND	50	8.3
BSN	310	51.3
MSN or higher	24	4.0
Nursing experience		
≤6 months	14	2.3
>6 months–2 years	102	16.9
>2 years–5 years	132	21.9
>5 years–10 years	182	30.1
>10 years–15 years	114	18.9
>15 years	60	9.9
Overtime duration for the last 3 months		
None	202	33.4
1–12 hours	284	47.0
>12 hours	118	19.5
Plans to leave the current position		
No plans to leave	484	80.1
In the next 6 months	30	5.0
In the following year	90	14.9
How satisfied are you in your current position?		
Very satisfied ( <i>n</i> (%))	52 (8.6%)	
Satisfied ( <i>n</i> (%))	84 (13.9%)	
Neutral ( <i>n</i> (%))	140 (23.2%)	
Dissatisfied ( <i>n</i> (%))	232 (38.4%)	
Very dissatisfied ( <i>n</i> (%))	48 (15.9%)	
Independent of your current job, how satisfied are you with being a nurse or a nurse assistant?		
Very satisfied ( <i>n</i> (%))	12 (2%)	
Satisfied ( <i>n</i> (%))	42 (7%)	
Neutral ( <i>n</i> (%))	74 (12.3%)	
Dissatisfied ( <i>n</i> (%))	208 (34.4%)	
Very dissatisfied ( <i>n</i> (%))	268 (44.4%)	
How satisfied are you with the level of teamwork on this unit?		
Very satisfied ( <i>n</i> (%))	12 (2%)	
Satisfied ( <i>n</i> (%))	58 (9.6%)	
Neutral ( <i>n</i> (%))	104 (17.2%)	
Dissatisfied ( <i>n</i> (%))	250 (41.4%)	
Very dissatisfied ( <i>n</i> (%))	180 (29.8%)	

serious local conditions. According to Aboshaiqah [35]; the limited number of nursing schools in Saudi Arabia, low wages, long working hours, and the negative social perception of nursing are the reasons why many nurses give up their nursing careers and why the country is experiencing an exacerbation of nurse shortage. These results suggest that the system of care in hospital units, where admissions and discharges and acuity fluctuations are the regular ebb and flow of the unit work, is not responsive to workload volume.

Although the Saudi Ministry of Health and Saudi Central Board for Accreditation of Healthcare Institutions laid out safe staffing “nurse to patient ratios” standards in its facilities, the national nursing shortage hinders achieving these standards that led nurses to an excessive workload which is considered as a significant reason for missed nursing care. Therefore, nurses prioritize their patients according to their acuity level, and critical patients usually receive the most attention compared with those who are less critical [36]. Tubbs–Cooley et al. [37]

TABLE 2: Types of missed nursing care.

Items	Never missed	Rarely missed	Occasionally missed	Frequently missed	Always missed	Mean	SD
Attending interdisciplinary care conferences whenever held	369 61.1%	114 18.9%	77 12.7%	44 7.3%	0 0%	1.66	0.96
Facilitating ambulation three times per day or as ordered	398 65.9%	74 12.3%	92 15.2%	40 6.6%	0 0%	1.63	0.97
Turning and positioning every 2 hours	185 61.3%	122 20.2%	76 12.6%	36 6%	0 0%	1.63	0.92
Feeding the patients when the food is still warm	418 69.2%	82 13.6%	66 10.9%	38 6.3%	0 0%	1.54	0.92
Teaching the patients about illness, tests, and diagnostic studies	423 70.1%	96 15.9%	69 11.4%	16 2.6%	0 0%	1.46	0.80
Providing mouth care	430 71.2%	104 17.2%	42 7%	28 4.6%	0 0%	1.45	0.82
Offering emotional support to patients and/or family	219 72.5%	94 15.6%	56 9.3%	16 2.6%	0 0%	1.42	0.77
Assisting with toileting needs within 5 minutes of request	436 72.2%	106 17.5%	46 7.6%	16 2.6%	0 0%	1.41	0.74
Bathing or providing skin care	454 75.2%	94 15.6%	32 5.3%	24 4%	0 0%	1.38	0.76
Responding to call light within 5 minutes	468 77.5%	84 13.9%	40 6.6%	12 2%	0 0%	1.33	0.69
Setting up meals for patients who feed themselves	481 79.7%	72 11.9%	34 5.6%	18 3%	0 0%	1.32	0.71
Discharge planning and teaching	478 79.1%	72 11.9%	40 6.6%	14 2.3%	0 0%	1.32	0.70
Fully documenting all necessary data	482 79.8%	84 13.9%	24 4%	14 2.3%	0 0%	1.29	0.65
Responding to PRN medication requests within 15 minutes	496 82.1%	66 10.9%	22 3.6%	20 3.3%	0 0%	1.28	0.69
Conducting focused reassessments according to patients' condition	484 80.1%	80 13.2%	24 4.6%	12 2%	0 0%	1.28	0.65
Providing skin/wound care	244 80.8%	39 12.9%	12 4%	7 2.3%	0 0%	1.28	0.65
Monitoring intake/output	490 81.1%	74 12.3%	28 4.6%	12 2%	0 0%	1.27	0.64
Administering medications within 30 minutes before or after the scheduled time	492 81.5%	140 11.6%	68 5.6%	16 1.3%	0 0%	1.27	0.62
Assessing the effectiveness of medications	304 83.4%	66 10.9%	26 4.3%	8 1.3%	0 0%	1.24	0.59
Performing patient assessments each shift	510 84.4%	68 11.3%	12 2%	14 2.3%	0 0%	1.22	0.59
Handwashing	528 87.4%	50 8.3%	18 3%	8 1.3%	0 0%	1.18	0.54
Assessing vital signs as ordered	544 90.1%	40 6.6%	16 2.6%	4 0.7%	0 0%	1.14	0.46
Bedside glucose monitoring as ordered	548 90.7%	40 6.6%	14 2.3%	2 0.3%	0 0%	1.12	0.42

IV, intravenous; PRN, as necessary; SD, standard deviation.

revealed a direct relationship between missed nursing care and nursing workload. Meanwhile, Ball et al. [38] argued that for every rise in the number of patients, the workload of each nurse rises; consequently, the probability of missed nursing care will increase to 10%.

The study also found that approximately 20% of the participants had plans to leave their current position. Such a rate is lower than those in Jordan (32%) [28], Egypt (24.8%) [29], and Italy (35.5%) [39]. Furthermore, the current study revealed that missed nursing care had a significantly positive

TABLE 3: Reasons for missed nursing care.

Items	NOT a reason for missed care	Minor reason	Moderate reason	Significant reason	Mean	SD
Inadequate number of staff	44 7.2%	28 4.8%	98 16.2%	433 71.8%	3.53	0.88
Inadequate number of assistive and/or clerical personnel (nursing assistants, technicians, and unit secretaries)	44 7.3%	64 10.6%	128 21.2%	368 60.9%	3.36	0.94
Unexpected rise in patient volume and/or acuity on the unit	70 11.6%	36 6%	144 23.8%	354 58.6%	3.29	1.01
Heavy admission and discharge activity	74 12.3%	74 12.3%	144 23.8%	312 51.7%	3.15	1.05
Supplies/equipment not functioning properly when needed	74 12.3%	89 14.7%	135 22.4%	306 50.7%	3.12	1.06
Unbalanced patient assignments	88 14.6%	62 10.3%	148 24.5%	306 50.7%	3.11	1.09
Urgent patient situations (e.g., a worsening condition)	74 12.3%	80 13.2%	154 25.5%	296 49%	3.11	1.05
Supplies/equipment not available when needed	78 12.9%	92 15.2%	142 23.5%	292 45.3%	3.07	1.07
Lack of backup support from team members	92 15.2%	88 14.6%	162 26.8%	262 43.4%	2.98	1.09
Other departments did not provide the care needed (e.g., physical therapy did not ambulate)	88 14.6%	106 17.5%	160 26.5%	250 41.4%	2.95	1.08
Tension or communication breakdowns with other ancillary/support departments	100 16.6%	84 13.9%	176 29.1%	244 40.4%	2.93	1.10
Tension or communication breakdowns with the medical staff	96 15.9%	91 15.1%	192 28.5%	245 40.5%	2.93	1.09
Medications were not available when needed	94 15.6%	124 20.5%	126 20.9%	230 43%	2.91	1.12
Tension or communication breakdowns within the nursing team	115 19.1%	100 16.6%	146 24.2%	243 40.1%	2.85	1.15
Caregiver off unit or unavailable	122 20.2%	112 18.5%	136 22.5%	234 38.7%	2.80	1.16
Inadequate handoff from the previous shift or sending unit	119 19.5%	123 20.4%	156 25.8%	206 34.1%	2.75	1.13
Nursing assistant did not communicate that care was not provided	133 21.9%	112 18.5%	155 25.7%	204 33.8%	2.72	1.15

TABLE 4: Correlations between missed nursing care, job satisfaction, and intention to leave.

Variables	1	2	3	4	5	6
1. Satisfaction with the current position	1.000					
2. Satisfaction with being a nurse	0.387**	1.000				
3. Satisfaction with the level of teamwork in the unit	0.494**	0.414**	1.000			
4. Total satisfaction score	0.818**	0.747**	0.798**	1.000		
5. Intention to leave	-0.212**	-0.368**	-0.266**	-0.353**	1.000	
6. Total missed nursing care	-0.199**	-0.278**	-0.231**	0.247**	-0.199**	1.000

\*\* $p < 0.01$ .

correlation with their intention to leave their jobs. Missed nursing care is linked to work overload, considering that nurses cannot monitor all patients assigned to them and compel themselves to ration their care [40, 41]. The workload is a main factor that causes missed nursing care [22]. These circumstances usually lead to poor nursing satisfaction, which is also associated with a higher rate of intention to leave [21].

In addition, a significantly negative correlation was noted between missed nursing care and job satisfaction. These variables are strongly related throughout the nursing literature. This finding is supported by a previous study, which recruited 7079 nurses from different countries, including Australia, the US, Turkey, and Iceland and reported that a higher rate of missed nursing care was linked to a lower level of job satisfaction [42]. The level of nursing job

TABLE 5: Multiple linear regression predicting missed nursing care.

Model summary						
Model	R	R square		Adjusted R square	Std. error of the estimate	
	0.46	0.21		0.20	0.976	
Model	Unstandardized coefficients		Standardized coefficients		t	Sig.
	B	Std. error	Beta			
(Constant)	59.35	4.21			14.07	0.001
Age	0.457	0.831	0.026		0.550	0.580
Gender	-8.592	1.321	-0.245		-6.505	0.060
Qualification	-0.132	0.468	-0.012		-0.281	0.779
Level of experience	-0.010	0.427	-0.001		-0.023	0.981
Adequate staff	-0.762	0.350	-0.087		-2.178	0.030
Working overtime	-0.038	0.567	-0.002		-0.067	0.946
Turnover intention	2.380	0.622	0.158		3.829	0.001
Level of satisfaction	-0.864	0.180	-0.198		-4.788	0.001
Model	Sum of squares		Df	Mean square	F	Sig.
Regression	15.55		10	155.52	16.319	0.001
Residual	56.51		593	95.30		
Total	72.06		603			

satisfaction is an important indicator not only to nurses' physical and psychological health but also to the quality of the healthcare system [43–45]. According to several studies, nursing job satisfaction is directly related to the amount of missed nursing care, considering that staff nurses who reported less missed nursing care often claimed to have a higher level of job satisfaction [23, 31, 46, 47]. Indeed, various reasons can hinder nurses from providing optimum and comprehensive care, leave them frustrated, and eventually, feel dissatisfied with their job. The results of the current study suggest that the level of nurses' job satisfaction and the reasons behind missed nursing care in Jazan hospitals should be explored in depth to mitigate missed nursing care activities and to improve the quality of nursing care provided to patients.

However, the current study has several limitations. It utilized a cross-sectional correlational design, which does not support causation between missed nursing care and staff satisfaction or turnover intentions. The study used an online questionnaire as pandemic precautions recommend which often led to a low response rate. Furthermore, the sample size is relatively small, and it was rendered exclusively in Jazan Region, thereby limiting the generalizability of the study finding among nursing professionals across Saudi Arabia.

## 5. Conclusions

Missed nursing care is evident across all countries, including Saudi Arabia. Nonetheless, the rate of missed nursing care in Saudi Arabia is significantly lower than those in other international and even middle eastern countries. Failure to attend interdisciplinary care conferences, ambulation, and turning and positioning were the most frequently missed nursing care activities. The main reason behind missed nursing care was human resource shortage. Moreover, poor job satisfaction and high intention to leave were directly associated with an increased rate of missed nursing care.

Nursing care is holistic and healthcare organizations need to pay more attention to missed nursing care rates and their underlying causes. Optimizing the recruitment process, resource allocation and effective nurses' retention programs are proposed solutions that may be beneficial to mitigate missed nursing care.

## Data Availability

The datasets used for this study are available from the corresponding author upon reasonable request.

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

## References

- [1] A. Page, *Keeping Patients Safe: Transforming the Work Environment of Nurses*, National Academies Press, Washington, DC, U.S.A, 2004.
- [2] T. L. Rodziewicz, B. Houseman, and J. E. Hipskind, *Medical Error Reduction and Prevention*, StatPearls Publishing: Treasure Island, FL, USA, 2021.
- [3] J. Farokhzadian, N. Dehghan Nayeri, and F. Borhani, "The long way ahead to achieve an effective patient safety culture: challenges perceived by nurses," *BMC Health Services Research*, vol. 18, no. 1, pp. 654–713, 2018.
- [4] World Health Organization, "State of the world's nursing 2020," 2020, <https://www.who.int/publications/i/item/9789240003279>.
- [5] S. P. Clarke and L. H. Aiken, "Failure to rescue," *American Journal of Nursing*, vol. 103, no. 1, pp. 42–47, 2003.
- [6] S. Eltaybani, N. Mohamed, and M. Abdelwareth, "Nature of nursing errors and their contributing factors in intensive care units," *Nursing in Critical Care*, vol. 24, no. 1, pp. 47–54, 2019.
- [7] B. Gibbon and J. Crane, "The impact of 'missed care' on the professional socialisation of nursing students: a qualitative

- research study," *Nurse Education Today*, vol. 66, pp. 19–24, 2018.
- [8] A. Bagnasco, G. Catania, M. Zanini et al., "Are data on missed nursing care useful for nursing leaders? The RN4CAST@ IT cross-sectional study," *Journal of Nursing Management*, vol. 28, no. 8, pp. 2136–2145, 2020.
  - [9] B. J. Kalisch, G. L. Landstrom, and A. S. Hinshaw, "Missed nursing care: a concept analysis," *Journal of Advanced Nursing*, vol. 65, no. 7, pp. 1509–1517, 2009.
  - [10] R. Chapman, A. Rahman, M. Courtney, and C. Chalmers, "Impact of teamwork on missed care in four Australian hospitals," *Journal of Clinical Nursing*, vol. 26, no. 1-2, pp. 170–181, 2017.
  - [11] B. J. Kalisch, "Missed nursing care a qualitative study," *Journal of Nursing Care Quality*, vol. 21, no. 4, pp. 306–313, 2006.
  - [12] M. Schubert, T. R. Glass, S. P. Clarke et al., "Rationing of nursing care and its relationship to patient outcomes the Swiss extension of the International Hospital Outcomes Study," *International Journal for Quality in Health Care*, vol. 20, no. 4, pp. 227–237, 2008.
  - [13] F. Zúñiga, D. Ausserhofer, J. P. Hamers, S. Engberg, M. Simon, and R. Schwendimann, "The relationship of staffing and work environment with implicit rationing of nursing care in Swiss nursing homes—a cross-sectional study," *International Journal of Nursing Studies*, vol. 52, no. 9, pp. 1463–1474, 2015.
  - [14] D. Ausserhofer, B. Zander, R. Busse et al., "Prevalence patterns and predictors of nursing care left undone in European hospitals results from the multicountry cross-sectional RN4CAST study," *BMJ Quality and Safety*, vol. 23, no. 2, pp. 126–135, 2014.
  - [15] J. E. Ball, T. Murrells, A. M. Rafferty, E. Morrow, and P. Griffiths, "Care left undone during nursing shifts: associations with workload and perceived quality of care," *BMJ Quality and Safety*, vol. 23, no. 2, pp. 116–125, 2014.
  - [16] R. Albsoul, G. FitzGerald, J. Finucane, and E. Borkoles, "Factors influencing missed nursing care in public hospitals in Australia: an exploratory mixed methods study," *The International Journal of Health Planning and Management*, vol. 34, no. 4, pp. e1820–e1832, 2019.
  - [17] J. Needleman, "The economic case for fundamental nursing care," *Canadian Journal of Nursing Leadership*, vol. 29, no. 1, pp. 26–36, 2016.
  - [18] H. Alsubhi, P. Meskell, D. O. Shea, and O. Doody, "Missed nursing care and nurses' intention to leave: an integrative review," *Journal of Nursing Management*, vol. 28, no. 8, pp. 1830–1840, 2020.
  - [19] T. L. Jones, P. Hamilton, and N. Murry, "Unfinished nursing care missed care and implicitly rationed care: state of the science review," *International Journal of Nursing Studies*, vol. 52, no. 6, pp. 1121–1137, 2015.
  - [20] A. Recio-Saucedo, C. Dall'Orta, A. Maruotti et al., "What impact does nursing care left undone have on patient outcomes? Review of the literature," *Journal of Clinical Nursing*, vol. 27, no. 11-12, pp. 2248–2259, 2018.
  - [21] E. M. White, L. H. Aiken, and M. D. McHugh, "Registered nurse burnout, job dissatisfaction, and missed care in nursing homes," *Journal of the American Geriatrics Society*, vol. 67, no. 10, pp. 2065–2071, 2019.
  - [22] D. Tschannen, B. J. Kalisch, and K. H. Lee, "Missed nursing care the impact on intention to leave and turnover," *Canadian Journal of Nursing Research*, vol. 42, no. 4, pp. 22–39, 2010.
  - [23] B. J. Kalisch and B. Xie, "Errors of omission missed nursing care," *Western Journal of Nursing Research*, vol. 36, no. 7, pp. 875–890, 2014.
  - [24] T. Yamane, *Statistics: An Introductory Analysis*, Harper & Row, NY, 1967.
  - [25] B. J. Kalisch, M. Doumit, K. H. Lee, and J. E. Zein, "Missed nursing care level of staffing, and job satisfaction: Lebanon versus the United States," *The Journal of Nursing Administration: The Journal of Nursing Administration*, vol. 43, no. 5, pp. 274–279, 2013.
  - [26] E. Lee and B. J. Kalisch, "Identification and comparison of missed nursing care in the United States of America and South Korea," *Journal of Clinical Nursing*, vol. 30, no. 11-12, pp. 1596–1606, 2021.
  - [27] S. B. Orique, C. M. Patty, and E. Woods, "Missed nursing care and unit-level nurse workload in the acute and post-acute settings," *Journal of Nursing Care Quality*, vol. 31, no. 1, pp. 84–89, 2016.
  - [28] T. J. Saqer and R. F. AbuAlRub, "Missed nursing care and its relationship with confidence in delegation among hospital nurses," *Journal of Clinical Nursing*, vol. 27, no. 13-14, pp. 2887–2895, 2018.
  - [29] M. Hammad, W. Guirguis, and R. Mosallam, "Missed nursing care, non-nursing tasks, staffing adequacy, and job satisfaction among nurses in a teaching hospital in Egypt," *Journal of the Egyptian Public Health Association*, vol. 96, no. 1, p. 22, 2021.
  - [30] G. Gravlin and N. Phoenix Bittner, "Nurses' and nursing assistants' reports of missed care and delegation," *The Journal of Nursing Administration: The Journal of Nursing Administration*, vol. 40, no. 7/8, pp. 329–335, 2010.
  - [31] B. J. Kalisch, D. Tschannen, H. Lee, and C. R. Friese, "Hospital variation in missed nursing care," *American Journal of Medical Quality*, vol. 26, no. 4, pp. 291–299, 2011.
  - [32] E. Papastavrou, P. Andreou, and G. Efstathiou, "Rationing of nursing care and nurse–patient outcomes: a systematic review of quantitative studies," *The International Journal of Health Planning and Management*, vol. 29, no. 1, pp. 3–25, 2014.
  - [33] H. L. Tubbs-Cooley, R. H. Pickler, J. B. Younger, and B. A. Mark, "A descriptive study of nurse-reported missed care in neonatal intensive care units," *Journal of Advanced Nursing*, vol. 71, no. 4, pp. 813–824, 2015.
  - [34] E. T. Lake, K. A. Riman, and D. M. Sloane, "Improved work environments and staffing lead to less missed nursing care a panel study," *Journal of Nursing Management*, vol. 28, no. 8, pp. 2157–2165, 2020.
  - [35] A. Aboshaiqah, "Strategies to address the nursing shortage in Saudi Arabia," *International Nursing Review*, vol. 63, no. 3, pp. 499–506, 2016.
  - [36] S. Rezaee, E. Baljani, A. Feizi, and P. Delnavaz, "Reasons of missed nursing care from the viewpoints of nurses in educational, private, and social security hospitals in urmia-Iran in 2018," *Preventive Care In Nursing and Midwifery Journal*, vol. 11, no. 4, pp. 26–34, 2021.
  - [37] H. L. Tubbs-Cooley, C. A. Mara, A. C. Carle, B. A. Mark, and R. H. Pickler, "Association of nurse workload with missed nursing care in the neonatal intensive care unit," *JAMA Pediatrics*, vol. 173, no. 1, pp. 44–51, 2019.
  - [38] J. E. Ball, L. Bruyneel, L. H. Aiken et al., "Post-operative mortality missed care and nurse staffing in nine countries a cross-sectional study," *International Journal of Nursing Studies*, vol. 78, pp. 10–15, 2018.
  - [39] L. Sasso, A. Bagnasco, M. Zanini et al., "The general results of the RN4CAST survey in Italy," *Journal of Advanced Nursing*, vol. 73, no. 9, pp. 2028–2030, 2017.

- [40] P. Griffiths, A. Recio-Saucedo, C. Dall’Ora et al., “The association between nurse staffing and omissions in nursing care: a systematic review,” *Journal of Advanced Nursing*, vol. 74, no. 7, pp. 1474–1487, 2018.
- [41] M. Schubert, D. Ausserhofer, H. Bragadóttir et al., “Interventions to prevent or reduce rationing or missed nursing care a scoping review,” *Journal of Advanced Nursing*, vol. 77, no. 2, pp. 550–564, 2021.
- [42] H. Bragadóttir, E. A. Burmeister, F. Terzioglu, and B. J. Kalisch, “The association of missed nursing care and determinants of satisfaction with current position for direct-care nurses—an international study,” *Journal of Nursing Management*, vol. 28, no. 8, pp. 1851–1860, 2020.
- [43] M. Estryn-Béhar, B. I. J. M. Van der Heijden, H. Ogińska et al., “The impact of social work environment teamwork characteristics burnout and personal factors upon intent to leave among European nurses,” *Medical Care*, vol. 45, no. 10, pp. 939–950, 2007.
- [44] M. Kirwan, A. Matthews, and P. A. Scott, “The impact of the work environment of nurses on patient safety outcomes: a multi-level modelling approach,” *International Journal of Nursing Studies*, vol. 50, no. 2, pp. 253–263, 2013.
- [45] A. Kutney-Lee, D. M. Sloane, and L. H. Aiken, “An increase in the number of nurses with baccalaureate degrees is linked to lower rates of postsurgery mortality,” *Health Affairs*, vol. 32, no. 3, pp. 579–586, 2013.
- [46] M. Bekker, S. K. Coetzee, H. C. Klopper, and S. M. Ellis, “Non-nursing tasks nursing tasks left undone and job satisfaction among professional nurses in South African hospitals,” *Journal of Nursing Management*, vol. 23, no. 8, pp. 1115–1125, 2015.
- [47] S. H. Cho, J. Y. Lee, S. J. You, K. J. Song, and K. J. Hong, “Nurse staffing nurses prioritization, missed care quality of nursing care and nurse outcomes,” *International Journal of Nursing Practice*, vol. 26, no. 1, Article ID e12803, 2020.