

The relationship between missed nursing care and job burnout in intensive care units

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ABSTRACT

Providing quality nursing care in intensive care units is a crucial component of hospital services. Conversely, the stress and workload in these environments put nurses at risk of job burnout. This study aimed to examine the relationship between missed nursing care and job burnout among nurses in intensive care units. This cross-sectional study used census sampling to recruit 200 nurses working in the intensive care units of teaching hospitals at Kurdistan University of Medical Sciences in Iran. The data were collected using demographic information forms, the Kalisch Missed Nursing Care Questionnaire, and the Persian version of the Maslach Burnout Inventory (MBI). Descriptive and analytical analyses were performed using SPSS software version 24. In this study, the mean score of missed nursing care was 35.29 ± 9.43 . Additionally, a moderate level of job burnout among nurses was found, with a mean score of 42.54 ± 17.22 . The results indicated a significant relationship between missed nursing care and nurses' gender and economic status ($P < 0.05$). Furthermore, missed nursing care was significantly related to job burnout (positive correlation) and its dimensions, including depersonalization and personal accomplishment ($P < 0.05$). Based on these findings, to enhance the quality of healthcare services in intensive care units, measures should be taken to reduce missed nursing care and job burnout among nurses.

KEYWORDS: missed nursing care, job burnout, nurse, intensive care unit

INTRODUCTION

Recent research has shown that missed nursing care is a highly prevalent phenomenon in acute care settings [1]. This issue has been recognized as a critical concept in nursing within acute care facilities worldwide [2] and is considered one of the forms of healthcare deficiency on a global scale [3]. Missed nursing care refers to the neglect of both minor and major aspects of patient care that are either forgotten or delayed [2], partially completed, or not completed at all. In another definition, it involves essential care necessary for optimal, rapid patient recovery, but is omitted or not performed [3]. Moreover, missed nursing care is not only a type of nursing error that can affect patient safety but also a form of neglect that violates patients' rights and jeopardizes their rehabilitation and recovery [2].

Nursing care is particularly important due to its direct impact on patient recovery and health [4]. It can also serve as a benchmark for comparing performance across systems and organizations [5]. Several factors, such as understaffing, poor teamwork and safety, and work-related stress, contribute to missed care [6]. Emotional exhaustion among nurses is one such factor that leads

to diminished care quality [7]. Indeed, job burnout and occupational stress among healthcare workers pose threats to patient safety and the quality of care. Job burnout among healthcare workers is an independent predictor of adverse events, healthcare-associated infections, and medical errors, and is associated with poor patient satisfaction [8].

Among the job-related consequences of burnout are withdrawal from work, absenteeism, changes in job performance, and decreased activity and effectiveness at work for those who remain in their positions [9]. Therefore, job burnout and job dissatisfaction not only lead to staff turnover but also negatively affect the quality of care [10]. When a nurse experiences burnout, patients are deprived of adequate attention and care, and their individual human rights are called into question. A nurse suffering from burnout, due to depersonalization, responds negatively to care recipients [11]. The evidence suggests that nurse burnout affects patient recovery more than any other factor [12].

Studies indicate that 23 to 43% of intensive care unit (ICU) nurses worldwide suffer from job burnout [13], characterized by high levels of emotional exhaustion (EE) and depersonalization, and low levels of personal accomplishment (PA) [14]. Providing care in the ICU requires nurses to regularly handle the most crit-

ical cases [14], making ICU work more stressful and impacting the quality of care they provide [15]. Recent evidence indicates that insufficient, delayed, or omitted nursing care is widespread among nurses [5]. In fact, nurses' ability to provide care and fulfill their roles is greatly influenced by the work environment in which they serve [10].

Several studies have shown that missed nursing care is prevalent in hospitals in the United States and Europe [16,17]. In a study conducted in the United States, the prevalence of missed nursing care was reported to be between 10 to 27% [18]. A review of the literature indicates that this issue is highly context-dependent, with frequency and type varying across hospitals within the same country and even across units within the same hospital [19]. In Iran, the rate of missed nursing care has been reported to be greater than that in other parts of the world [20]. For instance, a recent Iranian study revealed that 72.1% of nurses missed at least one nursing care activity during their last shift [21].

Studies on missed nursing care highlight the greater importance of quality and comprehensive nursing care in ICUs than in other departments. Therefore, assessing factors such as job burnout, which may be related to missed nursing care in ICUs, is crucial. However, few studies have specifically examined the relationship between missed nursing care and job burnout, and none have been conducted recently, particularly in Iran or within ICU settings. Thus, this study aimed to determine the relationship between missed nursing care and job burnout among nurses in intensive care units.

MATERIAL AND METHODS

This cross-sectional study included nurses working in the intensive care units of teaching hospitals at Kurdistan University of Medical Sciences in Iran in 2023. The research sample was selected from the research population based on the following inclusion criteria: having rotating shift duties, at least 6 months of clinical experience in an intensive care unit, willingness to participate in the study, and holding a bachelor's degree or higher. The sampling method used was convenience sampling. The exclusion criterion was incomplete completion of the questionnaires.

The research environment for this study comprised 11 intensive care units in Kosar, Towhid, and Besat educational hospitals affiliated with Kurdistan University of Medical Sciences. To determine the sample size, a census method was used, and all nurses working in the intensive care units of these teaching hospitals in 2023 were included in the study. It is worth mentioning that the total number of nurses working in the intensive care units of Kurdistan's teaching hospitals was 253. Of these, 23 did not meet the inclusion criteria, and out of the remaining 230, 200 completed the questionnaires.

In this study, the data collection tools included a demographic information form for nurses, the Kalisch Missed Nursing Care Questionnaire, and the Persian version of Maslach Burnout Inventory (MBI). The demographic information form comprised questions related to age, gender, marital status, education, employment status, economic status, place of residence, place of employment, length of employment in ICUs, length of employment overall, number of shifts per month, type of shift, total working hours per month, and the amount of overtime per month.

In the present study, the Kalisch Missed Nursing Care Questionnaire was used to assess missed nursing care. This questionnaire was developed by Kalisch in 2006 and was psychometrically

evaluated by the same researcher in 2009. It consists of 24 items, including patient movement, turning, assessment, education, discharge planning, and medication administration. Each item is rated on a four-point Likert scale ranging from 1 to 4. Higher scores on this questionnaire indicate a higher level of missed nursing care, and vice versa. The total score on this questionnaire ranges from 24 to 96 [20]. Its validity in Iran was established by Khajavi and colleagues in 2019, with a reported coefficient of 0.91 [20]. In a subsequent study by Ebadi and colleagues, the reliability of the instrument, assessed using Cronbach's alpha, was 0.88 [2]. In the present study, face validity was evaluated through feedback from 10 faculty members with expertise in nursing care, and their suggestions were incorporated into the final version of the questionnaire. Reliability was then assessed using Cronbach's alpha.

The Persian version of the Maslach Burnout Inventory (MBI) was used to measure job burnout among nurses. This questionnaire consists of 22 items designed to assess three dimensions of job burnout: emotional exhaustion (9 items), depersonalization (5 items), and reduced personal accomplishment (8 items). High scores in the dimensions of emotional exhaustion and depersonalization, along with low scores in personal accomplishment, indicate a high level of job burnout. The scores for each dimension are considered separately and are not combined into a single total score. In the study by Azimilolaty and colleagues, the reliability coefficients for the dimensions of emotional exhaustion, depersonalization, and personal accomplishment were 0.90, 0.79, and 0.71, respectively [22]. In the study by Rasoul Aghadavoud, the Cronbach's alpha coefficient for the MBI was 0.852 [23].

In this study, data analysis was conducted using SPSS version 24 software. Descriptive analysis of the data was performed using frequency tests, means, and standard deviation calculations. To explore the relationships between variables, various statistical tests, including *t*-tests, Mann-Whitney U tests, ANOVA, and Kruskal-Wallis tests, were used. Furthermore, linear regression analysis was conducted to evaluate correlations between variables. The significance level was set at 5%.

RESULTS

The results of this study, conducted among 200 nurses working in the intensive care units of educational hospitals affiliated with Kurdistan University of Medical Sciences, indicated that the participants' mean age was 32.05 ± 6.09 years. Most of the nurses were women (58.0%), married (54.0%), held a bachelor's degree (94.5%), were officially employed (49.0%), had a moderate economic status (65.5%), and resided in urban areas (99.0%). Nearly half of the participants worked at Kowsar Hospital (48.5%). Furthermore, the mean duration of employment in special care units was 21.5 ± 4.41 months, while the mean overall work experience was 17.04 ± 20.13 months. In addition, the nurses worked an average of 20.00 ± 15.52 shifts per month, with a mean total of 187.06 ± 28.56 working hours (Table 1).

The results of the present study indicated that among nurses working in the special care units of educational hospitals affiliated with Kurdistan University of Medical Sciences, the mean score for missed nursing care was 29.35 ± 43.9 . The mean scores for emotional exhaustion, depersonalization, and personal accomplishment were 25.14 ± 11.12 , 9.4 ± 56.5 , and 19.24 ± 5.9 , respectively. The overall occupational burnout score of nurses was 54.42 ± 22.17 (Table 2).

Table 1. Demographic characteristics of nurses employed in the intensive care department of teaching hospitals, Sanandaj, Iran (n = 200)

Demographic characteristics		Mean ± (SD) or Number (%)
Age		32.05 ± 6.09
Gender	Men	84 (42.0%)
	Women	116 (58.0%)
Marital status	Married	109 (54.5%)
	Single	85 (42.5%)
	Divorced	5 (2.5%)
	Widowed/ Widower	1 (0.5%)
Level of education	Associate's degree	1 (0.5%)
	Bachelor's degree	189 (94.5%)
	Master's degree	10 (5.0%)
Employment status	Employed by a company	10 (5.0%)
	Contractual	52 (26.0%)
	Fixed-term contract	35 (17.5%)
	Official	98 (49.0%)
	Service commitment period	5 (2.5%)
Economic status	Weak	43 (21.5%)
	Moderate	131 (65.5%)
	Good	26 (13.0%)
Place of residence	City	198 (99.0%)
	Village	2 (1.0%)
Workplace hospital	Kawsar Hospital	97 (48.5%)
	Tohid Hospital	87 (43.5%)
	Be'sat Hospital	16 (8.0%)
Duration of employment in the ICU		5.21 ± 4.41
Duration of nurses' employment		17.04 ± 120.31
Number of nursing shifts		20.00 ± 15.52
The working hours of nurses		187.06 ± 28.56
Work shift type	Fixed shift	39 (19.5%)
	Rotating shift	161 (80.5%)
Overtime hours per month	100>	190 (95.0%)
	100<	10 (5.0%)

The results of the present study, based on the Mann–Whitney test, revealed a significant relationship between missed nursing care scores and several demographic variables, including gender ($P = 0.024$), economic status ($P = 0.0001$), and the hospital of employment ($P = 0.0001$). Furthermore, according to the Spearman correlation test, there were significant positive correlations between missed nursing care and the dimensions of emotional

Table 2. The distribution of scores for missed nursing care, nurse burnout, and dimensions of nurse burnout (n = 200)

Scores	Mean ± (SD)
Missed nursing care	35.29 ± 9.43
Emotional exhaustion	14.25 ± 12.11
Depersonalization	4.05 ± 5.56
Personal accomplishment	24.19 ± 9.05
Nurse burnout	42.54 ± 17.22

exhaustion ($P = 0.0001$), depersonalization ($P = 0.0001$), personal accomplishment ($P = 0.0001$), as well as the overall occupational burnout score ($P = 0.045$) among nurses working in special care units (Table 3).

The results of the present study, based on linear regression analysis, demonstrated a significant relationship between forgotten nursing care and sex ($P = 0.037$) as well as economic status ($P = 0.0001$; Table 4).

DISCUSSION

The present study aimed to examine the relationship between missed nursing care and job burnout among nurses working in the special care units of educational hospitals affiliated with Kurdistan University of Medical Sciences in 2023. A total of 200 nurses participated in the study. The findings indicated that the overall level of job burnout among the participants was moderate, with moderate emotional exhaustion, low depersonalization, and low personal accomplishment scores. These results are consistent with those reported by Rastjoo and Zandvanian, who also found a moderate overall level of job burnout among nurses, with moderate emotional exhaustion and depersonalization, and low personal accomplishment score [24]. Similarly, Mudallal *et al.*, in a study of 407 Jordanian nurses, demonstrated high levels of job burnout in the emotional exhaustion and depersonalization domains, and a moderate level in personal accomplishment [25]. In a study by Khaneghai *et al.*, 84% of nurses experienced job burnout [26]. However, a systematic review and meta-analysis by Isfahani *et al.* reported a 25% prevalence of job burnout among Iranian nurses [11]. Furthermore, a systematic review and meta-analysis by Woo *et al.* on the global prevalence of job burnout symptoms among nurses found an overall prevalence of 11.23%. This study included 113 studies for the systematic review and 61 for the meta-analysis, comprising 45,539 nurses from 49 countries across various specialties [27]. Based on these findings, it may be concluded that the prevalence of job burnout among nurses in the special care units of educational hospitals affiliated with Kurdistan University of Medical Sciences is higher than global statistics indicate. Several factors may contribute to this issue, including long working hours, excessive overtime, insufficient staffing relative to workload, frequent fluctuations in demand and response to medical and nursing care, psychological pressures, and stress waves resulting from sudden and critical patient conditions, as well as unexpected critical events such as accidents and physical injuries. Moreover, the imbalance between workload and material and spiritual rewards is one factor that may contribute to nurse burnout in these environments. Therefore, managerial and executive measures to reduce workload

Table 3. Scores of missed nursing care and its association with demographic characteristics, nurse burnout, and its dimensions, Sanandaj, Iran (n = 200)

Missed nursing care score		Mean ± (SD) or frequency (average rank)	Spearman's rho	P value
Demographic characteristics				
Scores of missed nursing care		35.29 ± 9.43		
Age		32.05 ± 6.09	- 0.032	0.654
Gender	Men	84 (111.36)		0.024
	Women	116 (92.63)		
Marital status	Married	109 (109.07)		0.091
	Single	85 (88.57)		
	Divorced	5 (110.30)		
	Widowed/Widower	1 (131.50)		
Level of education	Associate's degree	1 (141.50)		0.620
	Bachelor's degree	189 (99.66)		
	Master's degree	10 (112.25)		
Employment status	Employed by a company	10 (102.70)		0.320
	Contractual	52 (86.87)		
	Fixed-term contract	35 (112.24)		
	Official	98 (102.75)		
	Service commitment period	5 (111.60)		
Economic status	Weak	43 (120.74)		0.0001
	Moderate	131 (107.43)		
	Good	26 (32.10)		
Place of residence	City	198 (101.01)		0.246
	Village	2 (50.25)		
Workplace hospital	Kawsar Hospital	97 (121.19)		0.0001
	Tohid Hospital	87 (80.53)		
	Besat Hospital	16 (83.69)		
Work shift type	Fixed shift	39 (107.05)		0.430
	Rotating shift	161 (98.91)		
Overtime hours per month	100>	190 (100.94)		0.639
	100<	10 (92.15)		
Duration of employment in the ICU		5.21 ± 4.41	- 0.126	0.075

Missed nursing care score	Mean ± (SD) or frequency (average rank)	Spearman's rho	P value
Demographic characteristics			
Duration of nurses' employment	17.04 ± 120.31	- 0.030	0.672
Number of nursing shifts	15.52 ± 20.00	0.089	0.212
The working hours of nurses	187.06 ± 28.56	0.077	0.280
Emotional exhaustion	14.25 ± 12.11	0.380	0.0001
Depersonalization	4.05 ± 5.56	0.318	0.0001
Personal accomplishment	24.19 ± 9.05	-0.349	0.0001
Nurse burnout	42.54 ± 17.22	0.142	0.045

pressure, increase staffing levels, establish rest and psychological support programs, and strengthen support systems can help improve nurses' job burnout in these units. Additionally, some of these differences may be attributed to environmental, cultural, and organizational factors associated with each work environment, which require further investigation and analysis.

The results of the present study indicated that the average score of missed nursing care in the special care units of educational hospitals affiliated with Kurdistan University of Medical Sciences was 43.9 ± 29.35 . This was in contrast with the findings of Mohammadi *et al.*, who reported an average missed nursing care score of 20.24 ± 18.55 in COVID-19 special care units in Kurdistan [28], which was higher than the level observed in the current study. The higher rate of missed nursing care in Mohammadi *et al.*'s study [28] may be attributed to the timing of the study during the COVID-19 pandemic and the impact of the coronavirus crisis on missed nursing care. Additionally, the results of Khajavi *et al.*'s study in Kerman in 2019 showed an average missed nursing care score of 41.7 ± 28.32 [20], which was close to and consistent with the findings of the present study. This contrasts with a study by Hessels *et al.* conducted in the United States, which reported a prevalence of missed nursing care of 10% to 27% [18]. In another study by Blackman *et al.*, the rate of missed nursing care was reported as 34% [29], which is consistent with the results of the present study. However, the rate of missed nursing care in the study by Labrague *et al.* in the Philippines was very low at 50.0 ± 35.1 [30]. They predicted that the low rate of missed care was due to inadequate patient surveillance, as well as the most commonly missed nursing activity, hospital and staffing resource levels, and patient safety culture [30].

The present study demonstrated a significant relationship between the score for missed nursing care and nurses' gender in special care units. This finding was consistent with the study by Chegini *et al.* [21]. It should be noted that, in the current study, the frequency of missed nursing care scores was higher among women than among men, whereas Chegini *et al.* reported a higher risk of missed care among men [21]. Most of the reviewed studies did not observe a significant relationship between missed nursing care scores and gender. For instance, studies by Mohammadi *et al.* [28], Ebadi *et al.* [2], and Labrague *et al.* in the Philippines [30] did not report any significant correlation between the average score of missed nursing care and gender. However, considering the results of the present study and corroborating stud-

Table 4. Regression analysis of the relationship between missed nursing care and demographic variables among nurses working in special care units

Variable	B	S. E	Sig	Collinearity	
				Tol	VIF
Intercept	-	13.619	0.000	-	-
Age	-0.040	0.186	0.740	0.292	3.421
Gender	-0.148	1.339	0.037	0.854	1.171
Marital status	0.086	1.154	0.225	0.849	1.178
Education	0.024	2.799	0.731	0.898	1.113
Employment status	0.090	0.674	0.213	0.808	1.238
Economic status	-0.331	1.154	0.000	0.829	1.207
Place of residence	-0.004	6.298	0.957	0.949	1.053
Workplace hospital	-0.133	1.122	0.080	0.738	1.354
Duration of employment in the ICU	-0.069	0.221	0.505	0.392	2.550
Duration of nurses' employment	0.010	0.005	0.887	0.909	1.100
Number of nursing shifts	0.098	0.040	0.140	0.963	1.039
Work shift type	-0.013	2.053	0.885	0.564	1.775
The working hours of nurses	-0.107	0.026	0.171	0.969	1.437
Overtime hours per month	0.022	2.909	0.750	0.927	1.078

ies, it can be suggested that gender is an important influencing factor on missed nursing care. The finding supports the notion that women are more likely than men to forget nursing care tasks, which may be attributed to childcare responsibilities and family issues that can influence female nurses' work behavior. Therefore, addressing the needs of this group of caregivers is crucial. The mentioned finding can guide policymakers in addressing the issues faced by female nurses and paying more attention to the reasons for missed nursing care among women.

The current study indicated a significant relationship between the score for missed nursing care and nurses' economic status, with individuals of higher economic status having fewer instances of missed nursing care. This finding contrasts with many studies that have not assessed the impact of this factor on missed nursing care, such as those by Ebadi *et al.* [2], Mohammadi *et al.* [28], and others. Based on this finding, it can be argued that improving nurses' economic status may reduce missed nursing care and ultimately improve the quality of nursing care. Therefore, policymakers and health system decision-makers need to prioritize improving nurses' economic status.

Furthermore, the study results showed a statistically significant correlation between the missed nursing care score and the level of nursing burnout in special care units. This finding is consistent with the study by White *et al.* [8], which also demonstrated a significant correlation between missed nursing care and burnout, with nurses experiencing burnout being 4.97 times more likely to have missed nursing care. Additionally, Nantsupawat *et al.* showed that each unit increase in burnout among nurses was associated with a 1.61 times higher likelihood of missed nursing care [31]. Moreover, Abdulrahim Ibrahim and El-Wekil demonstrated a positive and significant relationship between burnout dimensions and missed nursing care in Egypt [32]. On the other hand, the

growing phenomenon of burnout syndrome is accompanied by changes in the workplace and increasing professional demands. Work-related stress can lead to dissatisfaction, chronic fatigue, and emotional exhaustion [8]. Therefore, improving management and supervision systems for nursing care to reduce missed care and, consequently, burnout is essential. Strengthening management and supervision systems, providing stress management skills training, and promoting collaboration and interaction can be effective in reducing burnout and missed nursing care.

This study demonstrated a significant correlation between the score for missed nursing care and the dimensions of job burnout — emotional exhaustion, depersonalization, and personal accomplishment — among nurses. This finding is consistent with the study by Abdulrahim Ibrahim and El-Wekil in Egypt, which also showed a significant positive relationship between dimensions of job burnout and missed nursing care [32]. Similarly, Liu *et al.* in China also found this association [33]. Moreover, the experiences of nurses in the study by Harvey *et al.* indicated a relationship with jeopardizing care, professional incongruence, emotional exhaustion, and depersonalization [34].

Therefore, given the association between missed nursing care and depersonalization among nurses, addressing this issue requires developing communication skills and enhancing nurses' personalities. Solutions such as personality development programs and providing psychological counseling can help improve the situation and reduce care omissions.

Based on these findings, it can be suggested that dimensions of job burnout — emotional exhaustion, depersonalization, and personal accomplishment — among nurses may influence their ability to provide care, thereby reducing care omissions. Additionally, organizing courses and workshops to enhance personal accomplishment skills and reduce job burnout and emotional

exhaustion can improve nurses' competence and care provision. Furthermore, investigating environmental factors in special care units and creating conducive environmental conditions can help improve nurses' performance in providing care.

Future research is recommended to investigate the influence of social and family factors on neglected nursing care and nurses' overall performance. Additionally, studies should examine the impact of work environment variables, such as work shifts, job pressures, and stress management, on forgotten nursing care and job burnout among nurses. These investigations could provide deeper insights into the multifaceted causes of care omission and help develop targeted interventions to enhance nurses' well-being and the quality of patient care.

CONCLUSION

The findings of the present study indicate a moderate level of missed nursing care and job burnout among nurses in the special care units of teaching hospitals affiliated with Kurdistan University of Medical Sciences. Despite advances in hospital technology, the implementation of accreditation standards, and overall improvements in healthcare systems, nurses in special care units still experience job burnout and may forget to perform certain care tasks. Therefore, measures should be taken to reduce burnout and address nurses' needs in these units to improve the quality of healthcare services. Furthermore, considering the significant correlation between missed nursing care and job burnout and its dimensions, it is recommended that healthcare policymakers and decision-makers implement strategies to reduce nurse burnout and promote continuous improvement in nursing care and service quality. Continuous training programs focused on burnout reduction skills should be provided to nurses to enhance both nursing care and the overall quality of healthcare services.

Conflict of interest

The authors declare no conflict of interest.

Ethical approval

To collect the data, the researcher first obtained approval from the Research Deputy of Kurdistan University of Medical Sciences and ethical clearance from the university's Ethics Committee (IR.MUK.REC.1402.107). Initially, the research proposal was reviewed and approved by the university's research council. Subsequently, permission to conduct the study was obtained from the authorities of the educational hospitals. All procedures adhered to the ethical principles of the Declaration of Helsinki.

Consent to participate

After explaining the study objectives to hospital administrators and nurses in special care units and obtaining their consent, sampling was initiated. Data were collected confidentially using a census method among eligible nurses, with questionnaires distributed anonymously and accompanied by clear instructions for completion. Informed consent was obtained from all participants, and confidentiality was strictly maintained.

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Data availability

All information and data are available in this article.

Authorship

ShSh contributed to data collection and writing the original draft. NSh contributed to conceptualizing, and writing the original draft. ShSG contributed to editing the manuscript. AA contributed to methodology and data analysis.

REFERENCES

- Gurková E, Mikšová Z, Šáteková L. Missed nursing care in hospital environments during the COVID-19 pandemic. *Int Nurs Rev*. 2022 Jun;69(2):175-184. doi: 10.1111/inr.12710
- Ebadi J, Najafi E, Aghamohammadi V, Saeedi S, Nasiri K. Missed Nursing Care and Its Related Factors in Ardabil and Khalkhal Educational and Medical Centers in 2020. *JHC*. 2021;23(1):78-87.
- Vatankhah I, Rezaei M, Baljani E. The Correlation of Missed Nursing Care and Perceived Supervisory Support in Nurses. *IJN*. 2020; 33 (126):103-116.
- Ebrahimi F, Jafarjalal E, Najafi Ghezleh T, Haghani S. The quality of nursing care in nurses working in the intensive care unit of COVID-19 in Arak medical training centers in 2021-2022. *Hayat*. 2023;29(1):89-100.
- Duffy JR, Culp S, Padrucci T. Description and Factors Associated With Missed Nursing Care in an Acute Care Community Hospital. *J Nurs Adm*. 2018 Jul/Aug;48(7-8):361-367. doi: 10.1097/NNA.0000000000000630
- Henderson J, Willis E, Xiao L, Blackman I. Missed care in residential aged care in Australia: an exploratory study. *Collegian*. 2017;24(5):411-416.
- Dhaini SR, Zúñiga F, Ausserhofer D, Simon M, Kunz R, De Geest S, *et al*. Are nursing home care workers' health and presenteeism associated with implicit rationing of care? A cross-sectional multi-site study. *Geriatr Nurs*. 2017 Jan-Feb;38(1):33-38. doi: 10.1016/j.gerinurse.2016.07.003
- White EM, Aiken LH, McHugh MD. Registered Nurse Burnout, Job Dissatisfaction, and Missed Care in Nursing Homes. *J Am Geriatr Soc*. 2019 Oct;67(10):2065-2071. doi: 10.1111/jgs.16051
- Dehghani Y, Asghari F, Saaidpour F, Joukar E. Prediction of occupational burnout based on job satisfaction, personality traits and mental health. *Iran J Nurs Res*. 2017;12(5):61-70. Available from: <http://ijnr.ir/article-1-1910-en.html>
- White EM, Aiken LH, Sloane DM, McHugh MD. Nursing home work environment, care quality, registered nurse burnout and job dissatisfaction. *Geriatr Nurs*. 2020 Mar-Apr;41(2):158-164. doi: 10.1016/j.gerinurse.2019.08.007
- Isfahani P. The prevalence of burnout among nurses in hospitals of Iran: a systematic review and meta-analysis. *J Health*. 2019;10(2):240-250. Available from: <http://healthjournal.arums.ac.ir/article-1-1859-en.html>
- Jarvic L, Robinson C, MacTavish P, Dunn L, Quasim T, McPeake J. Understanding the patient journey: a mechanism to reduce staff burnout? *Br J Nurs*. 2019 Mar 28;28(6):396-397. doi: 10.12968/bjon.2019.28.6.396
- Torre M, Santos Popper MC, Bergesio A. Burnout prevalence in intensive care nurses in Argentina. *Enferm Intensiva (Engl Ed)*. 2019 Jul-Sep;30(3):108-115. English, Spanish. doi: 10.1016/j.enfi.2018.04.005
- Filho FA, Rodrigues MCS, Cimiotti JP. Burnout in Brazilian Intensive Care Units: A Comparison of Nurses and Nurse Technicians. *AACN Adv Crit Care*. 2019 Spring;30(1):16-21. doi: 10.4037/aacnacc.2019222
- Rezaee N, Salar A, Keykha A. Nurses' experience of nursing care in the intensive care unit: a qualitative study. *J Crit Care Nurs*. 2020;13(2):46-53. Available from: <http://jccnursing.com/article-1-465-en.html>
- Lee E, Kalisch BJ. Identification and comparison of missed nursing care in the United States of America and South Korea. *J Clin Nurs*. 2021 Jun;30(11-12):1596-1606. doi: 10.1111/jocn.15712
- Willis E, Brady C. The impact of "missed nursing care" or "care not done" on adults in health care: A rapid review for the Consensus Development Project. *Nurs Open*. 2022 Mar;9(2):362-371. doi: 10.1002/nop2.942
- Hessels AJ, Flynn L, Cimiotti JP, Cadmus E, Gershon RR. The Impact of the Nursing Practice Environment on Missed Nursing Care. *Clin Nurs Stud*. 2015 Dec;3(4):60-65. doi: 10.5430/cns.v3n4p60

19. Amini K, Khani Lehdarbonei L, Hanifi N. Relationship between ethical climate and missed nursing care from the point of view of patients with cancer and nurses working in oncology wards of Zanjan and Rasht cities. *J Health Care (Tehran)*. 2022;24(2):95–107. Available from: <http://hcjournal.arums.ac.ir/article-1-1380-en.html>
20. Khajooee R, Bagherian B, Dehghan M, Azizzadeh Forouzi M. Missed nursing care and its related factors from the points of view of nurses affiliated to Kerman University of Medical Sciences in 2017. *Hayat*. 2019;25(1):11-24.
21. Chegini Z, Jafari-Koshki T, Kheiri M, Behforoz A, Aliyari S, Mitra U, *et al*. Missed nursing care and related factors in Iranian hospitals: A cross-sectional survey. *J Nurs Manag*. 2020 Nov;28(8):2205-2215. doi: 10.1111/jonm.13055
22. Azimilolaty H, Rezaei S, Khorram M, Mousavinasab N, Heidari T. Correlation between the quality of nursing care and burnout of nurses in the teaching hospitals affiliated to Mazandaran University of Medical Sciences, Iran. *Iran J Nurs*. 2021;33(128):54-66.
23. Aghadavood SR. The Relationship Between The Characters In The Morning and Evening and Burnout among nurses case Study Applied two Standard Models (Valiasr Hospital Eghlid city). *Caring Today*. 2019;11(40-41):24-36.
24. Rastjoo S, Zandvavian A. Predicting job burnout of female nurses based on effort–reward imbalance and components of positive psychology. *Occup Med QJ*. 2021;13(2):29-39.
25. Mudallal RH, Othman WM, Al Hassan NE. Nurses' Burnout: The Influence of Leader Empowering Behaviors, Work Conditions, and Demographic Traits. *Inquiry*. 2017 Jan 1;54:46958017724944. doi: 10.1177/0046958017724944.
26. Khaneghai K, Parvin A, Vaisi Raygani AA, Abdi A, Salari N, Mohammadi MM. Predicting job burnout based on job satisfaction, organizational commitment, emotional intelligence, and five personality traits in Kermanshah nurses. *Nurs Midwifery J*. 2023;20(11):939-53
27. Woo T, Ho R, Tang A, Tam W. Global prevalence of burnout symptoms among nurses: A systematic review and meta-analysis. *J Psychiatr Res*. 2020 Apr;123:9-20. doi: 10.1016/j.jpsychires.2019.12.015
28. Mohammadi S, Valiee S, Nouri B, Fathi M. The rate and causes of missed nursing care of COVID-19 hospitalized patients in intensive care units: a multicenter cross-sectional study. *J Crit Care Nurs*. 2023;16(1):16-25.
29. Blackman I, Henderson J, Willis E, Hamilton P, Toffoli L, Verrall C, Abery E, Harvey C. Factors influencing why nursing care is missed. *J Clin Nurs*. 2015 Jan;24(1-2):47-56. doi: 10.1111/jocn.12688
30. Labrague IJ, de Los Santos JAA, Fronza DC. Factors associated with missed nursing care and nurse-assessed quality of care during the COVID-19 pandemic. *J Nurs Manag*. 2022 Jan;30(1):62-70. doi: 10.1111/jonm.13483
31. Nantsupawat A, Wichaikhum OA, Abhichartibutra K, Sadarangani T, Poghosyan L. The relationship between nurse burnout, missed nursing care, and care quality following COVID-19 pandemic. *J Clin Nurs*. 2023 Aug;32(15-16):5076-5083. doi: 10.1111/jocn.16761
32. Ibrahim IA, El-Wkeel NS. Exploring the relationships between job burnout, job satisfaction, and missed nursing care among staff nurses. *Tanta Sci Nurs J*. 2021;21(2):97-120. doi:10.21608/TSNJ.2021.179394
33. Liu J, Zheng J, Liu K, You L. Relationship Between Work Environments, Nurse Outcomes, and Quality of Care in ICUs: Mediating Role of Nursing Care Left Undone. *J Nurs Care Qual*. 2019 Jul/Sep;34(3):250-255. doi: 10.1097/NCQ.0000000000000374
34. Harvey C, Thompson S, Otis E, Willis E. Nurses' views on workload, care rationing and work environments. *J Nurs Manag*. 2020 May;28(4):912-918. doi: 10.1111/jonm.13019