

**Original Article**

**Open Access**

**Missed Nursing Care and its Associated Factors during the COVID-19 Pandemic: A Cross-Sectional Study**

**Mansoorreh Azizzadeh Forouzi<sup>1</sup>, Fatemeh Hosseini<sup>2</sup>, Tayebbeh Jalali<sup>3</sup>, Mahlagha Dehghan<sup>4</sup>, Azam Heidarzadeh<sup>5\*</sup>, Fatemeh Seyedghasemi<sup>6</sup>**

<sup>1</sup> MSc, Neuroscience Research Center, Institute of Neuropharmacology, Kerman University of Medical Sciences, Iran.

<sup>2</sup> Assistant Professor, Department of Community Health Nursing, School of Nursing and Midwifery, Rafsanjan University of Medical Sciences, Rafsanjan.

<sup>3</sup> MSc, Department of Student research Committee, Kerman University of Medical Sciences, Kerman, Iran.

<sup>4</sup> Associate Professor of Nursing, HIV/STI Surveillance Research Center, and WHO Collaborating Center for HIV Surveillance, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran.

<sup>5</sup> MSc, Faculty Member, Dept. of Medical Surgical Nursing, School of Nursing and midwifery, Geriatric Care Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran. (**Corresponding author**)

<sup>6</sup> MSc, Faculty Member, Dept. of Medical Surgical Nursing, School of Nursing and midwifery, Geriatric Care Research Center, Rafsanjan University of Medical Sciences, Rafsanjan, Iran.

**Abstract**

**Background and Aim:** Missed nursing care has recently been identified as a key indicator for evaluating nursing care quality and patient safety. This study aims to determine missed nursing care and its associated factors during the COVID-19 pandemic from the perspectives of nurses working in hospitals affiliated with Rafsanjan University of Medical Sciences, Iran in 2020.

**Materials and Methods:** A total of 220 nurses working in Rafsanjan hospitals were selected to participate in this descriptive cross-sectional study using convenience sampling. Data were collected using the missed nursing care questionnaire self-administered and a related to factors associated with missed care. SPSS software version 22 was employed to analyze the data with the use of variance, Mann–Whitney U, independent t-test, and Kruskal-Wallis.

**Results:** The mean age of the nurses was  $31.60 \pm 6.35$  years. The mean score of missed nursing care during the COVID-19 pandemic was determined to be  $25.48 \pm 5.78$ , which was lower than the questionnaire's mean score of 52.5. Nurses identified the factors associated with missed care to be "fear of family infection," "staff's physical fatigue," "high patient workload per shift," and "lack of psychological and emotional support by the organization". Additionally, a significant relationship was found between the type of ward and missed nursing care ( $p=.007$ ).

**Conclusion:** This study found that the level of missed nursing care was below the average and could be reduced through effective management. Decreasing caregivers' workload could also help reduce the factors contributing to missed nursing care.

**Keywords:** Nursing care, associated factors, COVID-19, pandemic.

**Corresponding author:** Azam Heidarzadeh, ORCID ID: 0000-0001-5035-4454. Email: Heidarzadeh@rums.ac.ir,

**Received:** July 2024, **Accepted:** August 2024, **ePublish:** Summer 2024. **Citation:** Azizzadeh forouzi M, Hosseini F, Jalali T, Dehghan M, Heidarzadeh A, Seyedghasemi F, Missed Nursing Care and its Related Factors during the COVID-19 Pandemic: A Cross-Sectional Study, Knowledge of Nursing Journal. 2024; 2(2):164-179.

## Introduction

In late December 2019, an infectious disease emerged in Wuhan China, caused by a strain of coronavirus. The COVID-19 pandemic continued for an extended period, with nurses being at the forefront of health and social care in extreme situations. This virus was subsequently named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Being highly contagious, it led to the illness known as coronavirus disease 2019 (COVID-19), which quickly spread beyond China's borders and escalated into a global public health emergency [1]. The high prevalence of COVID-19 in the general population of many countries, its novelty, its highly contagious nature, and high morbidity and mortality rates created an unprecedented demand for health care worldwide [2]. The COVID-19 pandemic continued for an extended period, with nurses being at the forefront of health and social care in extreme situations [3]. Nurses

Knowledge of Nursing Journal. Summer 2024; 2(2)

act as gatekeepers in health care by serving as planners, coordinators, care providers and evaluators. Their specialized services are essential for achieving high-quality patient care [4].

The quality of nursing care is an important factor in ensuring patient safety [5]. Concerns about improving the quality of care, particularly in relation to patient safety, are among the significant challenges faced by nurses worldwide. Over the past four decades, many nursing researchers have sought to clarify these concepts and explore their interconnections in order to identify the most effective interventions for maintaining high standards of nursing care and ensuring patient safety [6].

Missed nursing care has recently been recognized as an important indicator for evaluating nursing care and patient safety [7]. Missed nursing care refers to any aspect of required patient care that is missed or delayed [8]. Additionally, missed nursing

care is also known as implicit care that has been affected, unstable nursing care, unmet patient needs, and incomplete nursing care [4]. Almost all nurses have expressed emotions such as anger, concern, frustration and sadness in response to missed care [5]. Missed care reduces the quality of nursing services [5], causes accidents [9-10], and increases complications [10]. Moreover, it can lead to risks such as patient falls [10], side effects [11], medication errors [10,12], reduced job satisfaction, and greater willingness of nurses to leave the service [13]. In addition, medical centers must bear high costs and prolong hospitalization [4].

Overall, the prevalence of missed nursing care in hospitals varies from 55% to 98% across countries [12,14]. A significant number of nursing care processes that have been missed in hospitals include evaluation (44%), basic care and interventions (73%), and planning (71%) [10]. One study conducted in Iran found that 72.1% of

nurses reported omitting at least one critical component of nursing care during a shift [10].

Furthermore, studies have shown that the most commonly missed activities include oral care, providing comfort or talking to patients, developing or updating care plans, and educating patients and their families. These activities are essential for patient safety and better patient outcomes [9,15-16].

Certainly, there are factors involved in the occurrence of missed care that can be related to communication as well as human and financial resources [17]. Studies have shown that missed nursing care can be linked to various factors in the care environment. These factors include stressful situations, lack of resources, inadequate staffing, and an ambiguous work environment. An ambiguous work environment is characterized by unclear or inconsistent practices that can either facilitate or hinder

nursing practice [8]. A study conducted by Winsett and colleagues highlighted several concerning factors that affect patient care, including an unexpected increase in patient's admission and discharge, staff shortages, and limited access to medications [18]. During the COVID-19 pandemic, the challenges became even more pronounced with an increase in the number of patients being cared for, a higher patient-to-nurse ratio, more days of nurse absenteeism due to illness, and greater workloads and overtime hours for nurses [18-19].

During the pandemic, nurses were faced with many challenges. For instance, they had to relocated, or new colleagues have been added to the ward. The work environment has changed deal with the implementation of additional measures such as maintaining personal hygiene, using protective gear, and dealing with restrictions put on contact and communication with patients and others. Additionally, they had to

manage psychological issues like stress, anxiety, depression, and emotional exhaustion. Therefore, in order to manage the quality of care and prevent the recurrence of missed nursing care during these challenging times, it is crucial to identify the extent of missed care and the factors that contribute to impairing nurses' clinical performance [20]. Thus, this study was conducted to determine the extent of missed nursing care and its related factors during the COVID-19 pandemic, from the perspective of nurses working in hospitals affiliated with Rafsanjan University of Medical Sciences, Iran in 2020.

## Method

This is a descriptive cross-sectional study that was conducted in the city of Rafsanjan, which has three independent hospitals. During the COVID-19 pandemic, the medical, surgical, and infectious disease wards, as well as the intensive care unit of Ali Ibn Abi Taleb hospital, provided

services to COVID-19 patients. The total statistical population was 630 nurses, and the sample size was estimated using Cochran's formula for a sample size of 220.

$$n = \frac{\frac{z^2 pq}{d^2}}{1 + \frac{1}{N} \left[ \frac{z^2 pq}{d^2} - 1 \right]}$$

N=630, z= 1.96, d=0.05, p= 0.5, q=0.5

Convenience sampling was used by the number five researcher to selected the nurses. Sampling was carried out across all three shifts in the selected hospital wards. After explaining the study objectives and obtaining oral consent, data were collected using a questionnaire, which was given to nurses who agreed to participate in the study.

The data collection tools consisted of a three-part Self-administered questionnaire, which included demographic and contextual information, missed nursing care, and related factor to missed care.

The demographic and contextual information questionnaire included questions about age, sex, marital status, degree, work experience, position, and type of employment.

The missed nursing care questionnaire was a researcher-made questionnaire. To design and compile the questionnaire, the items were extracted from scientific sources, national guidelines, and experts' opinions. Initially, it contained 40 items, but after receiving feedback from nursing professors and calculating the validity index, 21 items were deemed essential for nursing care of patients with COVID-19. The items were formatted using a 4-point Likert scale, with response options ranging from "I rarely forget" (score 1) to "I always forget" (score 4). The highest possible score was 84, while the lowest was 21. A higher score indicated a greater likelihood of missed care.

The factors related to missed care was also researcher-made questionnaire. To design

and compile the questionnaire, the items were extracted from scientific sources, national guidelines, and experts' opinions. This 19-item was scored on a 4-point Likert scale, ranging from 1 (unimportant) to 4 (important). The highest and lowest scores were 76 and 19, respectively with higher score indicating a greater importance of factors related to missed nursing care.

Since the questionnaires were developed by researchers, their validity was confirmed by ten faculty members of the Rafsanjan School of Nursing. In terms of content validity, the questionnaire scored was .91. Additionally, Cronbach's alpha was used to measure the reliability of the questionnaires, with coefficients estimated to be .91 for the missed nursing care questionnaire and .98 for the related factors questionnaire. Data were analyzed by SPSS software version 22. Descriptive statistics (frequency, percentage, mean, and standard deviation) were applied to describe

participants' characteristics. Analysis of variance, Mann-Whitney U test, independent t-test, and Kruskal-Wallis test was used to investigate the relationship between demographic variables and missed nursing care variables and its related factors due to the lack of normality.

Rafsanjan University of Medical Sciences approved this project (ethical code: IR.RUMS.REC.1399.186). After approval, the permission was offered to the management of hospitals affiliated with Rafsanjan University of Medical Sciences. The researcher provided some oral information to the participants, including the goals and objectives of the study, the confidentiality of personal information, and anonymity of the data. Participants were free to withdraw from the study at any time. Verbal consent was provided by the nurses individually.

## Results

The mean age of nurses involved in the study was  $31.60 \pm 6.35$  years. Majority of them were between 30-40 years old, with

170 of them being male (77.3%), 151 being married (68.8%), 184 having a bachelor's degree (83.6%), and 121 having more than 5 years of experience (55.3%) (Table 1).

**Table 1. Demographic and contextual characteristics of nurses working in hospitals affiliated to Rafsanjan University of Medical Sciences**

| Variable                                                            |                       | Nurses (n = 220) |         |
|---------------------------------------------------------------------|-----------------------|------------------|---------|
|                                                                     |                       | Frequency*       | Percent |
| Age(years)                                                          | 20-30                 | 106              | 48.2    |
|                                                                     | 31-40                 | 95               | 43.2    |
|                                                                     | <41                   | 19               | 8.6     |
| Sex                                                                 | male                  | 170              | 77.3    |
|                                                                     | female                | 50               | 22.7    |
| Marital status                                                      | Single/divorced       | 69               | 31.4    |
|                                                                     | Married               | 151              | 68.6    |
| Education                                                           | Associate Degree      | 15               | 6.8     |
|                                                                     | Bachelor              | 184              | 83.6    |
|                                                                     | Masters               | 21               | 9.5     |
| Job experience                                                      | Month<6               | 10               | 4.5     |
|                                                                     | 6 month and 5 years   | 88               | 40.2    |
|                                                                     | 5> years              | 121              | 55.3    |
| Job experience in Covid-19 departments                              | 6< month              | 162              | 73.6    |
|                                                                     | 6 – 15 months         | 31               | 14.1    |
|                                                                     | Missed Data**         | 27               | 12.3    |
| Employment Status                                                   | Manpower plan         | 43               | 19.5    |
|                                                                     | Contract Employee     | 34               | 15.5    |
|                                                                     | Temporary             | 65               | 29.5    |
|                                                                     | Fixed-Term            | 78               | 35.5    |
| Position                                                            | Nurse/Practical nurse | 212              | 96.4    |
|                                                                     | Head Nurse            | 8                | 3.6     |
| Shift type                                                          | Fixed                 | 23               | 10.5    |
|                                                                     | in circulation        | 197              | 89.5    |
| Hospital place of work                                              | Ali ibn Abi Talib     | 205              | 93.2    |
|                                                                     | Nik Nafs              | 7                | 3.2     |
|                                                                     | Moradi                | 8                | 3.6     |
| Department                                                          | Medical               | 41               | 18.6    |
|                                                                     | Surgical              | 27               | 12.3    |
|                                                                     | Infectious            | 34               | 15.5    |
|                                                                     | Neurology             | 7                | 3.2     |
|                                                                     | Intensive care units  | 92               | 41.8    |
|                                                                     | Emergency             | 19               | 8.6     |
| *There are missing data in cases with a frequency of less than 220. |                       |                  |         |
| **2 people without work experience and 25 missing data              |                       |                  |         |

The mean score of missed nursing care during the COVID-19 pandemic was  $25.48 \pm 5.78$ , which was lower than the mean score of the questionnaire (52.5). Among the items missed in the nursing care questionnaire, "using screening

questionnaires for early diagnosis of COVID-19 in suspected patients" ( $1.45 \pm .75$ ) and "using posters and warning signs for adherence to infection control standards" ( $1.44 \pm .72$ ) received the highest mean scores (Table-2).

**Table 2. The highest and lowest mean score of missed nursing care during Covid-19 epidemic among nurses working in hospitals affiliated to Rafsanjan University of Medical Sciences**

| Line                                              | Missed nursing care in patients during the covid-19                                            | Mean  | SD   |
|---------------------------------------------------|------------------------------------------------------------------------------------------------|-------|------|
| 1                                                 | Use of screening questionnaires for early diagnosis of covid-19 disease in suspected patients* | 1.45  | .75  |
| 2                                                 | Use of posters and warning signs to meet infection control standards*                          | 1.44  | .72  |
| 3                                                 | Oxygen therapy for patients with respiratory distress as directed by a physician**             | 1.06  | .28  |
| 4                                                 | Observe standard precautions when sucking patient's lung discharge**                           | 1.08  | .27  |
| Total score                                       |                                                                                                | 25.84 | 5.78 |
| * The highest mean score, **The Lowest mean score |                                                                                                |       |      |

Table-3 shows the importance of factors related to missed care. In other words, the

mean importance of all items was higher than 3 (the score range was 1-4). The items

of "fear of their families being infected", of psychological and emotional support  
 "staff's physical fatigue", "a large number of from the organization" had the highest mean  
 patients under care in each shift", and "lack scores.

**Table 3. The highest and lowest mean score to missed nursing care during the Covid-19 pandemic in nurses working in hospitals affiliated to Rafsanjan University of Medical Sciences**

| Row                                            | Factors related to missed nursing care in patients<br>during covid-19        | Mean | SD  |
|------------------------------------------------|------------------------------------------------------------------------------|------|-----|
| 1                                              | Fear of infecting the family member *                                        | 3.77 | .63 |
| 2                                              | Physical fatigue of staff *                                                  | 3.68 | .73 |
| 3                                              | Lack of psychological and emotional support from the<br>organization *       | 3.64 | .68 |
| 4                                              | Lack of cooperation of patients in the implementation of<br>care measures ** | 3.38 | .84 |
| 5                                              | Lack of information and knowledge about the disease **                       | 3.44 | .82 |
| 6                                              | Forced to wear equipment for a long time **                                  | 3.49 | .88 |
| * The highest mean score, ** Lowest mean score |                                                                              |      |     |

Analysis of variance, Mann-Whitney U, ward and missed nursing care ( $p=.007$ ),  
 independent t, and Kruskal-Wallis tests (Table4).  
 revealed a relationship between the type of

**Table 4. Relationship between demographic and contextual characteristics of nurses working in hospitals affiliated to Rafsanjan University of Medical Sciences with missed nursing care in patients during the covid-19 era**

| Variable                            |                      | Missed nursing care in patients during the covid-19 era |      | Statistical analysis | <i>p</i> |
|-------------------------------------|----------------------|---------------------------------------------------------|------|----------------------|----------|
|                                     |                      | Mean                                                    | SD   |                      |          |
| Age (years)                         | 20-30                | 25.48                                                   | 5.70 | F=.21                | .81      |
|                                     | 31-40                | 25.32                                                   | 5.77 |                      |          |
|                                     | >41                  | 26.26                                                   | 6.54 |                      |          |
| Sex                                 | Male                 | 25.20                                                   | 5.28 | Z= -.16              | .87      |
|                                     | Female               | 26.40                                                   | 7.21 |                      |          |
| Marital status                      | Single/divorced      | 25.94                                                   | 6.47 | t=-.80               | .42      |
|                                     | Married              | 25.26                                                   | 5.45 |                      |          |
| Education                           | Associate Degree     | 24.33                                                   | 4.29 | F=.37                | .69      |
|                                     | Bachelor             | 25.52                                                   | 5.80 |                      |          |
|                                     | Masters              | 25.95                                                   | 6.67 |                      |          |
| Job experience                      | 6> month             | 26.80                                                   | 6.18 | F=.35                | .70      |
|                                     | 6 month and 5 years  | 25.24                                                   | 5.31 |                      |          |
|                                     | 5> years             | 25.35                                                   | 5.74 |                      |          |
| Job experience in Covid departments | 6< month             | 25.15                                                   | 5.32 | H= 4.28              | .12      |
|                                     | 6 – 15 months        | 25.16                                                   | 6.19 |                      |          |
|                                     | Missed Data          | 27.81                                                   | 7.48 |                      |          |
| Employment Status                   | Manpower plan        | 26.65                                                   | 5.62 | F= 1.15              | .33      |
|                                     | Contract Employee    | 25.50                                                   | 6.36 |                      |          |
|                                     | Temporary            | 25.68                                                   | 6.15 |                      |          |
|                                     | Fixed-Term           | 24.65                                                   | 5.26 |                      |          |
| Shift type                          | Fixed                | 24                                                      | 3.52 | t=-1.30              | .20      |
|                                     | in circulation       | 25.56                                                   | 5.98 |                      |          |
| Department                          | Medical              | 25.60                                                   | 7.24 | H= 15.95             | .007     |
|                                     | Surgery              | 22.63                                                   | 2.79 |                      |          |
|                                     | Infectious           | 26.44                                                   | 5.25 |                      |          |
|                                     | Neurology            | 24.14                                                   | 5.16 |                      |          |
|                                     | Intensive care units | 25.25                                                   | 4.58 |                      |          |
|                                     | Emergency            | 29.10                                                   | 9.23 |                      |          |

*F* = analysis of variance, *Z* = Mann-Whitney *U*, independent *t* = *t*, *H* = Kruskal-Wallis

## Discussion

Missed nursing care has recently been recognized as an important indicator for assessing both the quality of nursing care and patient safety. The results of this study showed that the mean score of missed nursing care during the COVID-19 pandemic was below the overall average. In the literature review, no similar studies were found addressing missed nursing care during the COVID-19 pandemic or other pandemics. A study by Naseri in 2023 reported a missed nursing care score of 40.60 during the Coronavirus pandemic (12). In Ethiopia and Sweden, 74% of nurses reported that they commonly missed at least one aspect of nursing care [21-22]. Additionally, a study in Jordan indicated that the frequency of missed nursing care increased during the COVID-19 pandemic (32.6% vs 22.8%) [23]. The lower level of missed nursing care observed in the study of Labrague et al. (2020) was attributed to

differences in education levels and nurses' participation in ongoing training courses [24]. Assigning more nursing staff during the COVID-19 pandemic may have contributed to the reduced level of missed care among nurses in this study. Researchers suggest that one of the factors predicting an increase in missed care is an increased nurse-to-patient ratio [25-27]. The results of present study indicated that the items of "using screening questionnaires for early diagnosis of COVID-19 in suspected patients" and "using posters and warning signs for adherence to infection control standards" obtained the highest mean scores among the missed nursing care items. No similar study was found in order to compare its results with the results of present study. Due to the nature of COVID-19 and the severe need of affected patients for basic essentials such as air, nurses first perform oxygen therapy or other caring behaviors to save the patients' lives.

Regarding the factors related to missed care, the results of present study showed that the highest scores were attributed to the items of "fear of their families being infected", "staff's physical fatigue", "a large number of patients under care in each shift", and "lack of psychological and emotional support from the organization". In the study of Von Vogelsang et al. (2021) on barriers to nursing care during the COVID-19 pandemic, the most common barriers, according to participating nurses, were an "unexpected increase in the number of patients and ward crowdedness" and patients' emergency conditions [19]. Also, Mehrabian et al. (2023) reported that the most important reasons for missed care reported by nurses were human resources, material resources, and communication, which align with the results of present study [28]. Moreover, other studies conducted in periods other than the COVID-19 pandemic have reported "workload related to

admission and discharge", "manpower shortage and resource inadequacy" [17-18, 26] to be the most common factors related to missed care. These results are not in line with the results of present study, which may be due to differences in patient conditions and the use of different questionnaires. It is justifiable to say that nurses' fatigue is the most significant factor associated with missed care, because large number of hospitalized patients, high mortality rate, and possible staff shortage put a high level of physical pressure on nurses. Lack of psychological and emotional support from the organization could have been due to focusing more on patients' improvement and ignoring the nurses' condition.

Moreover, in the present study, there was only a significant relationship between the type of ward and missed nursing care, in such a way that the nurses working in Emergency and intensive care units missed nursing care more than others. This is in line

with the results of a study conducted by Eskin Bacaksiz et al. (2020), [27], while it is not in line with the results of studies by Bragadottir et al. (2017) and Duffy et al. (2018), who reported the level of missed nursing care in the nurses working in intensive care units to be lower [7,29]. Probably the reason for this discrepancy is the frequent transfer of staff between wards that cause some nurses not to have enough experience in the new ward, especially in the intensive care unit. Lack of experience leads to stress and, as a result, missed care. In addition, the use of different questionnaires and the pandemic conditions can also contribute to the differences in these results.

The present study has both advantages and limitations. Its main advantage is that it included the entire population of nurses working in medical/surgical wards and intensive care units in three hospitals of Rafsanjan, with a response rate of approximately 70%. One limitation of this

Knowledge of Nursing Journal. Summer 2024; 2(2)

study is the use of a researcher-made questionnaire, although this tool demonstrated good psychometric properties. Additionally, the high workload of nurses and lack of time to complete the questionnaire were other limitations that may have impacted the accuracy of responses. Furthermore, the psychological conditions, motivation levels, and willingness of nurses to answer questions could have influenced the results. Therefore, future studies are recommended to be conducted on larger populations with diverse cultures to better understand missed nursing care and its contributing factors in critical situations such as the COVID-19 pandemic.

## Conclusion

The results of present study indicated that the mean score of missed nursing care in this study was below average, suggesting that more than half of the care was not missed. Nursing managers can utilize these

findings to address the factors contributing to missed care and ultimately decrease instances of missed nursing care. As patients' well-being is closely tied to the quality of care they receive, the results of this study can also serve as a roadmap for enhancing care quality in hospitals.

### Acknowledgments

The authors would like to thank the nurses for their participation in this study.

### Conflict of interest

There is no conflict of interest in this study.

### Reference

1. Abdelhafiz AS, Mohammed Z, Ibrahim ME, Ziady HH, Alorabi M, Ayyad M, et al. Knowledge, perceptions, and attitude of Egyptians towards the novel coronavirus disease (covid-19). *Journal Of Community Health*. 2020;45(5):881-90. doi: 10.1007/s10900-020-00827-7.
2. Farnoosh G, Alishiri G, Hosseini Zijoud SR, Dorostkar R, Jalali Farahani A. understanding the severe acute respiratory syndrome coronavirus 2 (sars-cov-2) and coronavirus disease (covid-19) based on available evidence- A narrative review. *Journal Mil Med*. 2020;22(85):1-11 [Persian].
3. Maben J, Bridges J. Covid-19: supporting nurses' psychological and mental health. *Journal Of Clinical Nursing*. 2020 Aug;29(15-16):2742-2750.doi: 10.1111/jocn.15307.
4. Jones TL, Hamilton P, Murry N. Unfinished nursing care, missed care, and implicitly rationed care: State of the science review. *International Journal of Nursing Studies*. 2015;52(6):1121-37.
5. Kim KJ, Yoo MS, Seo EJ. Exploring the influence of nursing work environment and patient safety culture on missed nursing care in Korea. *Asian Nurs Res (Korean Soc Nurs Sci)*. 2018 Apr 20:S1976-1317(17)30683-7.doi: 10.1016/j.anr.2018.04.003.
6. Blackman I, Papastavrou E, Palese A, Vryonides S, Henderson J, Willis E. Predicting variations to missed nursing care: A three-nation comparison. *Journal Of Nursing Management*. 2018;26(1):33-41.
7. Bragadóttir H, Kalisch BJ, Tryggvadóttir GB. Correlates and predictors of missed nursing care in hospitals. *Journal Of Clinical Nursing*. 2017;26(11-12):1524-34.
8. Srulovici E, Drach-Zahavy A. Nurses' personal and ward accountability and missed nursing

care: A cross-sectional study. *International Journal Of Nursing Studies*. 2017;75:163-71.

9. Ball JE, Murrells T, Rafferty AM, Morrow E, Griffiths P. 'Care left undone during nursing shifts: associations with workload and perceived quality of care. *BMJ Quality & Safety*. 2014;23(2):116-25.

10. Kalisch BJ, Xie B. Errors of omission: missed nursing care. *Western Journal of Nursing Research*. 2014;36(7):875-90.

11. Ausserhofer D, Schubert M, Desmedt M, Blegen MA, De Geest S, Schwendimann R. The association of patient safety climate and nurse-related organizational factors with selected patient outcomes: a cross-sectional survey. *International Journal Of Nursing Studies*. 2013;50(2):240-52.

12. Naseri S. Examining Forgotten Nursing Care and Its Related Elements from the Standpoint of Nurses Working in 4 Teaching Hospitals of Kurdistan University of Medical Sciences Since the Coronavirus Epidemic. *Journal of Patient Safety & Quality Improvement*. 2023; 11(4):207-214. doi: 10.22038/psj.2023.75902.1415.

13. Kalisch BJ, McLaughlin M, Dabney BW. Patient perceptions of missed nursing care. *The Joint Commission Journal on Quality and Patient Safety*. 2012;38(4):161-7.

14. Lake ET, Riman KA, Sloane DM. Improved work environments and staffing lead to less missed nursing care: A panel study. *Journal of nursing management*. 2020;28(8):2157-65.

15. Carthon JMB, Lasater KB, Sloane DM, Kutney-Lee A. The quality of hospital work environments and missed nursing care is linked to heart failure readmissions: a cross-sectional study of US hospitals. *BMJ Quality & Safety*. 2015;24(4):255-63.

16. Kalisch BJ, Tschannen D, Lee KH. Missed nursing care, staffing, and patient falls. *Journal Of Nursing Care Quality*. 2012;27(1):6-12.

17. 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. *Journal of Hayat*. 2019;25(1):11-24. [Persian].

18. Winsett RP, Rottet K, Schmitt A, Wathen E, Wilson D, Group MNCC. Medical surgical nurses describe missed nursing care tasks—Evaluating our work environment. *Applied Nursing Research*. 2016;32:128-33.

19. Von Vogelsang AC, Göransson KE, Falk AC, Nymark C. Missed nursing care during the COVID-19 pandemic: a comparative observational

- study. *Journal of Nursing Management*. 2021; 29(8):2343-2352
20. Park SH, Hanchett M, Ma C. Practice environment characteristics associated with missed nursing care. *Journal of Nursing Scholarship*. 2018;50(6):722-30.
21. Ball JE, Murrells T, Rafferty AM, Morrow E, Griffiths P. Care left undone during nursing shifts: associations with workload and perceived quality of care. *BMJ Qual Saf*. 2014; 23(2):116-25. <https://doi.org/10.1136/bmjqs-2012-001767>.
- 22- Obregon-Gutierrez N, Puig-Calsina S, Bonfill-Abella A, Forrellat-Gonzalez L, Subirana-Casacuberta M. Care left undone and quality of care during the COVID-19 pandemic: Influential factors and modulating strategies. *Enferm Clin (Engl Ed)*. 2022; 32(1):4-11.
23. Alfukah OA, Alhalaiqa FN, Alqurneh MK, Ayed A. Missed nursing care before and during the COVID-19 pandemic: A comparative cross-sectional study. *Int Nurs Rev*. 2023;70(1):100-10. Doi: <https://doi.org/10.1111/inr.12795>.
24. Labrague LJ, De Los Santos JAA, Tsaras K, Galabay JR, Falguera CC, Rosales RA, et al. The association of nurse caring behaviours on missed nursing care, adverse patient events and perceived quality of care: A cross-sectional study. *Journal Of Nursing Management*. 2020;28(8):2257-65.
25. Lake ET, Germack HD, Viscardi MK. Missed nursing care is linked to patient satisfaction: a cross-sectional study of US hospitals. *BMJ Quality & Safety*. 2016;25(7):535-43.
26. Blackman I, Henderson J, Willis E, Hamilton P, Toffoli L, Verrall C, et al. Factors influencing why nursing care is missed. *Journal Of Clinical Nursing*. 2015;24(1-2):47-56.
27. Eskin Bacaksiz F, Alan H, Taskiran Eskici G, Gumus E. A cross-sectional study of the determinants of missed nursing care in the private sector: Hospital/unit/staff characteristics, professional quality of life and work alienation. *Journal of nursing management*. 2020;28(8):1975-85.
28. Mehrabian F, Javadi-Pashaki N, Ashouri A, Fakhri-Mousavi A. Missed nursing care during the COVID-19 pandemic in educational and medical centers in Northern Iran: A cross-sectional study. *J Nurs Midwifery Sci*. 2023;10(1):e134379. doi: <https://doi.org/10.5812/jnms-134379>.
29. Duffy JR, Culp S, Padrucci T. Description and factors associated with missed nursing care in an acute care community hospital. *The Journal of Nursing Administration*. 2018;48(7/8):361-7.