Research Paper
Assessment of the Relationship Between Intention to Migrate With Workload and a Healthy Work Environment of Nurses

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ABSTRACT

Background: Like other countries in the world, Iran is facing the problem of a shortage of nurses. Meanwhile, many Iranian nurses migrate to other countries every year. The present study aims to assess the relationships between migration intention, workload, and a healthy work environment for nurses.

Methods: This cross-sectional correlational study was conducted in 2020 using a proportional stratified sampling of 360 nurses working in the Iran University of Medical Sciences (IUMS) teaching hospitals. The study data were collected through a demographic questionnaire, the nurses' intention to migrate questionnaire, the NASA task load index, and the American Association of Critical-Care Nurses Healthy Work Environment Assessment. In this study, we used the independent t-test, analysis of variance, and the Pearson correlation coefficient for data analysis at a significance level of <0.05 in SPSS software, version 16.

Results: The Mean±SD intention to migrate score was 65.59±33.51. A weak but significant positive correlation existed between the intention to migrate and workload (r=0.166, P=0.002). There was an inverse and weak relationship between the intention to migrate and a healthy work environment (r=-0.160, P=0.002). There was also a significant relationship between the intention of nurses to migrate and their work experience (P=0.048) and employment status (P=0.001).

Conclusion: The prevention of nurses' migration must be investigated thoroughly to determine the reasons. But according to the results of this study, providing a healthy work environment and maintaining the current workforce by providing the indicators desired by nurses may partly prevent excessive migration of nurses.

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Highlights

• The migration of nurses has led to the loss of the labor force and has a high cost for the healthcare system.

• Based on the study results, nurses tend to migrate because of their inappropriate work environment.

• The study showed a significant relationship between nurses' intention to migrate with a high workload and an inappropriate work environment.

• Our study's results suggest health policymakers preserve human resources and create a suitable work environment to prevent further migration of nurses.

Plain Language Summary

The immigration of Iranian nurses has become an important professional challenge. Migration to developed countries is one of the important factors in leaving the workplace and the shortage of nurses, which leads to the loss of human resources in the health sector and reduces the quality of care. The study results showed that the migration of nurses is high and is partly related to workload and a healthy work environment.

1. Introduction

Considering the importance and role of human resources in countries' health systems, managers should be aware of the preservation of human resources. This issue is related to the health and life of society (Radl-Karimi et al., 2022). Meanwhile, nurses as one of the main members of the healthcare team (Fuqua et al., 2018) always face problems in the work environment, so about 50% of Iranian nurses have problems such as heavy workload (Arghami et al., 2015), low nurse-to-patient ratio, low salary and benefits, lack of dignity and real status of nursing, interdisciplinary conflict and lack of workforce (Gorgich et al., 2017). According to the studies, Iran faces a serious nursing shortage (Janatolmakan & Khatony, 2022). One of the factors that caused the lack of nursing staff is their migration (Valizadeh et al., 2016). Nurses migrate to more developed countries for better job opportunities and to create better income and security for family members in their countries (Adepoju, 2022). Based on this, the issue of nurses' migration from less developed to developed countries is an important challenge (Zolot, 2019).

Organizations are always preparing human resources to improve productivity so that about 60% of the hospital's budget is allocated to employing and training human resources. On the other hand, organizations should seek to hire new employees to lose elite human resources, which leads to decreased quality of care services (Roche et al., 2015). According to the results of the studies, about 54.77% of health personnel in Iran intend to migrate (Asadi et al., 2017). According to the Supreme Council of the Nursing System Organization report, about 1000 nurses migrate from Iran every year (Shojaeimotlagh et al., 2018). Nurses migrate for reasons such as dissatisfaction with the work situation, comparing their living conditions with other countries (Valizadeh et al., 2016), economic reasons (Zolot, 2019), and lack of access to organizational support (Li et al, 2014b). The high workload is an effective factor in changing jobs for nurses. Therefore, a standard workload can lead nurses to stay in their jobs (Ross, 2017). The results of a study in the Philippines also showed that one of the main reasons nurses intend to leave their jobs is the heavy workload (Labrague et al., 2018). Nurses are one of the groups in the health system that face a heavy workload during their careers due to the ratio of nurses to patients and the number of care hours per patient (Li et al., 2014a). Studies in Iran indicate nurses' high workload (Bakhshi et al., 2017; Ghasemi et al., 2019). High workload increases medical errors and patient mortality (Fagerström et al., 2018), reduces the quality of patient care and job satisfaction, increases burnout (Asgari & Khalkhali, 2016) and costs, and ultimately minimize effectiveness (Tubbs-Cooley et al., 2019). Because leaving the service is one of the reasons related to the nursing shortage and the increasing nurses' workload (Mudihanselage & Chamaru, 2015), the desire to stay in the job is associated with the high workload in nursing. On the other hand, an increased workload is associated with lower health standards in the workplace, while a healthy workplace will attract more qualified employees (Kelly & Todd,

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2017). Therefore, it is important to have a healthy work environment to retain the right people (Scruth et al., 2018). The suitability of the appropriate work environment improves communication and effective cooperation between nurses and other treatment team members, increases job satisfaction and reduces job burnout (Kelly & Todd, 2017), increases patient satisfaction with nursing services, and improves care outcomes (Bai, 2016). Meanwhile, it has been reported that the health status of Iranian nurses' working environment is poor (Hoseini-Esfidarjani et al., 2018; Salehi et al., 2020). However, research in countries like the United States shows that nurses have a healthy and suitable work environment (Huddleston et al., 2017).

Reducing the workload (Nasirizad Moghadam et al., 2021) and providing a healthy work environment (Freeman et al., 2012) can keep nurses in the treatment system, so paying attention to this issue seems very important. Iranian nurses greatly desire to migrate, mainly due to low job satisfaction, inappropriate job position, work environment, low salaries and benefits, and social attitude towards nursing (Kamali et al., 2020). In Iran, the ratio of nurses to patients is about 1.3 per 1000 people, while in the US, this ratio was 11.79 practicing nurses per 1000 inhabitants in 2020 (Trading Economics, 2022).

The immigration of nurses is an unconventional approach for which serious and effective measures should be considered (Cabanda, 2021). Considering the large increase in the migration of Iranian nurses to developed countries, it is necessary to determine the factors related to their desire to migrate so that the required evidence can be made for policymakers and nursing managers to be aware of these variables and adjust them to reduce the migration of nurses. Based on this, the present study was conducted to determine the relationship between the intention to migrate and the nurses' workload and healthy working environment.

2. Materials and Methods

This cross-sectional correlational study was conducted in 2020 in the hospitals affiliated with the Iran University of Medical Sciences (IUMS), Tehran, Iran. A total of 360 nurses were first recruited by proportional stratified sampling and then in each stratum (i.e. hospitals) by simple random sampling. The research population consisted of nurses with BS in nursing, those who lacked managerial positions, and nurses with at least 1 year of work experience. The following formula (Equation 1) was used to calculate the sample size (z 1-α/2=1.96, S=29, d=3 and, n=360) (Equation 1).

1. $$n = \frac{Z_{1-\alpha/2}{}^2 s^2}{d^2}$$

The data were collected by a demographic information questionnaire (including age, gender, work experience, marital status, education, type of ward, nurse/patient ratio, employment type, and working shift), nurses' intention to migrate questionnaire, NASA Task Load Index (NASA-TLX) workload scale, and the American Association of Critical-Care Nurses (AACN) Healthy Work Environment Assessment Tool (HWEAT).

Nurses' intention to migrate questionnaire

This valid and reliable questionnaire was developed by Lee (2016) to assess the intent to migrate Korean nursing students. It has three sections. Personal and environmental factors influence the intention to migrate. Also, a single question, "how much intention for migration after graduation from nursing school do you have currently?" measures the level of intention for migration. For this study, we adjusted this single question for clinical nurses. This scale includes scores from 0 to 100. Also, it is divided into four levels below 25%, 26%-50%, 51%-75%, and above 76%, where high scores indicate a high level of desire to migrate.

Three faculty members of the nursing and midwifery school of IUMS verified the validity of the Persian version of the questionnaire, and its reliability was confirmed after selecting 20 samples and completing the instrument on two occasions with a time interval of one week using the test-retest reproducibility method and the value was calculated as r=0.986.

NASA task load index (NASA-TLX)

Sandra Hart developed NASA-TLX and measures workload subjectively. It is a tool to measure and perform a mental workload assessment (MWL). The MWL scale measures mental demand, physical demand, temporal demand, performance, effort, and frustration. The definition and meaning of each subscale are given in the questionnaire, which the respondent reads before answering. It is a visual scale divided into 5 units from 0 to 100. The score range of each subscale is between 0 and 100, and the respondent determines the number for each subscale by marking it on the visual scale. The mean of the subscales is reported as the mental load of the task. An average score below 50 is acceptable, and scores above 50 are considered high (NASA TLX, Task Load Index). The face and content validity of the Persian version of this scale has been confirmed, and its reliability was reported

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with a Cronbach α coefficient of 0.897 (Mohammadi et al., 2013). Its reliability was also reported by Malekpour et al. (2013) and Safari & Kazemi (2013), with a Cronbach α coefficient of 0.83 (in both studies).

The American Association of Critical-Care Nurses (AACN) Healthy Work Environment Assessment Tool (HWEAT):

This tool evaluates a work environment based on each standard and includes 18 questions answered on a 5-point Likert scale from completely disagree =1 to completely agree=5. This tool has six dimensions: skilled communication (questions 1, 6, and 14), true collaboration (questions 2, 10, and 15), effective decision-making (questions 7, 11, and 16), appropriate staffing (questions 3, 8, and 12), meaningful recognition dimension (questions 4, 9, and 17), and authentic leadership (questions 5, 13, and 18). The range of scores is between 18 and 90, and the total score is obtained by dividing the total score by the total number of questions, resulting in a number between 1 and 5. Scores between 1.00 and 2.99 indicate a low level of environmental health. A score of 3.00 to 3.99 indicates a good state of health in the work environment, and a score of 4.00 to 5.00 indicates a very good state of the work environment. The reliability of this tool was confirmed by correlation coefficients of 0.50 to 0.68, and its internal consistency was shown by a Cronbach α of 0.77 overall (range for standards, 0.77-0.81) (Connor et al., 2018). This tool has been translated into Persian, and 10 academic staff members have confirmed its validity. The internal consistency of the questions has been confirmed using the Cronbach α coefficient and its reproducibility through test-retest (α=0.88 and r=0.92) (Salehi et al., 2020).

Qualified nurses were requested to complete the questionnaire in the self-report form at the desired and agreed time, and they were asked to deliver the questionnaire within a week.

Data were analyzed using descriptive statistics (percentage, Mean±SD) and inferential statistics (independent t-test, analysis of variance, and the Pearson correlation coefficient) and through SPSS software, version 16.

3. Results

The Mean±SD age and working experience of the subjects were 32.04±5.9 and 7.79±5.57 years, respectively. Most subjects were female (75.6%) and married (52.7%), with work experience between 5 and 9 years (32.8%),

and had a bachelor's degree (86.7%), were working in the emergency and intensive care units (33.9%), had 7-12 patients (48.3%), were temporary employed (78.3%) and had rotational shift work (65.8%). The demographic and occupational characteristics of the subjects are presented in Table 1. The Mean±SD score of the nurses' tendency to migrate was 59.65±33.51, indicating a high level. The mean workload was 82.79±10.99, which was high. Also, the mean score of a healthy work environment was 2.40±0.52, indicating an inappropriate work environment in terms of health (Table 2).

Nurses' intention to migrate had a weakly significant positive correlation with their workload (P=0.002, r=0.166) and an inverse and weak significant relationship with the healthy work environment (P=0.002, r= –0.160) (Table 3).

The analysis of variance (ANOVA) showed a significant relationship between the intention to immigrate and work experience (P=0.048). Also, Tukey's paired comparison indicated that the intention to migrate in nurses with a work experience of 10-14 years was significantly higher than those with a work experience of fewer than 5 years (P=0.033) and 5-9 years (P=0.011). The independent t-test showed a significant relationship between the intention to migrate and employment status. Hence, the intention to migrate was significantly lower in nurses with permanent employment than those with temporary employment (P=0.001). The results of the ANOVA test showed that workload was significantly correlated with the nurse/patient ratio (P=0.001). Tukey's paired comparison showed that the mean workload score in nurses with 1-2 patients was significantly lower than those with 2-5 patients (P=0.015) and 12-17 patients (P=0.001). Also, the mean workload score in nurses with 7-12 patients was significantly lower than those with 12-17 patients (P=0.004). The results of the ANOVA test showed that a healthy work environment had a significant relationship with the type of ward (P=0.003) and work shift (P=0.014). Tukey's paired comparison showed that the mean score of the healthy work environment in the surgical ward was significantly higher than the pediatric ward (P=0.002). The mean score of healthy work environment in nurses with morning and evening shifts was significantly higher than those with rotational shifts (P=0.003) (Table 4).

4. Discussion

This study determined the relationship between nurses' intention to migrate with workload and a healthy work environment in Iran. The study results show that the av-

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Table 1. Demographic/occupational characteristics of the nurses

Demographic/Occupational Characteristics	Category	No. (%)
Gender	Male	88(24.4)
	Female	272(75.6)
Work experience (y)	<5	117(32.5)
	5-9	118(32.8)
	10-14	75(20.8)
	15≤	50(13.9)
Marital status	Single	171(47.5)
	Married	186(52.7)
	Divorced	3(0.8)
Education	Bachelor's degree	312(86.7)
	Master's degree	48(13.3)
Type of ward	Emergency/intensive care	122(33.9)
	Surgical	105(29.2)
	Medical	83(23.1)
	Pediatric	50(13.9)
Nurse/patient ratio	1-2	12(3.3)
	2-5	31(8.6)
	5-7	84(23.3)
	7-12	174(48.3)
	12-17	59(16.8)
Employment type	Permanent	114(31.7)
	Non-permanent	246(78.3)
Working shift	Morning	24(6.7)
	Night	34(9.4)
	Morning and evening	55(15.3)
	Evening and night	10(2.8)
	Rotational	237(65.8)

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erage score of nurses' intention to migrate is high. According to the evidence, nurses' migration from underdeveloped countries is high (Santric-Milicevic et al., 2015; Gea-Caballero et al., 2019). It has been shown that the intention to migrate among nurses in South Korea was 69.8% in 2013 and about 50.74% in 2016 (Lee, 2016; Lee & Moon, 2013). A study in Iran showed that 54.77% of healthcare professionals intended to migrate (Asadi et al., 2017). According to studies, 15% of nurses in Canada intend to migrate abroad (Freeman et al., 2012). There are differences between underdeveloped countries for reasons such as management systems, differ-

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Table 2. Frequency distribution of intention to migration, workload, and healthy work environment from the perspective of the nurses

Variables	Category	No. (%)/Mean±SD
Intention to migration	<25%	63(17.5)
	26%-50%	48(13.1)
	51%-75%	70(17.4)
	Mean±SD	65.59±33.51
Workload	Acceptable	3(0.8)
	High	357(99.2)
Healthy work environment	Inappropriate	320(88.9)
	Appropriate	38(10.6)
	Highly appropriate	2(0.6)

ent working conditions, differences in wages, independence, and different work responsibilities of nurses in developed countries. It seems that migration is an individual issue. The evidence shows that nurses have a high workload (Bakhshi et al., 2017; Ghasemi et al., 2019). Studies show that nurses in South American countries have a high workload (Carlesi et al., 2017), confirming our study's results. Unlike our study, some results show that nurses' workload in some centers in America is acceptable (Tubbs-Cooley et al., 2019). There are reasons for the difference in the workload in different countries, including the ratio of nurses to patients, patient characteristics, and laws governing the provision of health care services. Also, based on the results of studies, the acceptable number of nurses is a factor in preventing patient deaths (Needleman et al., 2011).

Another study finding was the unhealthy work environment from the nurses' perspectives. A US study shows that nurses' work environment is healthy. Also, a rela-

tionship exists between the daily workload of each nurse and patients' morbidity and mortality (Fagerström et al., 2018). Hospitals with a good work environment have characteristics such as autonomy of practice, permission to express opinions, good work communication, reward systems, and the possibility of participation in patient care planning. To improve health care, the components of a healthy work environment must exist together to create a healthy work environment, several committees should be formed in the hospital, and each committee should take responsibility for one of the components of a healthy work environment and monitor its proper implementation (Wakefield et al., 2021).

The present study results showed that with the increase in the workload and the decrease in the health of the work environment, the desire to migrate increases among nurses. These results are consistent with similar studies in other countries that have identified high workload as one of the factors associated with nurses' inten-

Table 3. The result of the pearson correlation test between intention to migration, workload, and healthy work environment

Variables	Intention to Migration				The Pearson correlation
	Mean±SD				
	<25%	26%-50%	51%-75%	>76%	
Workload	81.82±12.15	77.28±10.68	80.23±11.07	85.50±9.8	r=0.166 P=0.002
Healthy work environment	2.52±0.49	2.57±0.38	2.36±0.51	2.34±0.55	r=-0.16 P=0.002

Table 4. Relationship between occupational characteristics, the intention to migration, workload, and healthy work environment

Demographic/Occupational Characteristics	P		
	Intention to Migration	Workload	Healthy Work Environment
Work experience	0.048	0.051	0.777
Employment status	0.001[*]	0.317*	0.542[*]
Nurse/patient ratio	0.250	0.001	0.774
Type of ward	0.562	0.054	0.003
Work shift	0.065	0.210	0.014

[*]Analyzed by the independent t-test. The relationship of other variables has been calculated by ANOVA.

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tion to migrate (Kizito et al., 2015; Garner et al., 2015; Li et al., 2014b; Ross, 2017). A healthy work environment is mentioned as one of the effective factors in nursing staff retention, and an unhealthy work environment is considered one of the reasons for the migration of nurses (Shamsi & Peyravi, 2020). Reducing workload and improving a healthy work environment can help maintain nurses in the treatment system, improve health care, and ultimately promote patient satisfaction. Another result of this study was the relationship between nurses' intention to migrate with work experience and employment status. Therefore, nurses with relatively little work experience and non-permanent employment status were more inclined to migrate. This finding is consistent with another study conducted on healthcare professionals in Iran (Asadi et al., 2017). This result may be related to job security, which is higher in nurses with permanent employment. Also, similar studies point to the lack of job security (Santric-Milicevic et al., 2015) and obtaining better job opportunities in the destination country among the reasons for the migration of nurses to other countries (Dywili et al., 2013). Thus, less experienced nurses are less inclined to stay in their previous organizations, looking to create ideal conditions for themselves. On the other hand, the immigration policy of some countries affects this issue, such as accepting young nurses.

Feeling tired, lacking enough time to complete the questionnaires, and the emotional state of the samples could affect their responses and, ultimately, the study results. To reduce this problem, the subjects were given 1 week to complete the questionnaires to answer the questions in a more suitable situation. The cross-sectional nature of the study requires a cautious use of the findings. In addition, this research was carried out in the context of Iranian teaching hospitals; therefore, in applying the results, attention should be paid to the differences in context.

5. Conclusion

This study showed that the nurses had a high intention to migrate, and their workload was also high. In addition, they believed that their work environment was unhealthy. There were weak significant associations between the intention to migrate, workload, and a healthy work environment.

According to the findings, it is necessary to pay more attention to the components of workload and, most importantly, the shortage of nurses and try to reduce the pressure on nurses by keeping the current nurses and hiring new nurses. It is also necessary for nursing managers and planners to use all their efforts to provide a healthy work environment for the activities of nurses so that the capital of the health system does not show a desire to migrate anymore. Considering that sufficient nursing force is one of the most important factors in reducing workload and that workload is related to nurses' intention to migrate, it is recommended to conduct more longitudinal studies on workload and nurses' intention to migrate. It is also recommended to compare the migration of nurses in healthy and unhealthy work environments. Conducting qualitative studies on the migration of nurses can explain the processes and factors related to this issue and determine the pattern of migration of nurses.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Student Research Committee and the Ethics Committee of IUMS (Code: IR.IUMS.REC.1398.374). The subjects were informed that participation in the study is completely optional. Eligible nurses who agreed to participate signed the written consent form.

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