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Work-family conflict, burnout, and related factors among nurses during the COVID-19 pandemic in the Northwest of Iran

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Abstract.
BACKGROUND: Nurses, as the largest working group in the hospital, experience many problems, conflicts, and stressors in the workplace and family especially after the widespread distribution of coronavirus 2019 (COVID-19).
OBJECTIVE: The perceived conflict and burnout among nurses, as well as the correlation between these two variables and the associated factors, were the main subjects of this study.
METHODS: This cross-sectional study involved 256 nurses from three COVID-19 referral hospitals in northwest Iran. Participants completed demographic, work-family conflict (WFC), and burnout questionnaires. The nonparametric tests including Mann-Whitney U, Kruskal-Wallis, and Spearman correlation coefficient were applied to statistical analysis.
RESULTS: The overall score of conflict was 55.3 (12.7). The time dimension received the highest score 11.4 (2.9). In terms of intensity 27.6 (8.7) and frequency 27.6(8.8), nurses had the most burnout in the lack of personal accomplishment dimension. All aspects of WFC, emotional exhaustion, and depersonalization characteristics of burnout had statistically significant positive correlations ($p < 0.01$). The ward, hospital and employment status variables were associated with WFC ($p < 0.05$). The association between taking the crisis management course and the severity of depersonalization, and the frequency of lack of personal accomplishment was confirmed ($p < 0.01$). Additionally, the frequency and severity of emotional exhaustion were associated with employment status and work experiences ($p < 0.05$).
CONCLUSION: The findings showed that nurses had WFC and burnout rates that were above average. Regarding the negative effects of these two phenomena on health, and also nurse's clinical practices, rearranging work conditions and providing better organizational support seem necessary.

Keywords: COVID-19, burnout, conflict, work environment, mental health

1. Introduction

Work environments have fundamental differences in the degree of stressful situations. One of the most stressful work environments is medical settings such as hospitals. Hospital staff is always faced with stressful stimuli due to dealing with patients. Nurses, as the largest working group in the hospital, have the most direct contact with patients and therefore have a worse situation in terms of facing stressful situations [1]. Especially when nurses have to

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deal with coronavirus 2019 (COVID-19), they have intense workloads, extended workdays, night shifts, and exposure to infectious diseases [2]. COVID-19 first appeared in Wuhan, China, in December 2019 [3]. It can be spread by close contact and shares a lot of similarities with Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS) in terms of its signs and symptoms. Following MERS and SARS in recent years, COVID-19 has been the world's most significant public health emergency [4].

The work and living environments are the main places where people spend their time. Adapting one's situation to these two environments can lead to psychological well-being. In most cases, however, work environments follow mechanical conditions, and, despite the development of human resource management approaches, many challenges are nowadays seen in the workplace, which in many cases are due to non-compliance of job requirements with living conditions, referred to as the conflict [5]. The term WFC refers to a type of interrole conflict in which the role pressures from the work and family domains are contradictory in some ways. The under-participation in the family (work) role makes it harder to participate in the work (family) role, according to this definition [6]. There are three main components to it: WFC-based time (the time spent doing work/family and reducing family/work time), WFC-based pressure (the level of energy expended on work/family duties and reducing energy expenditure on family/work affairs), and WFC-based behavior (the interaction of behaviors and norms of the work/family environment with behaviors and norms of the family/work environment). The ability of nurses to balance between professional and personal life can increase their mental fortitude and affect the quality of the services they provide, enhancing patient safety and satisfaction [7, 8].

Burnout is another variable that can affect the degree of adjustment between work and family. Burnout occurs in response to work pressures and refers to a situation in which a person's attitude and behavior become pessimistic towards his/her work and profession [9]. Burnout was defined by Maslach and Jackson as a work-related stress syndrome that contains (a) Emotional Exhaustion (EE), including weakened emotional feeling in contact with others, (b) Depersonalization (DP), including negative feelings toward the service recipients, and (c) Lack of Personal Accomplishment (LA), including a negative assessment about the job [10, 11]. Personal traits, the nature of the job, inadequate nursing staff, working environment and change shifts, relationships, and the conflict that occurs between the physician and nurse were recognized as the main problems associated with burnout among nurses [12]. In the clinical field, burnout means loss of feeling and interest in the patient resulting from inadequate care [13, 14].

Studies have shown that the situation of WFC and burnout is not at the desired level in Iranian hospitals and among nursing staff. 52.6% of the samples in a study of 210 nurses in a social security hospital reported having high levels of WFC [15]. The rate of WFC was greater than usual in all three dimensions of time, pressure, and behavior, according to a second study of 374 nurses in eight teaching hospitals [16]. The burnout scores in the frontline workers of COVID-19 infection were considerably more than those in the non-frontline workers, according to a study of 245 nurses conducted after the COVID-19 pandemic [2]. The results a cross-sectional study among 212 nurses of six teaching hospitals showed high intensity and frequency of burnout [17].

WFC can have an effect on nurses' quality of life and mental health, which in turn alters their capacity to provide services psychologically [18]. Additionally, burnout among nurses can have an effect on their attitudes toward their jobs and the quality of patient care [19]. Due to changes in workload, working conditions, and the amount of exposure to stressors as a member of the health workforce and as a citizen, the situation of WFC and burnout among nurses, as well as its adverse effects, may be more severe during the COVID-19 pandemic [20]. The negative consequences of WFC and burnout and the possibility of worsening the situation during the COVID-19 pandemic confirm the necessity of conducting studies in this regard. Therefore, this research was conducted to identify the level of WFC and burnout among Iranian nurses, to examine the correlation between them, and to determine associated factors related to these two variables.

2. Methods

2.1. Study design

This cross-sectional survey was carried out from September 1st to end of Journey 2021. Three referral hospitals were selected in the Ardabil area of Iran's northwest for the study, which offered services to patients with COVID-19 (Fig. 1). The majority of

Fig. 1. Study setting.

the services for COVID-19 patients in this province, which has a population of about 1300,000, are provided by these centers, which have over 870 active beds.

2.2. Sampling and data collection

753 nurses who worked the morning, evening, and night shifts in 26 hospital wards made up the study's population. Based on Krejcie and Morgan's table, which establishes sample size in accordance with a particular degree of community size and reliability [21], a sample size of 256 nurses was selected. The convenient sampling technique was used to select participants from among the qualified nurses. According to a quota and based on the proportion of nurses employed by each hospital in relation to the general population, a certain number of samples were allotted to each hospital.

After providing sufficient explanation about the study, all participants provided their verbal informed consent. In total, 300 questionnaires were distributed during September to Journey 2021. Participants were asked to complete and return the questionnaires within 20 days.

2.3. Survey tools

A three-part questionnaire with a demographic characteristics form, the Carlson et al. WFC scale, and the Maslach Burnout Inventory (MBI) was used to collect the data. Age, sex, education level, marital status, employment type, hospital and department name, work experience (in years), shift type, family size, having children, and passing a crisis-related course were all questions on the demographic questionnaire.

The second part was WFC scale which was developed by Carlson et al (2000) and includes 18 items of the time (questions NO. 1-6), the pressure (questions NO. 7-12), and the behavior dimensions (questions NO. 13-18). Responses were provided on a 5-point Likert scale ranging from 1="strongly disagree" to 5="strongly agree." The score obtained is in the range of 18 to 90, and a higher score indicates more WFC. Carlson et al. confirmed the reliability of the WFC questionnaire by Cronbach's alpha coefficient of 0.78-0.87 for different dimensions [22]. The validity and reliability of this questionnaire in all subscales have been reported between 0.77 and 0.92 in a study by Watai et al. [23]. The Persian version of this questionnaire was used in the study by

Rajabi et al., who calculated the correlation coefficient of 0.86, 0.85, 0.84, and 0,88 for the entire scale and between the subscales, respectively ($p < 0.001$) [24]. The reliability of the WFC scale was confirmed by the Cronbach's alpha coefficient of 0.872 in the mentioned study.

The final section of the survey was the MBI [25], which measured three aspects of job burnout with 22 items in three dimensions: emotional exhaustion (9 items), depersonalization (5 items), and lack of personal accomplishment (8 items). Moalemi et al. [26] studied the reliability coefficients, construct validity, convergent validity, and discriminant validity of this tool among Iranian nurses. The current study's EE, DP, and PA Cronbach's alpha coefficients were 0.87, 0.88, and 0.89, respectively. This survey's questions are graded on a 7-point Likert scale. This survey can be used with two different scale types:

A: Frequency scale: Never (zero), Several times a year (1), Once a month (2), Several times a month (3), Once a week (4), Several times a week (5), and every day (6).

B: Intensity scale: Never (zero), Very little (1), Low (2), Medium (3), Medium to high (4), High (5), and very high (6).

Both scales were examined in this study. The subscore obtained in each of the three aspects is placed in the categories of mild, moderate, and severe based on the reference score (Table 1).

2.4. Data analysis

Version 26 of the Statistical Package for Social Science (SPSS) software was used to analyze the data (IBM Corp., Armonk, NY, USA). Descriptive statistics including frequency/percentages and mean ± standard deviation (SD), were used to present the respondents' demographic information. The scores of questionnaires were calculated according to each subscale and then analyzed by the software using descriptive data analysis. The Shapiro-Wilk test was used to determine the normality. To examine the relationship between the research variables, the Mann-Whitney U, Spearman, and Kruskal-Wallis tests were used. Statistical significance was defined as a value of $p < 0.05$.

3. Results

3.1. Participants

From 300 distributed questionnaires, about 270 responses were received during this study. The overall response rate was 90%. Then, 14 incomplete responses were excluded.

Table 2 provides a summary of the samples' characteristics. The majority of subjects were female (87.5%) and married (82%), and 78.5% were officially and semi-officially government employees. 52.3% of the participants were nurses who worked at Hospital No. 1. The vast majority of the samples (93.4%) had a bachelor's degree in nursing, and 78.1% worked rotating shifts. Participants who had children and those who had a family of three or four were, respectively, 68.7% and 71.8%. A crisis management training was completed by less than half (44.9%) of the nurses. The participants' average age was 34.2(SD = 6.6) years. 77% of participants worked in wards that were not exposed to COVID-19, and the average work experience was 9.5 (SD = 5.7) years.

3.2. WFC scores

Table 3 are shown the WFC results for nurses. Conflict received a total score of 55.3 ± 12.7. The time subscale received the highest score out of all the dimensions, including time, pressure and behavior.

3.3. Burnout scores

According to results, 85.4% and 75.2% of nurses experienced high amounts of burnout in LA in terms of the intensity and frequency, respectively. Besides, the nurses stated a moderate level of burnout in DP and EE based on the frequency and a mild level

Table 1
Classification of burnout scores

Dimensions	Frequency			Intensity		
	Mild	Moderate	Severe	Mild	Moderate	Severe
EE*	≤17	18-29	≥30	≤25	26-39	≥40
DP**	≤5	6-11	≥12	≤6	7-14	≥15
LA***	≥40	34-39	≤33	≥44	37-43	≤36

*EE: Emotional Exhaustion; **DP: Depersonalization; ***LA: Lack of Personal Accomplishment.

Table 2
General characteristics of participants (N = 256)

Variables	N (%)
Gender	
Female	224(87.5)
Male	32(12.5)
Marital status	
Single	46(18)
Married	210(82)
Employment status	
Official	115(45.8)
Semi-official	82(32.7)
Contractual	16(6.4)
Corporative	20(8)
Temporary (2 or 4 years)	18(7.2)
Education level	
Bachelor's	239(93.4)
Master's or PhD	17(6.7)
Hospital	
Hospital No. 1	134(52.3)
Hospital No. 2	34(13.3)
Hospital No. 3	88(34.4)
Ward[§]	
Exposure to COVID-19	59(23)
Non-exposure to COVID-19	197(77)
Shift	
Rotational	200(78.1)
Fixed	56(21.9)
Having children	
Yes	173(68.7)
No	79(31.3)
Family number	
1	2(0.8)
2	37(14.7)
3	97(38.5)
4	84(33.3)
5	24(9.5)
>5	8(3.2)
Age (years)	
20-30	76(30.2)
31-40	133(52.8)
41-50	40(15.9)
>50	3(1.2)
Work experience (years)	
1-10	150(60.2)
11-20	86(34.5)
21-30	13(5.2)
Crisis management course	
Yes	111(44.9)
No	136(55.1)

[§]In three referral hospitals of COVID-19, six wards directly provided care to patients with COVID-19.

based on the intensity. Nurses' burnout scores and categories are shown in Table 4.

3.4. Correlation between WFC and burnout components

Table 5 shows significant positive correlations within all dimensions of WFC ($p < 0.01$), except the time and pressure ($r = 0.119$, $p = 0.059$). In terms of burnout, the data showed correlations between EE and DP ($p < 0.05$). However, there was a non-significant negative correlation between EE and LA in terms of intensity ($r = –0.066$, $p = 0.29$) and frequency ($r = –0.47$, $p = 0.45$). Positive correlations were also observed between all dimensions of WFC and EE, and DP, dimensions of burnout ($p < 0.05$). The results also showed a non-significant negative correlation between six dimensions of WFC, and LA ($p > 0.05$).

3.5. Relationships between WFC components and demographic variables

The Mann-Whitney U analysis shows that the WFC score of non-exposure with COVID-19 wards (Mean (SD)=54.21(12.14)) was significantly lower ($Z = –2.08$, $p = 0.03$) compared to exposure with COVID-19 (Mean (SD)=58.58(14.14)). No significant relationship was found in the other bivariate demographic characteristics.

A significant relationship between the hospital and WFC is shown in Table 6 ($\chi^2 = 9.63$, $p = 0.008$). Additionally, the relationship between work status and WFC was statistically different ($\chi^2 = 11.67$, $p = 0.02$). To ascertain the cause of the difference, the Mann-Whitney U test was used. The WFC score in hospital No. 3 was lower than those of hospital No 1 ($Z = –3.04$, $p < 0.002$) according to this test. According to employment status, the WFC score in semi-official nurses was higher than corporative ($Z = –2.29$, $p = 0.02$), and temporary ($Z = –2.40$, $p = 0.01$) nurses. Furthermore, official nurses in were experienced higher conflict than temporary nurses ($Z = –2.22$, $p = 0.02$).

3.6. Relationships between burnout components and demographic variables

A statistically significant difference between the crisis management course and the intensity of DP ($Z = –2.86$, $p = 0.004$) and frequency of LA ($Z = –2.75$, $p = 0.006$) was discovered. Additionally, there was no significant relationship between burnout components the other bivariate demographic characteristics,

Table 7 indicates significant relationships between employment status and intensity of EE ($\chi^2 = 13.46$, $p = 0.009$), and employment status and frequency of EE ($\chi^2 = 12.95$, $p = 0.01$). Based on the Mann-Whitney U test, the intensity of EE of semi-official

Table 3
Distribution of scores among work-family conflict dimensions

Dimension	Mean (SD*)	Median	Minimum	Maximum
WFC**	30.6(7.2)	31	8	45
Time	11.4(2.9)	12	2	15
Pressure	10.6(3)	10	3	15
Behavior	8.7(2.9)	8	2	15
FWC***	24.7(6.9)	23	5	45
Time	8.7(2.5)	8	2	15
Pressure	7.6(3.1)	7	2	15
Behavior	8.4(2.8)	8	2	15
Total conflict	55.3(12.7)	54	18	90

*SD: standard deviation; **WFC: work-family conflict; ***FWC: family-work conflict.

Table 4
Burnout dimension scores and categories

Dimension scale		Mean (SD*)	Median	Minimum	Maximum	Category (n/%)	
EE**	Intensity	19.7 (11)	19.5	0	54	Mild	173(68.1)
						Moderate	24(29.1)
						Severe	7(2.8)
	Frequency	20.3(11.7)	20	0	54	Mild	109(42.9)
						Moderate	83(32.7)
						Severe	62(24.4)
DP***	Intensity	6.7(5.8)	5	0	30	Mild	148(58.3)
						Moderate	79(31.1)
						Severe	27(10.6)
	Frequency	6.6(5.9)	5	0	30	Mild	138(54.3)
						Moderate	59(23.2)
						Severe	57(22.4)
LA****	Intensity	27.6(8.7)	27	0	48	Mild	5(2)
						Moderate	32(12.6)
						Severe	217(85.4)
	Frequency	27.8(8.8)	28	0	48	Mild	24(9.4)
						Moderate	39(15.4)
						Severe	191(75.2)

*SD: standard deviation; **EE: Emotional Exhaustion; ***DP: Depersonalization; ****LA: Lack of Personal Accomplishment.

nurses was higher than those of official ($Z = -2.68$, $p = 0.007$), corporative ($Z = -2.13$, $p = 0.03$), and temporary nurses ($Z = -2.76$, $p = 0.006$). In addition, there was a significant relationship between work experiences and the intensity of EE ($\chi^2 = 7.87$, $p = 0.02$). The intensity of EE among nurses with 21-30 years of work experience was lower than those of groups with 1-10 ($Z = -2.75$, $p = 0.006$) and 11-20 years ($Z = -2.55$, $p = 0.01$).

4. Discussion

This study looked into nurses' perceptions of WFC and burnout while working in referral hospitals that treated COVID-19 patients. Nurses experienced conflict and burnout at higher than typical rates. Nurses are among those who have direct contact with patients who have been diagnosed with a range of dangerous and occasionally undiagnosed illnesses that pose some occupational and familial hazards [2]. Other studies that were similar to the current study [15, 16, 27] found that Iranian nurses had higher levels of WFC and burnout.

In this study, more than 80% of the participants were women who stated a high level of conflict apparently due to their multiple roles such as being a wife and being a mother. Cinamon found that women had more effect on their families than men; therefore, their time and energy concerning family activities were more than their jobs and work activities. Consequently, the overlap of work and family behaviors and norms was more visible among them [28]. No gender effect was found in the present study. In line with our results, Labrague et al. and Bryon found no significant relationships between gender and WFC [29, 30]. Contrarily, some studies reported more con-

Table 5
Spearman correlation within and between WFC and burnout dimensions

		Burnout						WFC			FWC		
		EE		DP		LA		Time	Pressure	Behavior	Time	Pressure	Behavior
		Intensity	Frequency	Intensity	Frequency	Intensity	Frequency						
Burnout	EE	r=1	r=1	r=0.615**	r=0.662**	r = –0.066	r = –0.47						
				p=<0.001	*p*=<0.001	*p* = 0.29	*p* = 0.45						
	DP			r=1	r=1	r = –0.128*	r = –0.130*						
						p = 0.04	*p* = 0.03						
	LA					r=1	r=1						
WFC	Time	r=0.372**	r=0.390**	r=0.191**	r=0.170**	r = –0.044	r = –0.042	r=1	r=0.669**	r=0.325**	r=0.293**	r=0.119	r=0.234**
		P=<0.001	*P*=<0.001	*p* = 0.002	*p* = 0.006	*p* = 0.48	*p* = 0.50		*p*=<0.001	*p*=<0.001	*p*=<0.001	*p* = 0.059	*p*=<0.001
	Pressure	r=0.407**	r=0.411**	r=0.152*	r=0.169**	r = –0.031	r = –0.045		r=1	r=0.476**	r=0.4**	r=0.322**	r=0.313**
		P=<0.001	*P*=<0.001	*p* = 0.01	*p* = 0.007	*p* = 0.62	*p* = 0.47			*p*=<0.001	*p*=<0.001	*p*=<0.001	*p*=<0.001
	Behavior	r=0.285**	r=0.299**	r=0.206**	r=0.210**	r = –0.108	r = –0.109			r=1	r=0.393**	r=0.477**	r=0.695**
		p=<0.001	*P*=<0.001	*p* = 0.001	*p* = 0.001	*p* = 0.08	*p* = 0.08				*p*=<0.001	*p*=<0.001	*p*=<0.001
FWC	Time	r=0.184**	r=0.197**	r=0.131*	r=0.119	r = –0.043	r = –0.037				r=1	r=0.498**	r=0.267**
		p = 0.003	*p* = 0.002	*p* = 0.03	*p* = 0.058	*p* = 0.49	*p* = 0.55					*p*=<0.001	*p*=<0.001
	Pressure	r=0.177**	r=0.163**	r=0.208**	r=0.219**	r = –0.077	r = –0.079					r=1	r=0.412**
		p = 0.005	*p* = 0.009	*p* = 0.001	*P*=<0.001	*p* = 0.21	*p* = 0.22						*p*=<0.001
	Behavior	r=0.178**	r=0.177**	r=0.143**	r=0.166**	r = –0.073	r = –0.077						r=1
		p = 0.007	*p* = 0.005	*p* = 0.001	*p* = 0.008	*p* = 0.24	*p* = 0.23						

*Correlation is significant at the 0.05 level (2-tailed); **correlation is significant at the 0.01 level (2-tailed).

Table 6
Kruskal Wallis analysis of factors associated with WFC

Variable		WFC[¶]($\bar{X}$)	SD[§]	χ^2	*p*-value	Mann-Whitney U test
Employment status	Official	56.28	13.15	11.67	0.02	Z = –2.22*; *p*-value=0.02
	Semi-official	57.18	10.66			
	Contractual	51.31	21.38			Z = –2.29*; *p*-value=0.02
	Corporative	51.15	8.50			
	Temporary	50.50	11.56			Z = –2.40*; *p*-value=0.01
Hospital	Hospital No. 1	57.22	13.37	9.63	0.008	Z = –3.04**; *p*-value=0.002
	Hospital No. 2	55.91	11.06			
	Hospital No. 3	52.11	11.88			
Age (years)	20-30	55.30	13.96	2.68	0.44	–
	31-40	56.33	11.89			
	41-50	52.98	12.33			
	Up 50	53.67	5.68			
Work experience (years)	1-10	55.75	12.96	0.40	0.81	–
	11-20	55.35	11.97			
	21-30	53.15	15.27			
Family number	1	54.50	3.53	3.50	0.62	–
	2	51.68	14.14			
	3	55.89	12.53			
	4	56.52	11.95			
	5	55.58	13.20			
	Up 5	52.63	9.21			

*Indicates a significant value ($p < 0.05$); **indicates a significant value ($p < 0.01$); [§]SD: standard deviation, [¶]WFC: work-family conflict

flict among female employees than men [31, 32], and others among men [33]. These differences may be due to differences in the cultural views and attitudes of employees in different organizations regarding the type and nature of work or the work environment.

In this study, the time subscale had the highest score in both the WFC and FWC, and the WFC score was higher than the FWC score. In the meantime, time management is a key factor in WFCs, particularly in the current study where the prevalence of COVID-19 may increase nurses' workload and conflict. According to certain studies, excessive work hours and a work schedule that includes weekends are directly associated with a higher frequency of WFCs and have an impact on the amount of time needed to complete job tasks, leaving less time for family-related activities [29, 34].

In line with the present study, Khoshnoodian et al. reported higher scores of WFC compared to FWC [15]. In another study, Fang reported that the scores of WFC were all higher than those of FWC. The highest score related to time dimension similar to our study [35]. Hesabi et al. presented evidence that pressure and time were the most conflicts in the fields of FWC and WFC, respectively, in accord with the present study. Besides, the mean FWC score was higher than that of WFC [16]. Buonocore and Marcello showed that nurses experienced WFC in the pressure dimension due to working in unusual conditions, being in contact with patients, and its resulting problems, paternal and maternal roles [36].

The current study discovered various characteristics, such as ward, hospital, and work status that are related to WFC dimensions. In similar research, Labrague et al. observed that WFC was predicted by nurse age, education, facility size, and hospital location [29]. According to Askari et al., WFC had adverse relationships with hospital staff members' ages and work experiences [37]. Shah and Rajadhyaksha's research [38] demonstrated that workers in more populous, urbanized areas had significantly higher levels of WFC than those in less urbanized areas. Department was a significant predictor of WFC, according to the Fang study. Also, it was correlated with FWC [35]. According to two studies [39, 40], nursing education did not predictor of WFC. The results of the previous three investigations agree with the present study. The relationship between demographic factors and WFC among nurses and doctors treating COVID-19 patients was not supported by the research by Mosalanejad et al. [41].

Fujimoto et al. showed that childcare responsibilities or having small children likely increased the

conflict of absence at work [42]. In the present study, having children was not a related variable. Afshani and Hatefirad confirmed the importance of employment status and showed that the average WFC was higher in private jobs than in government jobs [43] due to the stable condition of government workers. This is contrary to the results of the present study where WFC score in was significantly higher among officially, and semi-official nurses than corporative and temporary nurses.

Table 7
Kruskal-Wallis analysis of factors associated with burnout dimensions

Subscales		Kruskal-Wallis test								
		Intensity				Frequency				
		$\bar{X}$	SD	χ^2	p-value	$\bar{X}$	SD	χ^2	p-value	Mann-Whitney U test
According to hospital										
EE	Hospital No. 1	21.1	11.1	4.48	0.1	7.5	6.1	5.18	0.07	
	Hospital No. 2	19.3	11.4			6.3	5.8			
	Hospital No. 3	17.8	10.6			5.6	5			
DP	Hospital No. 1	27.1	9.3	5.44	0.06	21.9	12.1	5.86	0.054	
	Hospital No. 2	30.4	8.6			19.8	12.4			
	Hospital No. 3	27.2	7.5			18.1	10.5			
LA	Hospital No. 1	7.5	6.3	3.8	0.14	27	9.3	3.2	0.2	
	Hospital No. 2	6.1	5.8			30.4	9.1			
	Hospital No. 3	5.5	5.1			28	7.6			
According to employment status										
EE	Official	19.4	10.8	13.46**	0.009	6.1	5.5	12.95*	0.01	Z = –2.68,
	Semi-official	23	11.1			8.1	6.2			p-value=007
	Contractual	16.3	12.6			5.9	6.2			Z = –2.13,
	Corporative	18	9.1			6.6	5.2			p-value=0.03
	Temporary	14.1	7.1			5.7	4.2			Z = –2.76,
DP	Official	28.7	8.4	6.59	0.15	19.5	11.6	9.39	0.052	p-value=0.006
	Semi-official	27.3	8.5			24.1	12			
	Contractual	21.3	12.4			16.7	13.9			
	Corporative	26.4	7.4			18.6	8.3			
	Temporary	26.5	6.5			16.2	7.1			
LA	Official	6.1	5.6	7.32	0.12	28.6	8.7	6.6	0.15	
	Semi-official	8.3	6.5			28	8.4			
	Contractual	4.8	5.8			20.8	13.1			
	Corporative	6.7	5.5			27.4	5.9			
	Temporary	5.3	4.5			26.6	8.1			
According to age (years)										
EE	20-30	18.9	12.4	3.68	0.29	6.6	6.1	4.28	0.23	
	31-40	20.8	9.4			7.1	5.6			
	41-50	18.1	12.5			5.8	5.6			
	>50	16	12.1			2.3	2.5			
DP	20-30	26.7	9.3	4.77	0.18	20.1	13.1	4.19	0.24	
	31-40	27.5	8.5			21.5	10.6			
	41-50	28.3	7.8			17.6	12.1			
	>50	34.6	9.2			15.6	11.8			
LA	20-30	6.7	6.5	2.98	0.39	25.9	9.6	3.45	0.32	
	31-40	7.1	5.7			27.9	8.3			
	41-50	5.6	5.5			27.9	8.5			
	>50	2.3	2.1			36.3	6.4			
According to work experience (years)										
EE	1-10	19.9	11.5	0.18	0.91	21	12.1	1.06	0.58	
	11-20	19.6	10.6			19.6	11.6			
	21-30	18.3	8.4			17.7	9.1			
DP	1-10	7.1	5.9	7.87*	0.02	7.1	5.9	5.83	0.24	Z = –2.75,
	11-20	6.7	5.7			6.7	5.7			p-value=0.006
	21-30	2.9	3.3			2.9	3.3			Z = –2.55,
LA	1-10	26.6	8.9	2.84	0.24	26.9	8.9	2.32	0.31	p-value=0.01
	11-20	28.9	8.2			28.9	8.9			
	21-30	28.5	9.6			29.7	8.9			

Continued next page

Table 7
(*Continued*)

Subscales		Kruskal-Wallis test								
		Intensity				Frequency				
		$\bar{X}$	SD	χ^2	*p*-value	$\bar{X}$	SD	χ^2	*p*-value	Mann-Whitney U test
According to family number										
EE	1	39	21.21	8.89	0.11	7	7.1	8.27	0.14	
	2	19.5	12.4			7.5	6.9			
	3	20.26	10.1			6.7	5.4			
	4	19.1	10.2			6.4	5.8			
	5	16.3	12.8			5.7	4.7			
	>5	25	11.1			8.5	4.3			
DP	1	22.5	2.1	2.69	0.74	38.5	21.9	4.7	0.45	
	2	26.9	10.1			20.2	13.7			
	3	26.2	7.5			21.2	10.7			
	4	29.1	9.3			19.1	10.9			
	5	27.8	9.1			17.1	12.5			
	>5	25.2	5.2			26.7	2.5			
LA	1	10.5	10.6	7.02	0.21	28	1.4	3.48	0.62	
	2	7.1	7.1			26.8	10.1			
	3	6.6	5.5			26.9	7.5			
	4	6.4	6.2			28.9	9.4			
	5	5	4.2			28.1	10.3			
	>5	9.2	4.7			27.1	4.2			

*Indicates a significant value ($p < 0.05$); **indicates a significant value ($p < 0.01$); SD: standard deviation.

In particular, frontline healthcare professionals had high amounts of burnout during the COVID-19 pandemic, according to several studies [2, 44–46]. Nevertheless, other investigations have also identified contradictions. A group working on the front lines of COVID-19 had a decreased prevalence of burnout, according to Wu et al. [47]. It seems that the spread of this virus has imposed a double burden on health care personnel, which has led to burnout. According to Taghilou et al., COVID-19 had a direct impact on burnout rates, which rose by 39% as its impact grew [48]. According to the current study's findings, nurses had a high rate of burnout in the LA dimension. Similar to this, Rivaz et al. reported high levels of burnout among nurses working in intensive care units (ICUs), with the LA dimension accounting for the majority of the felt burnout [17]. In the EE and DP subscales, respectively, Zhang et al. revealed a modest level of burnout among nurses during the COVID-19 pandemic. However, similar to the present study, a severe LA was experienced by around 70% of subjects [49]. In a different investigation, Torrente et al. discovered that Spanish healthcare workers on the frontlines of COVID-19 and non-COVID-19 had moderate burnout in the three dimensions of EE, DP, and LA [28].

According to Sayilan et al.'s research, female and single nurses experienced significantly greater burnout in all three dimensions [50]. According to Torrente et al.'s findings in a different study, being a doctor, a woman, and working on COVID-19 frontline were all associated with a higher risk of developing burnout syndrome [46]. Gender, age, and frontline workers' burnout were not found to be related in this study. The results of this study may differ from earlier literature due to variations in working conditions. Hayes et al confirmed that nurses with more work experience reported lower levels of burnout than those with less work experience [51]. In accordance with the findings of the current study, Biganeh et al. reported that the LA of nurses had a significant positive relationship with job experience [52]. Nurses with more job experience appear to be more financially stable and better equipped to handle difficult situations; on the other hand, they also enjoy greater respect and work fewer shifts than their less experienced counterparts, which helps them avoid burnout. Compared to the other nurses in this study, semi-official nurses had a higher level of EE intensity. Fang verified that the types of employment and emotional exhaustion were related [35]. Burnout and employment status have a significant relationship, according to research by Portero De la Cruz et al. and Ravari et al. [53, 54].

All aspects of WFC and burnout were found to significantly positively correlate, with the exception of LA, according to our research. Wang et al. discovered that both components of WFC were positively

related to emotional exhaustion and cynicism in two investigations that were similar to our own. These findings involved both male and female doctors as well as female nurses. However, family conflict that interferes with work was adversely correlated with professional efficacy among nurses and both male and female doctors, but work conflict that interferes with family was positively correlated with professional efficacy both female nurses and male nurses [55, 56]. WFC was one of the effective predictors of burnout, according to Cotel et al [45]. Fang reported correlations between all dimensions of WFC and burnout. As with this study, they observed a negative correlation with the dimension of lack of accomplishment [35]. This may be because a lot of conflict makes a person try harder and, as a result, increases the person's sense of success.

Building internal strength, capability, external support, and reinforcement are a few strategies recommended by experts to combat burnout [35]. In this study, a statistically significant difference was found between the DP, LA, and crisis management courses. However, no significant relationship was found regarding the conflict. According to Shafiabadi et al., mindfulness training significantly decreased WFC in nurses who were married [57]. Khosravan et al. discovered no significant differences between WFC scores before the intervention in the test and control groups after a family-focused educational-supportive program, but considerably lower scores were reported in the test group after the intervention [58]. According to Hasmi et al., organizational support mediates the relationship between job stress and WFC in terms of how well people perform at work [59]. When compared to other medical personnel, WFC was much lower among the medical staff taking the ethics course, according to Mosalanezhad et al. [40]. According to Cotel et al.'s findings, these needs and resources should be the primary focus of psychological therapies for healthcare professionals during the COVID-19 outbreak [45]. Maybe healthcare workers' mental health appears to be effectively promoted by training and assistance.

4.1. Strengths and limitations

The main positive point of this study is that it has addressed two very important and fundamental concepts (WFC and burnout) in the field of nursing, which can be related to the health of nurses and their performance especial during the coronavirus disease. Another strength of this study is to consider the factors associated with WFC and burnout that can be used as a guide for decision-making in line with the design and implementation of related interventions. Despite the strengths, this study has a main limitation that the samples were recruited only from hospitals in a province in the northwest of Iran, so the results may not be generalizable to other hospitals in Iran. Also, in this study, we did not study some of the possible variables including the presence of illness among nurses or their family members, mother-father-child or single parent, payment details, and amenities such as nursery/kindergarten option for the workers.

5. Conclusion

Our findings revealed that the perception of WFC and burnout among nurses is not in a favorable state. This outcome may serve as a warning for managers, given the detrimental effects of WFC and burnout. The management of WFC and burnout by hospital managers and related authorities will be significantly impacted by knowing the status of these variables as well as the factors related to each one. Moreover, given the established link between them, the promotion of an adequate work-life balance may help prevent burnout. However, the lack of longitudinal and extensive data made it difficult to interpret our findings. Therefore, longitudinal research on the variables linked to WFC and burnout in large settings may provide helpful data for administrative and psychological interventions.

Ethical approval

Ethical permission was obtained from the Ethics Committee of Ardabil University of Medical Sciences (IR.ARUMS.REC.1399.318).

Informed consent

Informed consent was obtained from all participants before their participation in the study.

Conflict of interest

None to report.

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