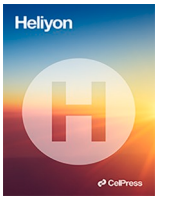
Heliyon 10 (2024) e30070

Contents lists available at ScienceDirect

Heliyon

journal homepage: www.cell.com/heliyon



Review article

Linking COVID-19 stress and Chinese nurses' life well-being: The influence of work-family conflict and work centrality

Xiaobo Dong [a], Mingxia Chen [b], Jingjing Li [c,*]

[a] China Cooperative Research Institute, Anhui University of Finance and Economics, Bengbu, China
[b] School of Business Administration, Anhui University of Finance and Economics, Bengbu, China
[c] School of Customs and Public Economics, Shanghai Customs University, Shanghai, China

ARTICLE INFO

Keywords:
Chinese nurse
COVID-19 stress
Work-family conflict
Life well-being
Work centrality

ABSTRACT

The COVID-19 pandemic has placed enormous stress on health workers, exposing them to high levels of work-family conflict (WFC), which in turn affects their life well-being (LWB). To date, whether WFC is involved in the association between COVID-19 stress and the well-being of life has not been investigated. The purpose of this paper was to explore the connection between COVID-19 stress and LWB in Chinese nurses and to analyse the mediating role of WFC and the moderating effect of work centrality. The link between COVID-19 stress and LWB was examined by performing multiple regression analysis, common method bias analysis, and confirmatory factor analysis on data for 227 nurses.COVID-19 stress exerted a remarkable direct impact on nurses' LWB, and WFC mediated the link between COVID-19 stress and nurses' LWB. Work centrality moderated the link between COVID-19 stress and nurses' WFC. COVID-19 stress decreases nurses' LWB and increases their WFC, which also decreases their LWB. For nurses with higher work centrality, the connection of COVID-19 stress to work-family conflict was stronger. Hospital managers should focus on nurses' work-family balance and pay particular attention to the work-family balance of work-centered nurses to avoid compromising their LWB.

1. Introduction

In early 2023, China experienced the height of infection since the COVID-19 outbreak, and the surge of infected patients placed enormous stress on medical institutions. In the COVID-19 pandemic, caregivers are an important group of people who provide the most direct treatment and care to patients [1]. Because of this central role, nurses are not only at high risk of infection but also experience increased difficulty and complexity in their work, all of which place considerable stress on nurses and greatly affect their mental health. Nurses have a very high perceived hazard of COVID-19 and experience psychological distress due to frequent patient contact [2]. COVID-19 considerably impacts the mental health of nurses. Surveys have shown that the incidence of mental health problems among caregivers on the front lines of nursing care is significantly higher than that of the general population [3,4], and nurses commonly face health issues same as anxiety [5] , depression [6], and stress [7]. These mental health problems considerably affect nurses' LWB. This investigation purported to investigate whether and how COVID-19 stress affects nurses' LWB and to help nurse managers develop policies to address COVID-19 stress, reduce mental health problems, and enhance life well-being.

The main dedications of this paper are as below. First of all, exploring the influence of the stress resulting from the COVID-19

* Corresponding author.
E-mail address: jiayousenlin@126.com (J. Li).

https://doi.org/10.1016/j.heliyon.2024.e30070
Received 22 November 2023; Received in revised form 13 April 2024; Accepted 18 April 2024
Available online 30 April 2024

pandemic on nurses' LWB expands research on the antecedents of LWB in crises. Second, the mechanism by which COVID-19 stress affects nurses' LWB is revealed by introducing work-family conflict (WFC) as a mediating variable. Third, the moderating function of work centrality in the influence of COVID-19 stress on LWB is explored. Finally, this research offers a theoretical evidence for hospital managers to make nurse management decisions in crises.

2. Theoretical background and hypothesis development

2.1. COVID-19 stress and life well-being

The worldwide spread of the novel coronavirus (COVID-19) has severely affected people's work, family, and health [8], and healthcare workers, as the most important group in the fight against the pandemic, undoubtedly face a higher perceived risk of COVID-19 [9]. Studies have confirmed that the stress due to the COVID-19 pandemic causes psychological health problems such as anxiety and depression in individuals [10], reducing mental flexibility and work meaning and thus affecting individuals' well-being [11]. Over the past few years, there has been a gradual increase in awareness of "employee well-being" and a gradual convergence in the definition of "employee well-being". It has been suggested that employee well-being is defined as the emotional experience and satisfaction expressed in both work and nonwork contexts, including psychological well-being, work well-being, and LWB [12]. During the COVID-19 pandemic, nurses have lacked appropriate protection and have worried about becoming infected and potentially transmitting the virus to their family members, leading some nurses to resign [9]. At the same time, nurses have faced occupational stress, fear of the pandemic, threats to resilience, and COVID-19 discrimination [13–16], which have also reduced their LWB. The conservation of resources (COR) theory argues that individuals use the key resources they have to cope with stressful situations, on the one hand, and actively construct and protect their own resources to deal with possible future stressful situations, on the other hand [17]. In the COVID-19 pandemic, nurses have exposed a long-lasting, high-intensity state, which has consumed a vast amount of time and psychological resources. Due to a lack of support, relevant resources cannot be replenished promptly; consequently, nurses cannot obtain the necessary resources to balance work and life. COVID-19 stress has also been shown to cause psychological distress [18] and emotional exhaustion [19] in nurses, which consumes substantial psychological resources and thus reduces well-being. In summary, this study proposes the following hypotheses.

Hypothesis 1. COVID-19 stress is negatively related to life well-being.

2.2. Mediating role of WFC

WFC refers to the conflict that arises between an individual's work and family roles due to their incompatibility in these two domains [20]. As hospital employees, nurses must take care of not only patients but also their families [21]. Due to the COVID-19 pandemic, nurses perceive a massive threat of infection and must work carefully to avoid it [9]. Moreover, as the frontline group in the fight against the pandemic, they feel significant responsibility, which can be a substantial drain on their personal resources. Research has revealed that despite their perceived COVID-19 stress, nurses have a strong sense of responsibility and are still able to fight illness at work [22]. The COVID-19 pandemic has placed great resource demands on nurses' work, and when nurses lack the necessary support, they experience high work stress. In addition to their role in health care, nurses must also spend time and effort caring for their families to prevent their family members from contracting COVID-19. Due to limited personal resources, nurses who perceive high COVID-19 stress are unable to take care of their families and thus experience role conflict, which leads to increased WFC.

The COR theory states that every person does everything in their power to strive for, acquire and preserve critical resources [23]. In response to the work pressures caused by the COVID-19 pandemic, nurses must consume many resources, leading to emotional exhaustion [24]. When WFC increases, nurses' resources are further consumed, leading to insufficient resources to meet their needs, resulting in decreased life well-being.

Hypothesis 2. WFC plays an mediating role in the link between COVID-19 stress and LWB.

2.3. Moderating role of work centrality

Work centrality is the value that a person holds about the importance of work in their life [25]. Work centrality is a relatively stable work value that reflects the degree of importance that employees ascribe to their work [26]. High-work-centered individuals spend more time, energy and other resources on their work [27]. In response to the COVID-19 pandemic, nurses with high work centrality often make work the centre of their lives, have a higher work commitment, and are actively engaged in their work, which exacerbates the strain on their resources and leaves them with no way to take care of their families, thus intensifying WFC. Low work-centered individuals don't think their jobs are central to their lives and even regard family and leisure as more important [28]. When faced with COVID-19 stress, low-work-centered nurses are likelier to restore some of their resources through leisure and other means to reduce WFC. Therefore, we hypothesize nurses with high work centrality in the face of COVID-19 stress would have higher WFC than nurses with low work centrality.

Hypothesis 3. The connection between COVID-19 stress and WFC is more negative for nurses who are high (vs. low) in work centrality.

Overall, this study further proposes that work centrality moderates the mediating function of WFC in the influence of COVID-19

stress on LWB. On the one hand, for nurses with high work centrality, facing COVID-19 stress consumes more resources, reducing their ability to care for their families and, thus, a high level of WFC. On the other hand, nurses with high work centrality need more leisure opportunities to replenish their resources, but the COVID-19 pandemic has forced them to put more time and effort into work. This situation results in greater WFC for nurses and further reduces their LWB. In contrast, nurses with low work centrality were more likely to mitigate COVID-19 stress in several ways, thereby alleviating WFC, which was relatively less likely to affect nurses' LWB. In summary, this study proposes the following hypotheses.

Hypothesis 4. Work centrality moderates the indirect relationship between COVID-19 stress and LWB through WFC.

Therefore, based on the research hypothesis and the relationship between variables, the theoretical model of this study is shown in Fig. 1.

3. Method

3.1. Research design

In this study, descriptive statistical analysis of the questionnaire, common method bias analysis, validation factor analysis, and hierarchical regression analysis were conducted using SPSS and AMOS29 software. Detailed descriptions are given below: firstly, descriptive statistical analyses of the variables were carried out using SPSS to give statistical properties, such as mean and standard deviation, to provide basic data for subsequent analyses; secondly, the fit of the measuring model was tested by AMOS29. Again, common method factors are used to test the measurement model for common method bias. Finally, the three-stage model developed by Baron and Kenny (1986) [29] validated the mediating role, and the moderating effect of WFC was tested using multilevel linear regression.

3.2. Sample and collection of data

Data for this study were obtained from two large hospitals in China: the Fifth People's Hospital of Bengbu and the Shenzhen Yantian District People's Hospital. We distributed 319 questionnaires to the directors of the nursing departments of these two hospitals. The returned questionnaires were screened, and after excluding invalid questionnaires filled out by unmarried nurses with the same results as the questionnaires and options, regularity of the possibilities, and contradictions between the previous and previous options, we finally obtained 227 valid questionnaires, with a recovery rate of 71 %. Among the good samples, 98.2 % were female, 76.2 % had a bachelor's degree, 69.6 % were under 40, and 70 % had worked for more than ten years.

3.3. Measures

The main variables used in this research are derived from articles published in authoritative journals. LWB was scaled in Chinese, and the variables COVID-19 stress, WFC, and Work centrality were used in a "translate-back" procedure to ensure linguistic completeness and comprehensibility of the items in the scales [30]. Measured using a five-point Likert scale for all scales, with 1 = "strongly disagree" and 5 = "strongly agree".

COVID-19 stress: This scale was modified from the 14-item stress scale developed by Cohen et al. (1983) [31], of which six items were selected in this study to measure nurses' COVID-19 stress based on their actual work situation. A representative item is "I feel nervous and stressed due to the COVID-19 pandemic." The Cronbach's alpha coefficient was 0.918.

Life well-being: The scale developed by Zheng et al. (2015) [12] was used, which consists of six items, with a representative item being "My life is very interesting." The Cronbach's alpha coefficient was 0.902.

WFC: The six-item scale developed by Zhao (2011) [32] was used, with a representative item being "I'm too busy at work to spend time with my family." The Cronbach's alpha coefficient was 0.953.

Work centrality: The five-item scale developed by Carr et al. (2008) [33]was used, with a representative item being "The greatest satisfaction in my life comes from my work." The Cronbach's alpha coefficient was 0.936.

Control variables: Previous studies have confirmed that employees' demographic characteristics, such as age, education, and organizational tenure, are strongly associated with well-being, so this was chosen as a control variable in this study [34,35].

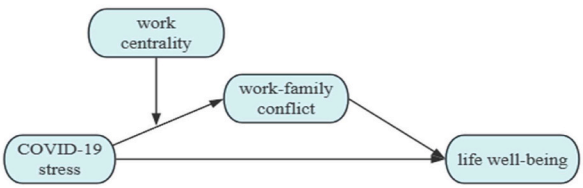


Fig. 1. Theoretical model.

4. Results

4.1. Descriptive statistics and correlation analysis

Table 1 shows each variable's means, standard deviations and Pearson's correlation coefficients. COVID-19 stress was significantly negatively correlated with LWB ($r = -0.464$, $p < 0.01$) and work centrality ($r = -0.243$, $p < 0.01$) and significantly positively correlated with WFC ($r = 0.480$, $p < 0.01$). WFC was significantly negatively correlated with work centrality ($r = -0.332$, $p < 0.01$), LWB was significantly negatively correlated with turnover intention ($r = -0.434$, $p < 0.01$), and work centrality was positively correlated with LWB ($r = 0.458$, $p < 0.01$). Because the above results preliminarily supported the hypotheses of this study, the next step of regression analysis was carried out.

4.2. Confirmatory factor analysis

The goodness of fit of the measurement model was tested with AMOS29. As shown by the results in Table 2, the model fit values all fell within the recommended range. For example, the hypothesis model had a χ^2/df of less than 2, and value-added appropriate indices (e.g., CFI, NFI and IFI) were all greater than 0.9. The absolute fit index root mean square error of approximation (RMSEA) was less than 0.07, indicating a high goodness of fit for the measurement model. To ensure the reliability of the questionnaire's content, the measurement items used in this paper were selected from well-established scales published in prestigious journals. As shown in Table 3, confirmatory factor analysis of latent variables found that the composite reliability (CR) values of the four variables, namely, COVID-19 stress, WFC, work centrality, and LWB, were all above the critical value of 0.8. The average variation extracted (AVE) of each latent variable was greater than the critical value of 0.5, which indicated good convergent validity of the variables. The square root of the AVE value of each of the four latent variables was greater than the correlation coefficient between that variable and other variables. Thus, the validity of the differentiation between the variables is good.

4.3. Common method bias analysis

A common method factor test was used to test the measurement model for common method bias [36]. After adding the common method factor, confirmatory factor analysis was performed with all items of the four variables. The test results indicated that $\Delta RMSEA = 0.016$, $\Delta NFI = 0.015$, $\Delta IFI = 0.011$, $\Delta CFI = 0.011$, the change in RMSEA fit index did not exceed 0.005, and the changes in the NFI, IFI, and CFI appropriate indices were less than the threshold of 0.05 [37]. The above analysis does not present a serious problem of common method bias in this study.

4.4. Hypothesis testing

The mediating effect was tested with the three-step method proposed by Baron and Kenny (1986) [29]. According to the test results in Table 4, Model 2 shows that COVID-19 stress exerted a significant negative impact on nurses' LWB ($\beta = -0.465$, $p < 0.01$), and thus, H1 is verified; Model 5 shows that COVID-19 stress was significantly positively correlated with WFC ($\beta = 0.487$, $p < 0.01$); and Model 4 shows that after adding WFC, there was a significant negative correlation between WFC and nurses' LWB ($\beta = -0.280$, $p < 0.01$), while the impact of COVID-19 stress was reduced ($\beta = -0.328$, $p < 0.01$). The above results indicate that WFC partially mediates the relationship between COVID-19 stress and nurses' LWB; hence, H2 is supported.

This study uses multilevel linear regression analysis to examine the moderating effect of WFC. To prevent multicollinearity from affecting the results [38], this study standardized COVID-19 stress and work centrality. Model 6 shows that the interaction term between COVID-19 stress and work centrality exerted a significant positive impact on nurses' WFC ($\beta = 0.192$, $p < 0.01$), indicating a stronger positive relationship between COVID-19 stress and WFC when nurses have higher work centricity; thus, H3 is verified. To illustrate the results, the interaction effect is plotted in Fig. 2, and the results of the simple slope test indicated that the positive impact of COVID-19 stress on WFC was strengthened ($\beta = 0.667$, $p < 0.01$) when nurses' work centrality was high and was weakened ($\beta =$

Table 1
Descriptive statistics and correlations between study variables.

Variable	Mean	Standard deviation	1	2	3	4	5	6
1. Age	3.23	0.77						
2. Education	2.76	0.46	−0.160[b]					
3. Organizational tenure	3.89	0.9	0.810[a]	−0.021				
4. COVID-19 stress	2.75	0.84	−0.04	−0.014	0.089			
5. WFC	3.28	0.97	−0.081	0.045	0.045	0.480[a]		
6. Work centrality	3.28	0.92	0.187[a]	0.05	0.168[b]	−0.243[a]	−0.332[a]	
7. Life well-being	3.42	0.73	0.003	0.091	−0.011	−0.464[a]	−0.434[a]	0.458[a]

Note.
[a] $p < 0.01$.
[b] $p < 0.05$.

Table 2
Goodness-of-fit indices of the measurement model.

Goodness-of-fit index	χ2	(χ2)/df	CFI	IFI	NFI	RMSEA
Measurement model	433.669	1.962	0.955	0.955	0.913	0.065

Table 3
Reliability and validity test results for the scales.

Variable	1	2	3	4	CR
1. COVID-19 stress	**0.8**				0.91
2. WFC	0.480[a]	**0.876**			0.95
3. Work centrality	−0.243[a]	−0.332[a]	**0.865**		0.94
4. Life well-being	−0.464[a]	−0.434[a]	0.458[a]	**0.807**	0.92

Note: The bold numbers along the diagonal are the square roots of the AVE values.
[a]$p < 0.01$.

Table 4
Multiple linear regression analysis results.

Variable	Life well-being				WFC	
	M1	M2	M3	M4	M5	M6
Control variables						
2. Age	0.076	0.027	0.024	0.008	−0.65	−0.035
3. Education	0.101	0.088	0.113	0.1	0.04	0.02
4. Organizational tenure	−0.07	0.011	−0.048	0.001	−0.035	−0.056
Independent variables						
COVID-19 stress		−0.465[a]		−0.328[a]	0.487[a]	−0.465[a]
Mediating variables						
WFC			−0.440[a]	−0.280[a]		
Interaction term						
COVID-19 stress × work centrality						0.192[a]
R2	0.01	0.224	0.202	0.283	0.243	0.278
Adjusted R2	−0.003	0.21	0.187	0.267	0.229	0.262
F	0.763	15.991[a]	14.037[a]	17.467[a]	17.767[a]	17.021[a]

Note.
[a]$p < 0.01$.

0.301, $p < 0.01$) when nurses' work centrality was low. Therefore, H3 is supported.

The mediating role of WFC was further tested with the 95 % confidence interval (CI) method proposed by Ref. [39]. Table 5 results showed that the mediating role of WFC between COVID-19 stress and LWB was significant (indirect utility value = −0.1145, 95 % CI = [−0.1798, −0.0519]>0); thus, H2 is further verified.

The moderated mediating effect was tested with the PRPCESS plug-in as suggested by Hayes (2013) [40]. As shown in Table 6, according to the results of 5000 bootstrapping resamples, when employees' work centrality was low, the indirect effect of WFC between COVID-19 stress and nurses' LWB had a value of −0.0618, which is significant at the 95 % CI [−0.1093, −0.0229], excluding zero; when employees' work centrality was high, the indirect effect of WFC between COVID-19 stress and nurses' LWB had a value of

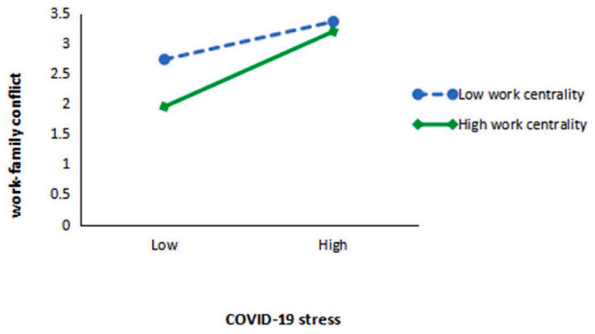


Fig. 2. Moderating effects of work centrality on COVID-19 stress–WFC.

Table 5
The mediating effect of the variable.

Paths	Indirect effect	Mediating effect	
		95 % CI	
		Lower limit	Upper limit
COVID-19 stress→WFC→life well-being	−0.1145	−0.1798	−0.0519

Table 6
Moderated-mediation model analysis results.

Grouping statistics	Indirect effect	95 % CI	
		Lower limit	Upper limit
Low work centrality (−1 SD)	−0.0618	−0.1093	−0.0229
High work centrality (+1 SD)	−0.1371	−0.2213	−0.0601
Intergroup differences	−0.0411	−0.0791	−0.0117

−0.1371, which is significant at the 95 % CI [−0.2213, −0.0601], excluding zero. The difference between the two groups was significant (indirect effect difference = −0.0411, 95 % CI = [−0.0791, −0.0117], excluding zero), indicating the presence of a moderated mediating effect; thus, Hypothesis 4 is supported.

5. Discussion

As noted above, this research is critical because of the urgent need to look into the connection between COVID-19 stress and the well-being of Chinese nurses. In the opinion of scholars, this perception is important for nurses to reduce work-family conflicts and enhance their well-being in life [2,10,11]. In addition, it has been shown that people with high work centrality place a higher value on their work [27]. In the context of the COVID-19 pandemic, nurses with high work centrality were actively engaged in their work, which exacerbated the strain on their resources and left them with no means to care for their families, thus exacerbating WFC and further reducing their well-being.

Our data confirmed that COVID-19 stress is negatively associated with well-being (Hypothesis 1). This expands the research on stress on nurses' well-being. In addition, COVID-19 stressed nurses' inability to take care of their families, resulting in role conflict, which led to an increase in WFC and a decrease in nurses' sense of well-being (Hypothesis 2). In previous studies, other scholars have also found that the stress correlated with the COVID-19 pandemic can cause psychiatric disorders, such as anxiety and depression in individuals [10], reducing psychological flexibility and job meaningfulness, which in turn affects individual well-being [11]. According to COR theory, scholars such as Shah SHA and Haider also emphasized that nurses must consume many resources to respond to the stress of working during the COVID-19 pandemic, which can lead to emotional exhaustion [24].

Furthermore, the results of the data in this research demonstrate that the link between COVID-19 stress and WFC is more negative for nurses with high (as opposed to low) work centrality and that work centrality moderates the indirect link between COVID-19 stress and well-being through WFC. As a result of the discussion, this paper highlights the value of investigating the connection between well-being in life and COVID-19 stress as an important research endeavour. This paper aimed to determine the effect of COVID-19 stress on work centrality, reduction of work-family conflict, and ultimately, improvement of nurses' well-being in life. The discussion concluded by emphasizing the theoretical and practical significance of the research in this paper.

5.1. Theoretical implications

First of all, it enriches the research on nurses' well-being. Some researchers have examined the function of COVID-19 on Chinese nurses at the individual, organizational and societal levels [41]. In this research, the implication of COVID-19 on Chinese nurses' well-being was analyzed in more detail at the corporate level. In the COVID-19 pandemic, nurses, as the frontline group in the fight against the pandemic, faced tremendous pressure and needed to make adjustments, affecting nurses' well-being to a large extent. Second, this study expands the research on stress and well-being in life. Previous studies have demonstrated the negative Influence of COVID-19 on Chinese nurses' mental health and work-life balance at the individual level [41]. The present study concluded that COVID-19 stress considerably affected nurses' health and further affected their well-being by affecting their WFC. This finding also enriches the research on the link between stress and crisis well-being. Finally, the present study identified a moderating effect of work centrality. The results showed that work centrality moderated the positive effect of COVID-19 stress on WFC and also moderated the indirect effect of COVID-19 stress on nurses' well-being in life through WFC.

5.2. Practical implications

The outcomes of this paper provide some insights into hospital management practice. (1) The findings point out that COVID-19

stress reduces LWB. The COVID-19 pandemic has complicated nurses' work and brought massive work stress, reducing their LWB. Therefore, hospital managers should provide nurses with various supportive resources to help them relieve work stress, such as adjusting their working hours, providing good pandemic prevention materials, increasing work allowances, and providing psychological counselling in real time. (2) The results highlight COVID-19 stress increasing WFC among nurses and thus reducing LWB. Therefore, to alleviate nurses' work stress and avoid increasing their WFC, hospital managers should consider nurses' work-family balance, especially for those nurses who need additional resources to take care of their families, and reduce their WFC by rationalizing work schedules and providing family resources for nurses, thus alleviating the decrease in their LWB due to COVID-19 stress. (3) The findings suggest that nurses with higher work-centricity experience higher WFC in the face of COVID-19 stress. Therefore, hospital managers must pay special attention to nurses who regard work as the centre of their lives and provide additional work resource support to promote work-life balance.

5.3. Limitations and future research

Although our paper has deepened the understanding of the health status of Chinese nurses' well-being, many things could still be improved. First, the data in this paper came from only two large hospitals in China, and the sample size needed to be more representative of all Chinese nurses. Therefore, future studies need to include more samples of nurses from different hospitals. Second, this paper examined the link between well-being and COVID-19 stress by analyzing the collected data and demonstrated that WFC mediates the connection between COVID-19 stress and nurses' well-being. In this paper, only the mediating function of WFC was considered, and in the future, variables such as work input can be added to improve the research model. Finally, although the moderating function of work centrality was analyzed in this research, organizational support has an important role in stress relief, and corporate adaptive support can be included as a moderating effect in the future to provide a more comprehensive explanation of the connection between well-being and COVID-19 stress.

6. Conclusions

Based on data from 227 nurses, this paper examined the mechanisms by which COVID-19 stress influences LWB. The findings showed that COVID-19 stress significantly reduced nurses' LWB, that WFC partially mediated the link between COVID-19 stress and LWB, and that work centrality enhanced the positive connection between COVID-19 stress and nurses' WFC.

Data availability statement

Data will be made available on request.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethics statement

This research has been reviewed and approved by the School of Business Administration, Anhui University of Finance and Economics, which in line with Declaration of Helsinki. This research used non-interventional research (survey) using a questionnaire instrument. The questionnaire distributed explained to the respondents that the research purpose was only for scientific publications. In the research questionnaire, there are no questions regarding the personal data of the respondents that can be identified so that all participants are kept confidential. Participants were also given the freedom to choose to participate or refuse to participate in this research. Informed consent was also asked directly in the questionnaire. Therefore, informed consent was obtained from participants who fulfil the questionnaire.

CRediT authorship contribution statement

Xiaobo Dong: Writing – original draft. **Mingxia Chen:** Writing – original draft. **Jingjing Li:** Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

The authors would like to extend their gratitude to Anhui University of Finance and Economics (AUFE) for providing support to this work.

References

[1] K.R. Choi, K.S. Jeffers, M.C. Logsdon, Nursing and the novel coronavirus:Risks and responsibilities in a global outbreak, J. Adv. Nurs. 76 (7) (2020) 1486–1487, https://doi.org/10.1111/jan.14369.

[2] C. Conversano, L. Marchi, M. Miniati, Psychological distress among health care professionals involved in the COVID-19 emergency:Vulnerability and resilience factors, Clinical Neuropsychiatry 17 (2) (2020) 94–96, https://doi.org/10.36131/CN20200212.

[3] F. Sampaio, C. Sequeira, L. Teixeira, Impact of COVID-19 outbreak on nurses' mental health: a prospective cohort study, Environ. Res. 194 (2021) 110620, https://doi.org/10.1016/j.envres.2020.110620.

[4] A.M. Stelnicki, R.N. Carleton, C. Reichert, Nurses' mental health and well-being: COVID-19 impacts, Can. J. Nurs. Res. 52 (3) (2020) 237–239, https://doi.org/10.1177/0844562120931623.

[5] M. Al Maqbali, M. Al Sinani, B. Al-Lenjawi, Prevalence of stress, depression, anxiety and sleep disturbance among nurses during the COVID-19 pandemic: a systematic review and meta-analysis, J. Psychosom. Res. 141 (2021) 110343, https://doi.org/10.1016/j.jpsychores.2020.110343.

[6] Y. Li, N. Scherer, L. Felix, H. Kuper, Prevalence of depression, anxiety and posttraumatic stress disorder in health care workers during the COVID-19 pandemic: a systematic review and meta-analysis, PLoS One 16 (3) (2021) e0246454, https://doi.org/10.1371/journal.pone.0246454.

[7] M. Murat, S. Köse, S. Savaşer, Determination of stress, depression and burnout levels of front-line nurses during the COVID-19 pandemic, International journal of mental health nursing 30 (2) (2021) 533–543, https://doi.org/10.1111/inm.12818.

[8] D. Banerjee, K.S. Meena, COVID-19 as an"infodemic"in public health:Critical role of the social media, Front. Public Health 9 (2021) 231, https://doi.org/10.3389/fpubh.2021.610623.

[9] X. Liu, S.J. Yuan, T.T. Ji, Y.L. Song, Relationship between risk perception of COVID-19 and job withdrawal among Chinese nurses:The effect of work–family conflict and job autonomy, J. Nurs. Manag. 30 (6) (2022) 1931–1939, https://doi.org/10.1111/jonm.13652.

[10] G. Arslan, M. Yıldırım, Coronavirus stress, meaningful living, optimism, and depressive symptoms: a study of moderated mediation model, Aust. J. Psychol. 73 (2) (2021) 113–124, https://doi.org/10.1080/00049530.2021.1882273.

[11] G. Arslan, K.A. Allen, Exploring the association between coronavirus stress, meaning in life, psychological flexibility, and subjective well-being, Psychol. Health Med. 27 (4) (2022) 803–814, https://doi.org/10.1080/13548506.2021.1876892.

[12] X.M. Zheng, W.C. Zhu, H.X. Zhao, C. Zhang, Employee well-being in organizations: theoretical model, scale development, and cross-cultural validation, J. Organ. Behav. 36 (2015) 621–644, https://doi.org/10.1002/job.1990.

[13] R.M. Said, D.A. El-Shafei, Occupational stress, job satisfaction, and intent to leave: nurses working on front lines during COVID-19 pandemic in Zagazig City, Egypt, Environ. Sci. Pollut. Control Ser. 28 (2021) 8791–8801, https://doi.org/10.1007/s11356-020-11235-8.

[14] D.C. Fronda, L.J. Labrague, Turnover intention and coronaphobia among front line nurses during the second surge of COVID-19: the mediating role of social support and coping skills, J. Nurs. Manag. 30 (3) (2022) 612–621, https://doi.org/10.1111/jonm.13542.

[15] A. Piotrowski, E. Sygit-Kowalkowska, O. Boe, S. Rawat, Resilience, occupational stress, job satisfaction, and intention to leave the organization among nurses and midwives during the COVID-19 pandemic, Int. J. Environ. Res. Publ. Health 19 (11) (2022) 6826, https://doi.org/10.3390/ijerph19116826.

[16] L.J. Labrague, J. Santos, D.C. Fronda, Perceived covid-19-associated discrimination, mental health and professional-turnover intention among front line clinical nurses: the mediating role of resilience, Int. J. Ment. Health Nurs. 30 (6) (2021) 1674–1683, https://doi.org/10.1111/inm.12920.

[17] J.R.B. Halbesleben, J.P. Neveu, S.C. Paustian-Underdahl, M. Westman, Getting to the"COR": understanding the role of resources in conservation of resources theory, J. Manag. 40 (5) (2014) 1334–1364, https://doi.org/10.1177/0149206314527130.

[18] L. Lorente, M. Vera, T. Peiró, Nurses stressors and psychological distress during the COVID-19 pandemic: the mediating role of coping and resilience, J. Adv. Nurs. 77 (3) (2021) 1335–1344, https://doi.org/10.1111/jan.14695.

[19] S.H.A. Shah, A. Haider, J. Jindong, A. Mumtaz, N. Rafiq, The impact of job stress and state anger on turnover intention among nurses during COVID-19: the mediating role of emotional exhaustion, Front. Psychol. (2022), https://doi.org/10.3389/fpsyg.2021.810378.

[20] J.H. Greenhaus, N.J. Beutell, Sources and conflict betweenwork and family roles, Acad. Manag. Rev. 10 (1) (1985) 76–88, https://doi.org/10.5465/amr.1985.4277352.

[21] A. Alloubani, W. Khater, L. Akhu-Zaheya, M. Almomani, S. Alashram, Nurses'ethics in the care of patients during the COVID-19pandemic, Front. Med. 8 (2021) 589550, https://doi.org/10.3389/fmed.2021.589550.

[22] R. Fernandez, H. Lord, E. Halcomb, L. Moxham, R. Middleton, I. Alananzeh, L. Ellwood, Implications for COVID-19: a systematic review of nurses' experiences of working in acute care hospital settings during a respiratory pandemic, Int. J. Nurs. Stud. 111 (2020) 103637, https://doi.org/10.1016/j.ijnurstu.2020.103637.

[23] S.E. Hobfoll, The influence of culture, community,and the nested-self in the stress proess:Advancing conservation of resources theory, Appl. Psychol. 50 (3) (2001) 337–421, https://doi.org/10.1111/1464-0597.00062.

[24] S.H.A. Shah, A. Haider, J. Jindong, A. Mumtaz, N. Rafiq, The impact of job stress and state anger on turnover intention among nurses during COVID-19: the mediating role of emotional exhaustion, Front. Psychol. (2022), https://doi.org/10.3389/fpsyg.2021.810378.

[25] I.M. Paullay, G.M. Alliger, E.F. Stone-Romero, Construct validation of two instruments designed to measure job involvement and work centrality, J. Appl. Psychol. 79 (2) (1994) 224–228, https://doi.org/10.1037/0021-9010.79.2.224.

[26] L. Jiang, M.J. Johnson, Meaningful work and affective commitment: a moderated mediation model of positive work reflection and work centrality, J. Bus. Psychol. 33 (4) (2018) 545–558, https://doi.org/10.1007/s10869-017-9509-6.

[27] J. Bagger, A. Li, Being important matters: the impact of work and family centralities on the family-to-work conflict-satisfaction relationship, Hum. Relat. 65 (4) (2012) 473–500, https://doi.org/10.1177/0018726711430557.

[28] R.R. Hirschfeld, H.S. Feild, Work centrality and work alienation: distinct aspects of a general commitment to work, J. Organ. Behav. 21 (7) (2000) 789–800, https://doi.org/10.1002/1099-1379 (200011) 21 : 7<789 : : AID-JOB59>3.0.CO;1-4.

[29] R.M. Baron, D.A. Kenny, The moderator-mediator variable distinctionin social psychological research: conceptual, strategic and statistical considerations, J. Pers. Soc. Psychol. 51 (6) (1986) 1173–1182, https://doi.org/10.1037/0022-3514.51.6.1173.

[30] R.W. Brislin, Translation and content analysis of oral and written materials, Methodology (1980) 389–444.

[31] S. Cohen, T. Kamarck, R. Mermelstein, A global measure of perceived stress, J. Health Soc. Behav. (1983) 385–396, https://doi.org/10.1080/23311908.2014.999405.

[32] X. Zhao, H. Qu, R. Ghiselli, Examining the relationship of work–family conflict to job and life satisfaction: a case of hotel sales managers, Int. J. Hospit. Manag. 30 (1) (2011) 46–54, https://doi.org/10.1016/j.ijhm.2010.04.010.

[33] J.C. Carr, S.L. Boyar, B.T. Gregory, The moderating effect of work-family centrality on work-family conflict, organizational attitudes, and turnover behavior, J. Manag. 34 (2) (2008) 244–262, https://doi.org/10.1177/0149206307309262.

[34] E. Diener, Subjective well-being, Psychol. Bull. 95 (3) (1984) 542.

[35] T.A. Judge, E.A. Locke, Effect of dysfunctional thought processes on subjective well-being and job satisfaction, J. Appl. Psychol. 78 (3) (1993) 475, https://doi.org/10.1037/0021-9010.78.3.475.

[36] P.M. Podsakoff, S.B. MacKenzie, J.Y. Lee, N.P. Podsakoff, Common method biases in behavioral research: a critical review of the literature and recommended remedies, J. Appl. Psychol. 88 (5) (2003) 879–903, https://doi.org/10.1037/0021-9010.88.5.879.

[37] R.P. Bagozzi, Y. Yi, Assessing method variance in multirait-multimethod matrices: the case of self-reported affect and perceptions at work, J. Appl. Psychol. 75 (5) (1990) 547–560, https://doi.org/10.1037/0021-9010.75.5.547.

[38] L.S. Aiken, S.G. West, R.R. Reno, Multiple Regression: Testing and Interpreting Interactions, Sage Publications. Inc., 1991, https://doi.org/10.1016/0886-1633(93)90008-d.

[39] K.J. Preacher, A.F. Hayes, SPSS and SAS procedures for estimating indirect effects in simple mediation models, Behav. Res. Methods Instrum. Comput. 36 (2004) 717–731, https://doi.org/10.3758/BF03206553.
[40] A.F. Hayes, Introduction to Mediation , moderation, and Conditional Process Analysis: A Regression-Based Approach, Guilford Press, New York, 2013.
[41] M. Sun, S. Hennekam, A multilevel perspective on the perceived effects of COVID-19 on nurses in China, Employee Relat. 44 (1) (2022) 54–69, https://doi.org/10.1108/ER-10-2020-0474.