Research Paper

Effect of Motivational Messages on Midwives' Resilience During COVID-19 Pandemic: A Psychological Intervention Study

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ABSTRACT

Background: The coronavirus disease 2019 (COVID-19) pandemic has become a great global health problem. It has also affected mental healthcare providers, especially nurses and midwives. This study was conducted to evaluate the resilience of Iranian midwives and the effectiveness of daily motivational messages through the WhatsApp messenger in improving resilience.

Methods: A psychoeducational intervention study with a control group was conducted on 362 midwives who were on duty in Iran during 2021. The samples were selected from the national midwifery Telegram group, and the data were collected through a Google Form. The tools used included the checklist of demographic characteristics and Davidson's resilience questionnaire, whose validity and reliability have been determined in the Persian version. The Persian version of the Connor-Davidson resilience scale (CD-RISC) was administered to all participants at baseline and at the end of the study. The intervention group received daily motivational messages via WhatsApp for 43 days. These motivational messages, based on Quranic verses and hadiths, were sent daily. Data were analyzed using SPSS software, version 16, and included the paired t-test, independent t-test, chi-square test, and Pearson and Spearman correlation coefficient tests.

Results: There was no significant difference in terms of personal characteristics between the groups at baseline (P>0.05). After the intervention, the resilience score increased significantly in the intervention group (P=0.002).

Conclusion: Motivational massaging via social media could be effective in increasing resilience among healthcare workers in stressful conditions, including epidemics.

Keywords: Resilience, COVID-19, Psychotherapy, Health education, Motivation, Social media

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Introduction

The infectious viral disease due to coronavirus was initiated in 2019 in Wuhan, China, and became one of the biggest pandemics and became one of the biggest challenges in the past century [1]. The health staff, including midwives, are on the front line of combat against the disease [2]. The coronavirus disease 2019 (COVID-19) infection rate among the treatment staff is reported to be between 3.8 and 63% [3]. The rate of infection among healthcare workers with COVID-19 in Iran is reported to be 5.62%, which is the highest rate among occupational hazards [4]. The COVID-19 pandemic not only threatens the health status of the front-line staff but also affects their mental health. Along with other medical staff, midwives also participated as the first line of care during the COVID-19 pandemic. Widespread infection, mortality, and human losses not only affected the physical health of midwives but also had mental consequences due to psychological pressures [5].

Designing national and international disease management protocols plays an important role in reducing mortality among healthcare workers. On the other hand, designing national and international protocols to improve the mental capacity and resilience of healthcare workers during the COVID-19 pandemic is challenging [6]. One of these interventions is related to increasing resilience.

Resilience is a personal mechanism that is important in improving an individual's capacity to confront current problems [2, 6, 7]. Because this potential capacity can prevent or minimize environmental complications of the current problem, improving resilience can improve adaptability to high-stress conditions affect the quality of life, and prevent the negative effects of the pandemic [6]. Resilience is among the important variables in confronting crises [6]. In other words, resilience is the ability of an individual to maintain psycho-somatic equilibrium in difficult situations [6]. The majority of studies in the field of resilience before the COVID-19 pandemic have examined the resilience among employees in busy shifts and long working hours, but after the COVID-19 pandemic, the fear and anxiety caused by contracting the disease were added to the challenges of staff, especially the midwives. Midwives are expected to be able to adapt to risky professional conditions. Therefore, the assessment of resilience in these conditions is of particular importance [8]. Distance from family, increased work pressure, stress caused by the deaths of colleagues, infection in pregnant women and mothers, and lack of sufficient protection facilities affected the mental health of midwives [9].

On the other hand, due to the long lockdowns and the lack of communication due to the COVID-19 pandemic, the use of cyberspace and social media increased and social messengers became an important and powerful communication tool [5]. Cyberspace and social media played an important role in providing information during the COVID-19 pandemic. The unlimited spread of messaging apps and social media, along with easy access to cyberspace, has made social media superior to conventional mass media and attracted a larger audience [10]. The proper use of publicly available tools to motivate the audience can be important in improving resilience in resilience among midwives, rather than sending frustrating and discouraging messages [10]. Social resilience increases social recovery during a crisis. Using social media is an important and essential way to increase resilience in societies during times of environmental stress [10]. However, it should be acknowledged that the COVID-19 pandemic is considered a significant shock to the health systems of various countries, prompting organizations to employ different methods to motivate and enhance resilience among their employees. One of these methods was providing motivational messages through SMS and social media [11, 12].

COVID-19 was one of the most important diseases of the century that affected the physical and mental health of the medical and health staff. The mental and physical health of the medical staff is effective in strengthening the health chain of the population [13]. Recommendations regarding quarantine, self-care, social distancing, and isolation could not be implemented for the treatment staff in health and treatment centers. Therefore, improving the mental health of the health and treatment staff was among the priorities of organizations. A previous meta-analysis indicated a decrease in the resilience of the treatment staff during the COVID-19 pandemic [14].

As COVID-19 is a newly emerging disease, compensatory mechanisms are important for reducing disease-related mental complications in society. Luo et al. conducted a cross-sectional study to assess the effects of motivational messaging on resilience during the COVID-19 pandemic based on the information-motivation-behavior (IMB) change model in Wuhan, China. They sent motivational messages via the commonly used social media (WeChat and Tencent QQ). They found that a correct understanding of COVID-19 and the promotion of healthy behaviors reduced stress in society [15].

It is worth noting that this study was conducted during the year 2020-2021, specifically during the third and fourth waves of COVID-19, when vaccination was not universal and long lockdowns were still the only method of prevention. The lack of access to vaccines and the high mortality rate during the initial peaks of COVID-19 caused a high level of stress among healthcare workers. Additionally, due to the increased role of social media during the COVID-19 lockdown, the use of social media is considered a novel and important method for improving mental health in midwives. Various factors can affect resilience, both internal and external. Therefore, the hypothesis of the current study was to investigate the resilience of Iranian midwives and the effect of motivational messages sent through WhatsApp. It is worth noting that different countries used different methods to increase resilience among health workers. Since the resilience of midwives in Iran had not been investigated during the COVID-19 pandemic period, the present study was designed with the aforementioned goal and hypothesis. Therefore, the aim of this study was to evaluate the effect of motivational messaging through social media on resilience among Iranian midwives during the COVID-19 pandemic.

Methods

Study design and participants

This study was a psychoeducational intervention with a control group that was conducted on 362 midwives (160 in the intervention group and 202 in the control group) who were on duty in the autumn of 2021, during the third and fourth peak of COVID-19 in Iran.

The study was conducted at all healthcare and medical centers that provided midwifery services, including maternity hospitals, clinics, and active healthcare centers during the COVID-19 pandemic in the country. The variety of geographical, climatic, and cultural conditions in Iran is associated with differences and variations in resilience [16]. Due to the geographical and cultural diversity, resilience was evaluated among midwives in all regions of the country.

The sample size was calculated using the Cochrane equation (Equation 1):
1.

$$n = \frac{N_Z^2 pq}{N_d^2 + Z_{pq}^2}$$

Considering the total population of the members of the online midwives group (n=3000) and a type I error of 0.05, the sample size was determined to be 340 participants, which was increased to 391 considering a 15% dropout.

First, the announcement calling for participation in the study was posted in two large national groups of midwives working in healthcare centers (with more than 3000 member midwives), and the criteria for inclusion and exclusion from the study were outlined in this announcement.

The inclusion criteria were willingness to participate in the study, being within the age range of 20-45 years, being a registered midwife with at least one year of work experience, being a member of professional midwifery channels or WhatsApp groups, and working in health and medical centers in Iran. The age range was defined based on previous findings indicating that being over 50 years old has a negative intervening effect on resilience [17-19]. Exclusion criteria were leaving the medical or health center during the study period, exposure to life crises, including the death of a close family member, accidents, or divorce, a history of exposure to stressful incidents, severe illness in the individual or relatives, a history of COVID-19 in the individual or close relatives during the past six months, and not listening to motivational messages for more than one session.

Then, one WhatsApp group was randomly selected as the intervention group, while another WhatsApp group was regarded as the control group. To randomly assign the two groups, the researcher prepared two bags and placed two envelopes in each. In the first bag, the names of the first and second WhatsApp groups were written on the envelopes, while in the second bag, the terms "intervention" and "control" were written on the envelopes. One envelope was then randomly drawn from the first bag and one envelope from the second bag. This process determined which WhatsApp group would serve as the intervention group and which would serve as the control group.

In this study, 395 participants were included. Of the 33 midwives who dropped out, five were excluded from the control group due to refusal to cooperate and leaving the WhatsApp group, and 28 were excluded from the intervention group. The reasons for the exclusion of the midwives in the intervention group were refusal to cooperate (n=9), and failure to complete the post-test (n=19). Finally, 362 participants (160 in the intervention group and 202 in the control group) completed the study.

Tools

The tools used in this study included a demographic checklist containing questions regarding age, education level, work experience, geographic region, type and location of work (hospital, health center, private clinic, facility center, or doula), and the Connor-Davidson resilience scale (CD-RISC).

The CD-RISC was developed by Connor and Davidson based on a literature review from 1979-1991 in the field of resilience [20]. The psychometric validity of the questionnaire has been assessed in six groups of participants, including the general population, primary healthcare referrals, ambulatory psychology patients, patients with generalized anxiety disorder, and two groups of patients with post-traumatic stress disorder. It is believed that the CD-RISC can differentiate resilient from non-resilient individuals in clinical and non-clinical settings and can be used both in research and clinical practice. It includes 25 items that are scored based on a four-point Likert scale from zero, indicating rarely true, to four, indicating nearly all of the time. Therefore, the total score of the CD-RISC ranges from zero to 100 with larger scores indicating a higher level of resilience.

The reliability of the CD-RISC was approved based on the Cronbach's α (α=0.89). The reliability index of the questionnaire was assessed based on the test re-test method with a 4-week washout period (r=0.87). The reliability of CD-RISC was approved by Mohammadi (2005) on Persian subjects (Cronbach's α=0.89) [21]. The validity of the CD-RISC was previously approved in both normal and at-risk populations [22].

Innervation: Psychoeducational motivational messages

The resilience psychoeducational was designed in 43 sessions. The educational material was prepared in audio format, focusing on resilience techniques, while motivational messages were provided in visual and written formats.

The content of the messages was designed by a clinical psychiatrist based on the mindfulness-based emotional balance workbook [23] and the methods to increase capabilities in crises, drawing from the Quran and Hadith series [24]. Thus, the psychoeducational intervention consisted of two components: The mindfulness-based emotional balance techniques and the spiritual empowerment techniques. During the psychoeducational intervention, participants received messages about "mindfulness-based emotional balance and spiritual empowerment" during difficult times. Participants could also ask questions if needed.

The emotional balance and resilience improvement messages comprised 11 domains: 1) Education on body relaxation through breathing, 2) Education on mindfulness to achieve emotional balance, 3) Identifying types of emotions and their effects on motivation, 4) Identifying values and intentions, 5) Education on attention control, 6) Concentration on differentiating feelings (pleasant, unpleasant and neutral feelings), 7) Concentration on mindfulness in terms of thoughts, 8) Resisting negative thoughts, 9) Forgiveness and psychological balance, 10) Anger management and emotional balance, and 11) Drills to maintain emotional balance and resilience (resistance and forward movement).

The messages on increasing capabilities in crises were developed based on Quran and Hadith in 13 domains: 1) Inevitability of hardships, 2) Patience is the best confrontation, 3) Increasing the power of patience, 4) Empowering techniques, 5) Comparative empowerment (generalization and diminutive empowerment), 6) Generalization empowerment: Primary generalization, 7) Parallel comparison in generalization empowerment, 8) Usages of primary generalization, 9) Opposite comparison in generalization empowerment, 10) Generalization empowerment: Pattern generalization, 11) Parallel comparison in diminutive empowerment, 12) Usages of diminutive empowerment, and 13) Opposite comparison in diminutive empowerment (Table 1).

Two weeks after the end of sending motivational messages to the intervention group, the CD-RISC was filled by both groups.

Data analysis

Data were collected through Google Forms and analyzed by SPSS software, version 16. The Kolmogorov-Smirnov and Shapiro-Wilk test was used to assess the normality of the continuous variables. Parametric and non-parametric tests were then used based on the normality of variables. Analysis was performed after adjusting for baseline variables and covariates. The paired t-test, independent t-test, chi-square test, and Pearson and Spearman correlation coefficients were used for the statistical analysis. $P \leq 0.05$ was considered as statistically significant.

Table 1. Contents of psychoeducational intervention

The Mindfulness-based Emotional Balance Component	The Spiritual Empowerment Component
Part 1: Foundations	Part 1: Foundations
Mindfulness: The key to emotional balance	The inevitability of difficulties
Emotions: What drives us and what drives us astray	Patience is the best coping strategy
Clarifying values and intentions: why are you here?	Patience Increase
Part 2: The program	Part 2: Self-reinforcement techniques
Learning how to pay attention: One breath, one sensation at a time	Comparative reinforcement
Feelings: Pleasant, unpleasant, and neutral: Where all the trouble begins	Adaptive reinforcement
Mindfulness of thoughts: Using your head instead of being used by it	Transformation reinforcement
Exploring forgiveness: The key to opening the heart	Anticipatory reinforcement
Working with anger: Costly fuel that burns hot!	Spiritual reinforcement
Cultivating kindness: Tapping into the ocean of love within	Deductive reinforcement
Working with fear: The art of facing the monster	Part 3: God-reinforcement techniques
Awakening compassion: Embracing our shared vulnerability	Supportive reinforcement
Part 3: Sustaining and deepening	Weakening reinforcement
Diets of the heart, mind, and body: surfing the full catastrophe	
Continuation of practice: Resistance and forward momentum	

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Results

Based on the Kolmogorov-Smirnov and Shapiro-Wilk tests, the variables were normally distributed. There was no significant difference in the demographic characteristics of midwives between the motivational messaging and control groups, as determined by the independent t-test and chi-square test (P). Therefore, the two groups were homogenous at baseline (Table 2).

There was no significant difference between the intervention (motivational messaging) and control groups at baseline in terms of the mean resilience score (P=0.836). However, after the intervention, based on the independent t-test results, the mean resilience score was significantly higher in the motivational messaging group compared to the control group (P=0.002). The paired t-test was used to evaluate within-group differences and indicated that the resilience score significantly increased in the motivational messaging group, while no significant difference was observed in scores before and after the intervention in the control group (P=0.002) (Table 3).

The Spearman and Pearson correlation coefficients showed no correlation between socio-demographic variables and resilience score neither in the intervention nor control groups, except for a significant correlation between marital status and resilience in the control group. In other words, married participants in the control group exhibited higher resilience compared to participants who were single, divorced, or widowed (Table 4).

Discussion

The current study was conducted to assess the effect of motivational messaging via WhatsApp on resilience among midwives who were on duty during the COVID-19 pandemic in Iran. Due to the quarantine conditions during the COVID-19 pandemic and the increased use of messengers, as well as the obligation to maintain and improve resilience among midwives, it was decided to send motivational messages through WhatsApp. Resilience is defined as a countermeasure and adaptive mechanism in response to major and severe life events, which can be influenced by both internal and external

Table 2. Demographic characteristics of midwives in the motivational messaging and control groups at baseline

Variables		Mean±SD/No. (%)		Results
		Motivational Messaging Group (n=160)	Control Group (n=202)	
Age (y)		35.30±5.87	33.99±7.06	t=1.894 df=360 P=0.059*
Work experience (y)		12.53±6.96	66.10±14.13	t=-0.305 df=360 P=0.761*
Working hours per week		43.78±18.87	41±12.05	t=1.701 df=360 P=0.090*
Education level	Associate degree	1(6)	2(1)	χ^2=85.391 df=3 P=0.127**
	Bachelor's degree	140(87.5)	164(81.2)	
	Masters' degree	15(9.4)	33(16.3)	
	PhD	4(2.5)	3(1.5)	
Marital status	Single	17(10.6)	46(22.8)	χ^2=15.396 df=3 P=0.052**
	Married	134(83.8)	153(75.7)	
	Divorced	9(5.9)	2(1)	
	Widowed	0	1(0.5)	
Working location	Health center	28(17.5)	84(41.6)	χ^2=73.048 df=4 P=0.071**
	Education and research hospitals	25(15.6)	34(16.8)	
	Tutor	5(3.1)	14(6.9)	
	Others	102(63.8)	70(34.7)	

*Significant difference (t-test), **Significant difference (chi-square).

factors. Providing motivational messages is an external method to increase resilience [25]. The findings of the current study showed that sending daily motivational messages via WhatsApp increased resilience in midwives working in hospitals and health centers.

A meta-analysis conducted by Cheng et al. on 41 studies from different countries showed that the level of resilience among the health staff decreased during the COVID-19 pandemic, with medical personnel in Middle Eastern countries exhibiting the lowest levels of resilience in this context [14]. The findings of the current study are consistent with those of Köse et al. in Turkey who also showed that sending motivational messages via SMS to nurses working in intensive care units led to increased resilience during the COVID-19 pandemic [26]. Also, the findings of the current study are consistent with those of a clinical trial conducted by Goktas et al. on 60 nurses working in Istanbul hospitals, where motivational messages were sent to them through internal messengers for 21 days [27].

One of the factors that affected the treatment staff during the COVID-19 pandemic was the conditions of work shifts and increased working hours. The present study showed that the resilience of working midwives in Iran was not related to their working hours and shifts. A study by Munn et al. showed that employees' belief about increasing working hours can have an effect on resilience; if this belief is accompanied by a positive perception and psychological support from organizations, the level of resilience will not decrease [28]. Preventing job burnout and managing workload related to working hours are important factors in enhancing resilience in individuals, especially health workers [29]. Although busy working hours can have a negative effect on resilience, the current study did not find a significant correlation between resil-

Table 3. Determining and comparing the resilience score between the study groups before and after the intervention

Resilience	Mean±SD		Results
	Motivational Messaging Group	Control Group	
Before the intervention	52.66±14.68	52.29±11.72	t=0.208 df=223 P=0.836*
After the intervention	59.09±12.29	54.28±12.97	t=3.107 df=262 P=0.002*
Results	t=3.25 df=103 P=0.002**	t=1.026 df=120 P=0.207**	

*Independent t-test, **Paired t-test.

ience in midwives and working hours in the intervention group (r=0.024, P=0.791).

The midwives who participated in the current study were working in health and medical centers, as well as private and governmental hospitals. The current study showed that resilience was not correlated with workplace workplace and education level of the participants in either the intervention or control groups. Therefore, the current study showed that resilience was not affected by workplace and education level. Yörük and Güler showed that the workplace (private or governmental sector), as well as the age and education level of nurses and midwives, did not affect resilience [5].

Resilience is affected by various demographic, cultural, social, and even political and governmental factors [30]. A demographic influencing factor in the current study was marital status. In other words, married midwives had higher resilience compared to single, divorced, or widowed ones. A qualitative study by Jo showed that spouses play an important role in the formation of psychological balance in women. The study also showed that spousal support can be important in the formation of resilience in women [31]. Furthermore, a meta-analysis by Shorey and Valerie showed that midwives feel more disappointed when they find that their efforts in the diagnosis and care of pregnant women with COVID-19 were ineffective; therefore, they fear returning to their workplace. This study showed that the most important source of support for nurses and midwives in COVID-19 care and treatment centers comes from supportive messages from their family members and spouses, as well as actions taken by politicians to enhance occupational protection and implement special career incentives for nurses [32].

The experiences from the past year have shown that strong social support systems within a country can enhance resilience among healthcare personnel. Consequently, patient care can be improved due to the increased resilience of healthcare workers [33].

One of the motivational mechanisms to increase resilience is the use of motivational messages based on Quranic verses and hadiths. Paying attention to the humane basics and fully understanding the human being in the verses of the Quran can lead to creating more resilience [34]. The current study showed that motivational messages based on the verses of the Quran and Hadith could improve resilience in midwives working in health and medical centers compared to the control group. Kashim et al. showed that religious messages about God and religious beliefs played an important role

Table 4. Correlation between resilience and socio-demographic variables in study groups

Variables	Age (y)		Work Experience (y)		Working Hours per week		Marital Status		Education Level		Workplace	
	P*	r	P*	r	P*	r	P**	r	P**	r	P**	r
Resilience score in the intervention group	0.799	0.025	0.958	-0.005	0.263	-0.111	0.440	-0.077	0.366	0.090	0.566	-0.057
Resilience score in the control group	0.990	0.001	0.995	0.000	0.791	-0.024	0.036	0.191	0.648	0.037	0.623	-0.045

*Pearson test,**Spearman test, r: Significant correlation.

in the formation of resilience. They also showed that resilience led to patience. Patience is an internal power that can protect individuals against external factors and at the same time, culminate the individual internally [35]. Similarly, Ahmed et al. conducted a study on 233 medical staff and showed that considering spirituality and using spiritual motivational messages can increase the level of resilience [36]. Furthermore, the theoretical framework proposed by Park et al. suggested that external motivation in healthcare workers could improve their resilience and was important in developing occupational commitment and satisfaction. These effects increase organizational efficacy [37].

Generally, the COVID-19 pandemic highlighted the importance of social media in improving general health level of the society. Although social media can be used to disseminate threatening and frightening messages, Liu and Tong showed that WhatsApp played an important role in improving resilience and public welfare [38]. Furthermore, the importance and implication of social media by the population increased during the COVID-19 pandemic because social media was easily accessible and people could receive health messages with ease. Abbas et al. showed that health-related messaging via social media had an important role in improving the psychological health of Pakistani people during the COVID-19 period [39].

Because all the midwives participating in the current study were selected from various regions of Iran, a diverse range of midwives was represented in the study, reflecting the geographical and cultural conditions of the country. This diversity among participants can be considered one of the strengths of the study. Furthermore, the use of social media to design positive role modeling was another strength of this study. Given the varied roles of midwives in healthcare and medical care in Iran, this study included midwives who were actively working in different disciplines, which may have been associated with varying levels of exposure to the virus. Therefore, midwives involved in other practices beyond maternal and child care were also included in the study, allowing for better generalization of the findings to the population of working midwives in Iran.

Conclusion

Resilience is among the important variables in confronting crises. Resilience is defined as an individual's capability to maintain psycho-biological balance under critical conditions. During epidemics and stressful environmental situations, social media and networks can play a significant role in providing information. The unlimited expansion of messaging applications and social media along with their ease of access, has placed social media above other traditional media. Social media has attracted more members compared to traditional media. The positive use of accessible and public tools for sending motivational messages can significantly enhance resilience among midwives. The current study showed that motivational messaging through WhatsApp increased resilience in Iranian midwives during the COVID-19 pandemic.

It is suggested that different domains of resilience be studied in midwives working in different sectors in further research.

One of the limitations of this study was the dropout in both the intervention and control groups. Involvement in COVID-19 management and the death of family members were the most common reasons for dropout in this study. Furthermore, despite the messages being designed by group administrators, it was not possible for them to assess the daily viewing of the messages by the participants. Also, it was impossible to precisely control the subjects regarding their exposure to other sources and media. Although the overall dropout rate was within the anticipated range, the dropout rate in the motivational messaging group was 17.5%. Therefore, the findings of this study should be interpreted with consideration of the 17.5% dropout in the motivational messaging group.

Ethical Considerations

Compliance with ethical guidelines

Ethical approval was obtained from the Research Ethics Committees of the Islamic Azad University, Mashhad Medical Sciences Branch, Mashhad, Iran (Code: IR.IAU. MSHD.REC.1399.140). Written informed consent for data collection was obtained from the Department of Midwifery of the Islamic Azad University, Mashhad Medical Sciences Branch. All experiments were performed in accordance with relevant guidelines and regulations. Written informed consent was obtained from all participants prior to participation in the study. Participants were also assured that their information would be kept confidential. Additionally, the control group did not receive any intervention until the end of the post-test phase. To adhere to ethical guidelines, the control group received the educational materials one month after the study period. Participants were also assured that their information would be kept confidential. Additionally, the control group did not receive any inter-

vention until the end of the post-test phase. To adhere to ethical guidelines, the control group received the educational materials one month after the study period.

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Authors' contributions

conceptualisation and study design: Seyedeh Salil Ziaei and Tahereh Fathi Najafi; Data analysis and interpretation: Zahra Kamali and Tahereh Fathi Najafi; Writing the original draft: Sareh Dashti; Review and editing: Seyedeh Salil Ziaei, Sareh Dashti, and Tahereh Fathi Najafi; Statistical analysis: Zahra Kamali; Final approval: All authors.

Conflict of interest

The authors declared no conflict of interests.

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References

[1] Deng SQ, Peng HJ. Characteristics of and public health responses to the coronavirus disease 2019 outbreak in China. Journal of Clinical Medicine. 2020; 9(2):575. [DOI:10.3390/jcm9020575] [PMID] [PMCID]

[2] Murphy PA. Midwifery in the time of COVID-19. Journal of Midwifery & Women's Health. 2020; 65(3):299-300. [DOI:10.1111/jmwh.13121] [PMID] [PMCID]

[3] Hantoushzadeh S, Bagheri M, Amjadi MA, Farahani MF, Haghollahi F. Experiences of health care providers on pregnancy and childbirth care during the COVID-19 pandemic in Iran: A phenomenological study. BMC Pregnancy and Childbirth. 2021; 21(1):670. [DOI:10.1186/s12884-021-04148-y] [PMID] [PMCID]

[4] Sabetian G, Moghadami M, Hashemizadeh Fard Haghighi L, Shahriarirad R, Fallahi MJ, Asmarian N, et al. COVID-19 infection among healthcare workers: A cross-sectional study in southwest Iran. Virology Journal. 2021; 18(1):58. [DOI:10.1186/s12985-021-01532-0] [PMID] [PMCID]

[5] Yörük S, Güler D. The relationship between psychological resilience, burnout, stress, and sociodemographic factors with depression in nurses and midwives during the COVID-19 pandemic: A cross-sectional study in Turkey. Perspectives in Psychiatric Care. 2021; 57(1):390-8. [DOI:10.1111/ppc.12659] [PMID]

[6] Louise Duncan D. What the COVID-19 pandemic tells us about the need to develop resilience in the nursing workforce. Nursing Management. 2020; 27(3):22-27. [DOI:10.7748/nm.2020.e1933] [PMID]

[7] Shi LS, Xu RH, Xia Y, Chen DX, Wang D. The impact of COVID-19-related work stress on the mental health of primary healthcare workers: the mediating effects of social support and resilience. Frontiers in Psychology. 2022; 12:800183. [DOI:10.3389/fpsyg.2021.800183] [PMID]

[8] Moran L, Foster K, Bayes S. What is known about midwives' well-being and resilience? An integrative review of the international literature. Birth. 2023; 50(4):672-88. [DOI:10.1111/birt.12756] [PMID]

[9] Piotrowski A, Sygit-Kowalkowska E, Boe O, Rawat S. Resilience, occupational stress, job satisfaction, and intention to leave the organization among nurses and midwives during the COVID-19 pandemic. International Journal of Environmental Research and Public Health. 2022; 19(11):6826. [DOI:10.3390/ijerph19116826] [PMID] [PMCID]

[10] Schuh DL. The Cyberspace Advantage: Inviting them inhow cyber deception enables better resilience. Bedford: Mitre Corp Mclean Va Mclean; 2020. [Link]

[11] Malik YS, Kumar N, Sircar S, Kaushik R, Bhat S, Dhama K, et al. Coronavirus disease pandemic (COVID-19): Challenges and a global perspective. Pathogens. 2020; 9(7):519. [DOI:10.3390/pathogens9070519] [PMID] [PMCID]

[12] Schwaiger K, Zehrer A, Braun BJTR. Organizational resilience in hospitality family businesses during the COVID-19 pandemic: A qualitative approach. Tourism Review. 2022; 77(1):163-76. [DOI:10.1108/TR-01-2021-0035]

[13] Seaborn K, Chignell M, Gwizdka J. Psychological resilience during COVID-19: A meta-review protocol. BMJ Open. 2021; 11(6):e051417. [DOI:10.1136/bmjopen-2021-051417] [PMID] [PMCID]

[14] Cheng CKT, Chua JH, Cheng LJ, Ang WHD, Lau Y. Global prevalence of resilience in health care professionals: A systematic review, meta-analysis and meta-regression. Journal of Nursing Management. 2022; 30(3):795-816. [DOI:10.1111/jonm.13558] [PMID]

[15] Luo Y, Yao L, Zhou L, Yuan F, Zhong X. Factors influencing health behaviours during the coronavirus disease 2019 outbreak in China: An extended information-motivation-behaviour skills model. Public Health. 2020; 185:298-305. [DOI:10.1016/j.puhe.2020.06.057] [PMID] [PMCID]

[16] Moret-Tatay C, Murphy M. Anxiety, resilience and local conditions: A cross-cultural investigation in the time of Covid-19. International Journal of Psychology. 2022; 57(1):161-70. [DOI:10.1002/ijop.12822] [PMID] [PMCID]

[17] Masten AS. Resilience comes of age. In: Glantz MD, Johnson JL, editors. Resilience and development. Berlin: Springer; 2002. [DOI:10.1007/0-306-47167-1_15]

[18] Diehl M, Hay EL. Risk and resilience factors in coping with daily stress in adulthood: The role of age, self-concept incoherence, and personal control. Developmental Psychology. 2010; 46(5):1132-46. [DOI:10.1037/a0019937] [PMID] [PMCID]

[19] Pearman A, Hughes ML, Smith EL, Neupert SD. Age differences in risk and resilience factors in COVID-19-related stress. The Journals of Gerontology. 2021; 76(2):e38-44. [DOI:10.1093/geronb/gbaa120] [PMID] [PMCID]

[20] Connor KM, Davidson JR. Development of a new resilience scale: The connor-davidson resilience scale (CD-RISC). Depression and Anxiety. 2003; 18(2):76-82. [DOI:10.1002/da.10113] [PMID]

[21] Mohammadi M, Jazayeri AR, Rafie AH, Joukar B, Pourshahbaz A. [Resilience factors in individuals at risk for substance abuse (Persian)]. Journal of Psychology (Tabriz University). 2006; 1(2-3):203-24. [Link]

[22] Samani S, Jokar B, Sahragard N. [Effects of resilience on mental health and life satisfaction (Persian)]. Iranian Journal of Psychiatry and Clinical Psychology. 2007; 13(3):290-5. [Link]

[23] Cullen M, Pons GB. The mindfulness-based emotional balance workbook: An eight-week program for improved emotion regulation and resilience. Oakland: New Harbinger Publications; 2015. [Link]

[24] Ataalah M. [Empowerment methods in difficulties (Persian)]. Qum: Dar al-Hadith Scientific and Cultural Institute; 2013. [Link]

[25] Jeamjitvibool T, Duangchan C, Mousa A, Mahikul W. The association between resilience and psychological distress during the COVID-19 pandemic: A systematic review and meta-Analysis. International Journal of Environmental Research and Public Health. 2022; 19(22):14854. [DOI:10.3390/ijerph192214854] [PMID] [PMCID]

[26] Köse S, Gezginci E, Göktaş S, Murat M. The effectiveness of motivational messages to intensive care unit nurses during the COVID-19 pandemic. Intensive & Critical Care Nursing. 2022; 69:103161. [DOI:10.1016/j.iccn.2021.103161] [PMID] [PMCID]

[27] Goktas S, Gezginci E, Kartal H. The effects of motivational messages sent to emergency nurses during the COVID-19 pandemic on job satisfaction, compassion fatigue, and communication skills: A randomized controlled trial. Journal of Emergency Nursing. 2022; 48(5):547-58. [DOI:10.1016/j.jen.2022.06.001] [PMID] [PMCID]

[28] Munn LT, Liu TL, Swick M, Rose R, Broyhill B, New L, et al. Original research: Well-being and resilience among health care workers during the COVID-19 pandemic: A cross-sectional study. The American Journal of Nursing. 2021; 121(8):24-34. [DOI:10.1097/01.NAJ.0000767352.47699.0c] [PMID]

[29] Kumpfer KL. Factors and processes contributing to resilience. In: Glantz MD, Johnson JL, editors. Resilience and development. Berlin: Springer; 2002. [DOI:10.1007/0-306-47167-1_9]

[30] Manouchehri E, Alirezaei S, Latifnejad Roudsari R. Perceptions and experiences of midwives during the COVID-19 pandemic in Iran: A qualitative exploration. Current Women s Health Reviews. 2024; 20(3):e200423216141. [DOI:10.2174/1573404820666230420113320]

[31] Jo Y. The significance of resilience in mental health promotion of marriage immigrant women: A qualitative study of factors and processes. BMC Womens Health. 2020; 20(1):84. [DOI:10.1186/s12905-020-00945-3] [PMID] [PMCID]

[32] Shorey S, Chan V. Lessons from past epidemics and pandemics and a way forward for pregnant women, midwives and nurses during COVID-19 and beyond: A meta-synthesis. Midwifery. 2020; 90:102821. [DOI:10.1016/j.midw.2020.102821] [PMID] [PMCID]

[33] Legido-Quigley H, Mateos-García JT, Campos VR, Gea-Sánchez M, Muntaner C, McKee M. The resilience of the Spanish health system against the COVID-19 pandemic. The Lancet. Public health. 2020; 5(5):e251-2. [DOI:10.1016/S2468-2667(20)30060-8] [PMID]

[34] Abdullah S, Tengku TKS, Mahamood AF, Hussin NS, Mahmad MA, Rahman ZBA. Reciting the Al Quran, planned problem-solving strategy and resilience in coping with COVID-19 infections. Journal of Pharmaceutical Negative Results. 2023; 14(2):2331. [Link]

[35] Salleh K, Rahman A, Noor M, Kashim M, Long S, Hasan Z, et al. Resilience and patience (sabr) in Islamic view when observing the movement control (order MCO) during the covid 19 pandemic. International Journal of Psychosocial Rehabilitation. 2020; 24(01):5485-97. [DOI:0.37200/IJPR/V24I1/PR200654]

[36] Ahmed A, Jan G, Barkat W, Ahmed R, Mahmood A. The impact of spirituality on resilience and engagement during the COVID-19 pandemic. Journal of Management, Spirituality & Religion. 2021; 18(5):400-24. [DOI:10.51327/NAEU8792]

[37] Park I, Sarnikar S, Cho J. Disentangling the effects of efficacy-facilitating informational support on health resilience in online health communities based on phrase-level text analysis. Information & Management. 2020; 57(8):103372. [DOI:10.1016/j.im.2020.103372]

[38] Liu JCJ, Tong EMW. The relation between official WhatsApp-distributed COVID-19 news exposure and psychological symptoms: Cross-sectional survey study. Journal of Medical Internet Research. 2020; 22(9):e22142. [DOI:10.2196/22142] [PMID] [PMCID]

[39] Abbas J, Wang D, Su Z, Ziapour A. The role of social media in the advent of COVID-19 pandemic: Crisis management, mental health challenges and implications. Risk Management And Healthcare Policy. 2021; 14:1917-32. [DOI:10.2147/RMHP.S284313] [PMID] [PMCID]