Original Article
http://mjiri.iums.ac.ir
Medical Journal of the Islamic Republic of Iran (MJIRI)

Med J Islam Repub Iran. 2022 (15 Sep);36.106. https://doi.org/10.47176/mjiri.36.106

Predictors of Perceived Stress and Quality of Life among Women during the COVID-19 Outbreak: A Cross-sectional Study from Karaj, Iran

Sara Esmaelzadeh[1], Zohreh Mahmoodi[2], Fatemeh Rajati[3], Leili Salehi[4]*

Received: 15 Sep 2021 Published: 15 Sep 2022

Abstract

Background: The emergence of the coronavirus disease of the 2019 (COVID-19) pandemic in Iran has markedly affected lives and taken a toll on Iranians' mental health, especially in women. The current study investigated factors that contributed to both perceived stress and quality of life (Qol) among women during the COVID-19 pandemic in Karaj, Iran.

Methods: A cross-sectional online survey study was conducted between November 30, 2020, and January 30, 2021. A researcher-made questionnaire with 4 subscales, including information seeking, social support, primary appraisal, and secondary appraisal, was used. Perceived Stress Scale (PSS-10), and 36-Item Short Form Survey (SF-36) questionnaires were also applied. A total of 581 participants completed the study. The convenience sampling method was used in this study. Multiple mediation analyses were applied using pathway analysis.

Results: The mean age ± SD of the participants was 38.57±7.68 years, and 40.8% had a higher education than a high school diploma. Based on the final fitted model, higher perceived stress had a direct impact on mental QoL (β = 0.47). The Comparative Fit Index (CFI), Incremental fit index (IFI), and Goodness of Fit Index (GFI) were calculated as 1, and $\chi 2/df$ was 4.87.
Educational level and social support from both the direct and indirect pathway affected QoL. Social support affected both information-seeking behavior and secondary appraisal (β = 0.50: 95% CI, 0.38-0.59). Furthermore, information-seeking behavior and secondary appraisal affected perceived stress. Perceived stress followed by educational level had the strongest and primary appraisal had the poorest indirect association with mental QoL.

Conclusion: In conclusion, primary appraisal, secondary appraisal, social support, educational level, perceived stress, and information-seeking behavior were correlated with higher levels of mental QoL among women. Social support and improving the situation appraisal can provide appreciated support to manage stress induced by the COVID-19 pandemic. Further assessment is needed to determine the vulnerable groups such as illiterate people.

Keywords: COVID-19, Iran, Stress, Quality of Life, Women

Conflicts of Interest: None declared
Funding: The research deputy of Alborz University of Medical Sciences financially supported this study.

This work has been published under CC BY-NC-SA 1.0 license.
Copyright© Iran University of Medical Sciences

Cite this article as: Esmaelzadeh S, Mahmoodi Z, Rajati F, Salehi L. Predictors of Perceived Stress and Quality of Life among Women during the COVID-19 Outbreak: A Cross-sectional Study from Karaj, Iran. *Med J Islam Repub Iran.* 2022 (15 Sep);36:106. https://doi.org/10.47176/mjiri.36.106

Introduction

The coronavirus disease pandemic of 2019 (COVID-19) is still a global concern for human survival. From the first emergence of the COVID-19 infection in Wuhan, China, until now, almost all countries in the world have been affected by COVID-19 (1). Currently, we are witnessing the

Corresponding author: Dr Leili Salehi, leilisalehi@abzums.ac.ir

1. Reproductive Health Department, Alborz University of Medical Sciences, Karaj, Iran
2. Social Determinants of Health Research Center, Alborz University of Medical Sciences, Karaj, Iran
3. Research Center for Environmental Determinants of Health, Health Institute, Kermanshah University of Medical Sciences, Kermanshah, Iran
4. Department of Health Education and Promotion, Alborz University of Medical Sciences, Karaj, Iran

↑What is "already known" in this topic:
According to the model of coping, cognitive appraisal can affect perceived stress. High levels of stress induced by the coronavirus disease of 2019 (COVID-19) pandemic lead to poor quality of life (QoL); however, there is no evidence that which factors affect women's stress and QoL.

→What this article adds:
Educational level and social support variables through perceived stress impacted QoL. Perceived stress directly affects mental QoL. Social support from both direct and indirect paths impacted Qol.

[Downloaded from mjiri.iums.ac.ir on 2026-11-09]

[DOI: 10.47176/mjiri.36.106]

so-called "fifth wave" of COVID-19 in Iran, which is causing stress among individuals. Studies show that perceived stress in Iranian women was correlated negatively with coping resources (2). In a study comprising 1500 Iranian population, about 25% of all participants experienced moderate to severe levels of stress during the COVID-19 pandemic (3). In this regard, the mental health effect of COVID-19 in Iran may be comparable to that caused by the COVID-19 epidemic in China and other countries (4, 5). Moderate to severe posttraumatic stress symptoms were also reported among the COVID-19 survivors after hospital discharge (6). Perceived stress also has an adverse effect on QoL among Iranian women during the COVID-19 pandemic (2).

There were several factors, such as living situation, poverty, lack of access to health care, stressful experiences, and susceptibility to diseases, that can also lead to some adverse mental health consequences during epidemics (7). Documents also indicate that women perceived greater severity in symptoms of acute stress during the COVID-19 outbreak (8). To have a better understanding of the elements that affect women's mental QoL, it is crucial to implement effective treatments to improve their mental QoL.

Several studies have investigated the effects of COVID-19 on mental health and Qol (8–10) and some of them were conducted among Iranian populations (11-13).

As some factors, such as social support (14), seeking information, (15) age, (16) and sex, (17) play an important role in mental QoL, exploring the mediating role of these variables on QoL will be useful.

Cognitive appraisal can affect perceived stress, according to the Lazarus and Folkman model of appraisal, coping, and stress (18, 19). It includes both "primary appraisal" and "secondary appraisal." During the primary appraisal, people evaluate how relevant the event is to them and what kind of impact it is likely to have. Secondary appraisal involves people's evaluation of their resources and options for coping. Indeed, insufficient resources lead to perceive stress. Afterward, if resources can help people overcome their stress, the coping process will develop. Therefore, in this study, we adopted 3 factors from the Lazarus and Folkman model, including (a) primary appraisal, (b) secondary appraisal, and c) perceived stress. Social support not only affects individuals' quality of life (20) but also has a relationship with information-seeking behavior (21). Considering 12.9 prevalence of the depression wordwide (22), we considered some demographic variables, self-reported health, and both social support and seeking information concepts as resources to overcome stress (20). Therefore, this study aimed to investigate factors affecting perceived stress and Qol among women during the COVID-19 outbreak in Karaj, Iran.

Methods

Design

This cross-sectional study was conducted during the COVID-19 outbreak in Karaj, Iran, between November 30, 2020, and January 30, 2021. Karaj, as the capital of Alborz province, is a metropolis of Iran and ranked as the fourth largest city in Iran. At the time of the study, Karaj was in the red situation with regard to COVID-19 prevalence (ie, 25 daily new cases per 100,000 county residents).

Sample Size

All women who agreed to participate in the study by verbal informed consent were included in the study. The sample size was considered as 600 women in terms of the empirical sample size guideline (23).

Study Population

The participants were recruited from women who received various primary health care services from health care centers using the convenience sampling method. Providing fair access to health care services is one of the most important health system goals in Iran, which is in line with primary health care. For recruitment, the researcher visited the head of health centers and obtained patients' contact information and medical history from their medical records. The study questionnaires were distributed to participants (n = 600 individuals) through social media applications (eg, WhatsApp, Telegram, and Facebook). Nineteen questionnaires were excluded from this study due to missing data.

Inclusion and Exclusion Criteria

The inclusion criteria were being female, age ≥18 years old, and ability to read and write. Participants were excluded from the trial if they had a history of musculoskeletal system problems, addiction, or COVID19 infection.

Measures

A sociodemographic questionnaire—age, sex, education, marital status—a researcher-made questionnaire comprising 4 sections—including information-seeking behavior, social support, primary appraisal, and secondary appraisal subscales—the Perceived Stress Scale (PSS-10), and 36-Item Short Form Quality of Life (SF-36) were completed by participants. The researcher-made questionnaire was developed using the literature and expert panels views. The validity was assessed using face and content validity according to the views of a panel of 10 experts. The reliability was also evaluated using Cronbach's alpha coefficient. For face validity, we asked the expert panel to answer how the questionnaire appears on the surface (representation of what researchers want to test) We used the content validity ratio (CVR) and content validity index (CVI) to assess content validity. The CVR was evaluated using the following formula: $CVR = (N_e - N/2)/(N/2)$, where the N_e is the number of panelists indicating "item is essential" and N is the total number of panelists. The numeric value of the CVR is determined by Lawshe Table. The CVR cutoff in the current study was considered to be 0.62 based on the expert panel. We also calculated the CVI based on the experts' ratings of item relevance. The CVI values range from 0 to 1, when CVI >0.79, the item is relevant, when it is between 0.70 and 0.79, the item needs revisions, and if the value is <0.70 the item is removed. The cutoff value of the Cronbach's alpha to accept the reliability was considered as 0.70.

[Downloaded from mjiri.iums.ac.ir on 2026-11-09]

[DOI: 10.47176/mjiri.36.106]

Self-Reported Health

Self-reported health status was assessed using SF-36 question 2: “Compared to 1 year ago, how would you rate your health in general now?” Women rated their responses in 5 categories: (a) much better now than 1 year ago; (b) somewhat better now than 1 year ago; (c) about the same; (d) somewhat worse now than 1 year ago; and (e) much worse now than 1 year ago. We merged 2 responses to categorize the options as follows: (a) much better; (b) somewhat better; (c) about the same; and (d) worse than 1 year ago.

Perceived Stress Scale

The Perceived Stress Scale (PSS-10), a 10-item self-administered questionnaire with a 5-point Likert response (from 0 to 4), was used to assess total perceived stress. The total scores range from 0 to 40, with higher scores indicating a higher level of stress (24). The reliability of this scale has been confirmed in the Iranian population with a Cronbach α of 0.76 (25).

Researcher-made Questionnaire

This study aimed to construct a researcher-made questionnaire with 4 subscales: information-seeking behavior, social support, primary appraisal, and secondary assessment.

Information-Seeking Behavior

Information seeking behavior was defined as a purposeful search of information resources to obtain health information to influence health-related decision-making (26). In this study, information-seeking was assessed using 4 items, regarding health tips, and coping of COVID-19; for instance, “I try to refer to health professionals and can rely on physicians" and “I know how to get more information about COVID-19 prevention." This section is scored based on 4-point Likert responses. Accordingly, higher scores represent more seeking information related to COVID-19. All items obtained CVR and CVI values more than the related cutoff. The Cronbach's alpha coefficient for this scale was calculated as 0.80.

Social Support: There were 3 items about social support; for instance, " In a stressful situation, I have someone I can rely on and this calms me down"; " In the current stressful situation, my family, friends, and relatives support me and I can rely on their help and advice.” This section is also scored based on a 4-point Likert scale, with the higher score representing a higher level of perceived social support. No item was recommended to be removed according to the CVI and the CVR. The reliability was confirmed by the Cronbach alpha coefficient as 0.72.

Primary Appraisal: Primary appraisal is also defined as when an individual concentrates on the magnitude of an event or situation, possibly for harm (27). Interpretation of the stressful situation occurs in this phase. There were 5 questions about primary appraisal; for instance, “am I in a stressful situation, now or in the future, and in what way?” This section is scored based on a 4-point Likert scale. After confirming the content validity, using CVI and CVR, the Cronbach's alpha coefficient for this scale was obtained as 0.77.

Secondary Appraisal: Secondary appraisal is the individual’s evaluation of his or her ability in handling the event or situation (28). When a person's appraisal results in insufficient resources, he or she feels stressed. We developed 6 questions in this subscale. This section is scored based on a 4-point Likert scale. The Cronbach's alpha coefficient for this part was 0.78.

36-Item Quality of life Questionnaire

The 36-Item Short Form Health Survey Questionnaire (SF-36) is a popular instrument for the evaluation of the health-related quality of life. It includes 8 subscales entitled physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional, and mental health (29).The SF-36 reports QoL in 2 main sections, including mental and physical components, with a score ranging from 0 to100. We used the scores of the mental component of SF-36 for this study. The mental component of SF-36 includes vitality, social functioning, role emotional, and mental health subscales.

Conceptual Model

Our conceptual framework of the COVID-19 pandemic and mental health is provided in Figure 1. Primary appraisal, secondary appraisal, perceived stress, education,

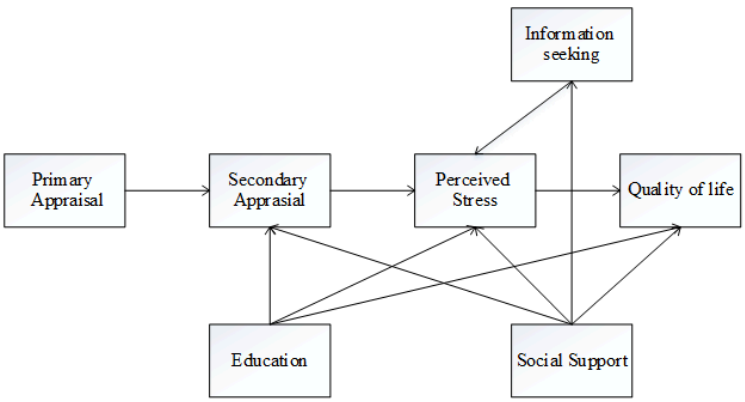

Fig. 1. Conceptual model of COVID19 pandemic and mental health in public population

[Downloaded from mjiri.iums.ac.ir on 2026-11-09]

[DOI: 10.47176/mjiri.36.106]

information seeking, and social support are independent variables for QoL both directly and indirectly in this model.

Statistical Analysis

The fitness of the conceptual model (Fig. 1) was assessed by path analysis to investigate the concurrent association of information-seeking behavior and social support with stress and mental QoL during the COVID-19 outbreak. Afterward, the correlation between variables was analyzed using Pearson's correlation coefficient, with significant levels set as $P \leq 0.05$. To assess the overall goodness-of-fit of a model, some appropriate indices were used including chi-square goodness-of-fit test (χ 2), the ratio of χ2 to degrees of freedom (χ2/df; acceptable value <5), the root mean squared error of approximation (RMSEA; acceptable value >0.05), the goodness-of-fit index (GFI; acceptable value >0.9), the comparative fit index (CFI; acceptable value >0.9 acceptable value >0.9), incremental fit indices (IFI; acceptable value >0.9), and the Normed Fit Index (NFI; acceptable value >0.9). Data were analyzed using Lisrel (Ver8) and SPSS-19 software.

Ethical Consideration

The current study was approved by the Ethics Committee of Alborz University of Medical Sciences (Ethical Code no. IR.ABZUMS.REC.088).

Results

The mean age of participants was 38.57 ± 7.68 years, and 70.74% of them were between 18 and 30 years old. Additionally, 89.50% of the participants were married. Other characteristics are represented in Table 1.

Relationship Between Variables

The univariate correlation between variables is shown in Table 2. A significant correlation was found between the variables and mental QoL, varying from 0.02 to 0.62. The strongest reverse correlation was also found between QoL and primary appraisal. The Pearson correlation coefficient has also shown that there was a positive and significant correlation between education and Qol (Table 2).

According to the path analysis results, among the variables relegated with QoL, perceived stress was the only variable that was associated with the direct path (β = 0.47), meaning that with every increase of 1 SD in perceived stress, the QoL increases by 0.47 unit (Fig. 2) The CFI, IFI, and GFI were calculated as 1. The χ^2/df was 4.87. and the RMSEA was calculated as 0.03. Educational level and social support variables from both direct and indirect paths through perceived stress impacted QoL. It was indicated that social support and perceived stress, through information seeking and secondary appraisal, had an impact on mental Qol (β = 0.499), respectively. Also, education had the strongest association with Qol and primary appraisal had the lowest association with Qol (Table 3). We found that R^2 was 0.92. Goodness-of-fit indices are presented in Table 4.

Discussion

Perceived stress, education level, and social support directly affected women's Qol during COVID-19. Education level and social support also affected Qol through indirect paths. Notably, stress is the subjective concept produced by uncontrollable events or threats. As it is established, the widespread outbreak of an infectious disease, such as COVID-19, is associated with psychological distress and

Table 1. Demographic characteristics of the participants (N = 581)

Variable	N (%)	Variable	N (%)
Educational level (year)		Self-reported heath	
<12	77 (11.7)	Very poor	3 (0.5)
12	296 (40.8)	Poor	8 (1.4)
14	80 (12.1)	Moderate	123 (21.2)
16	182 (27.6)	Good	340 (58.5)
>18	52 (7.6)	Very Good	107 (18.4)
Marital status			
Married	520 (89.5)		
Single/ divorced/ widow	61 (10.5)		

Table 2. Pearson correlation coefficients between study variables (N = 581)

	Age	Education	Information-seeking behavior	Social Support	Primary Appraisal	Secondary Appraisal	Perceived Stress	QoL
1.Age	1							
2. Education	-0. 02	1						
3.Information-seeking behavior	0. 21	-0.21	1					
4.Social Support	-0. 34	0.200	0.44*	1				
5.Primary Appraisal	-0. 62	-0.50	0.04	-0.15*	1			
6.Secondary Appraisal	-0.24	-0.24	0.18*	0.15*	0.14*	1		
7. Perceived Stress	0.27	-0.34	0.48	0.80	0.30*	-0.47	1	
8. QoL	-0.16	0.95*	0.56	0.16*	-0.60*	-0.12	-0.83*	1

*Correlation is significant at the 0.05 level (2-tailed)

[Downloaded from mjiri.iums.ac.ir on 2026-11-09]

[DOI: 10.47176/mjiri.36.106]

Table 3. Path coefficients for standardized variables

Independent Variable	Dependent Variable	Direct effect	Indirect effect	Estimated b	Total effect	*P*-value
Education	Quality of Life	0.45	0.336	0.501	0.786	<0.001
	Secondary Appraisal	0.74		0.6		
	Perceived stress	0.48		0.5		
Primary Appraisal	Secondary Appraisal	0.23		0.45		
Secondary Appraisal	Perceived stress	0.32		0.50		
Perceived stress	Quality of Life	0.47	-	0.5	0.47	
Information-seeking behavior	Perceived stress	0.29				
Social support	Quality of Life	0.25	0.249	0.45	0.499	
	Secondary Appraisal	0.41		0.5		
	Perceived stress	0.27		0.45		
	Information seeking behavior	0.44		0.43		

Table 4. Goodness-of-fit indices for the model

Fit Index	X^2	df	X^2/df	CFI	IFI	GFI	NFI	RMSEA
Model Index	39	8	4.875	1	1	1	0.99	0.3

NFI: Normed Fit Index; GFI: Goodness of Fit Index; IFI: Incremental fit indices; RMSEA: Root Mean Square Error of Approximation; X^2: Chi-Square

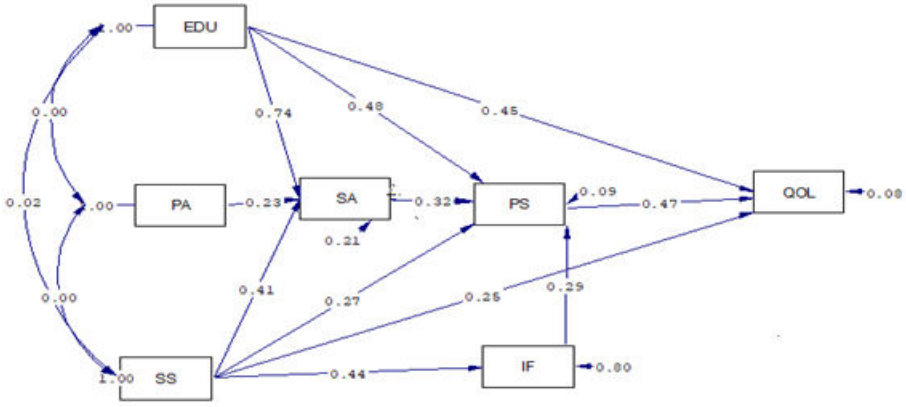

Fig. 2. Final Path analysis model. Final path analysis model of study variables on Qol
EDU: Education; PA: Primary Appraisal; SS: Social Support; SA: Secondary Appraisal; PS: Perceived Stress; IF: Information-Seeking behavior, QoL: Quality of Life

symptoms of mental illness (30). Stressful situations during COVID-19 outbreaks include perceived threat to life from COVID-19, movement restriction and lockdown, separation from family or friends, limited freedom, and fear of an uncertain future (31). Other stressors, include returning to work and lack of mental health services (32, 33). Additionally, restrictive conditions, such as quarantine, patient isolation, and social distancing, can also impact the psychological states of people (34-36).

In line with our finding, previous systematic review studies also reported that there is a reverse and significant association between perceived stress and QoL (37). Therefore, to improve mental health during the pandemic, it is recommended that online psychotherapy, such as internet-based cognitive behavior therapy and mobile applications, be used for improving mental health (38, 39).

Perceived social support significantly buffered the effects of stress only in women (40). Social support may be protective against depressive and PTSD symptoms during the COVID-19 Pandemic (41).

It is assumed that social support facilitates the primary and secondary reappraisal of stressful situations. Perceived social support significantly buffered the effects of stress from negative events on psychological health (42). It was found that social support and perceived stress, through information-seeking behavior with secondary appraisal had impacts on mental QoL, respectively. According to Uchino et al (2006), individuals who have more access to social support appear to have greater access to innovative and relevant health information compared with people who do not have adequate social support (43).

According to the Lazarus and Folkman definition, secondary appraisal is the ability to overcome a high-risk situation using some resources such as social support (18). Lazarus's definition of secondary appraisal confirms the results of this study on the impact of social support through secondary appraisal on QoL. According to a recent study, those who did not receive adequate support from family and friends were more likely to be stressed (44).

Our results indicated that education level had the strongest association with mental QoL, and it was also associated with QoL directly and indirectly and impacted QoL through perceived stress. Educational level has been presented as

[Downloaded from mjiri.iums.ac.ir on 2026-11-09]
[DOI: 10.47176/mjiri.36.106]

one of the leading predictors of QoL (45). Many studies have found a significant positive relationship between educational level and self-rated life satisfaction and Qol in different populations (46, 47). Moreover, having a higher educational level facilitates the process of accepting stressor situations (48).

However, in some studies, it is documented that educational level has an inverse effect on the individual QOL (49, 50). The roles of some social and cognitive mediating factors should also be considered in the association between sociodemographic status and perceived stress. Therefore, it is necessary to pay attention to the variety of sociodemographic characteristics on perceived stress during the COVID-19 pandemic. Studies documented that neighborhood fixed effects explained only an additional 1.5% to 2.5% of the variance of life satisfaction and more than14% of the variance explained by individual characteristics.

This study had some strengths and limitations. Accordingly, one of the major strengths was the fact that to the best of our knowledge, this was the first study to investigate the direct and indirect effects of stress and other variables on QoL among the public during the COVID-19 outbreak (51). The cross-sectional nature of the study limited casual inference. Thus, future studies should include longitudinal design to evaluate how the associations among related variables unfold over time. All variables were measured using self-report scales, which may lead to some potential bias (eg, selection bias and recall bias) in estimating relationships. This study mainly used item 2 of the SF-36 questionnaire to measure health status and did not make clinical diagnoses. The gold standard for establishing a psychiatric diagnosis involved a structured clinical interview and functional neuroimaging (52-54).

Conclusion

Perceived stress directly affects mental QoL. Social support from both direct and indirect paths impacted Qol. Providing all the requirements to support women can help them overcome their problems and improve their mental QoL.

According to the findings of this study, women can improve their quality of life by overcoming stress through social support. Furthermore, education showed the strongest link to mental well-being. In illiterate people, more attention should be paid to perceived stress and mental QoL.

Abbreviations

QoL: Quality of Life; CFI: Comparative Fit Index; IFI: Incremental fit indices; NFI: Normed-fit index; GFI: Goodness-of-fit statistic; RMSEA: Root mean square error of approximation; χ^2: chi-square.

Ethics Approval and Consent to Participate

The Ethics Committee of Alborz University of Medical Sciences (Ethical Code No. IR.ABZUMS.REC.088). All methods were performed in accordance with relevant guidelines and regulations. All participants agreed to participate in the study.

Acknowledgment

The authors would like to acknowledge all participants who took part in the study and the research deputy of Alborz University of Medical Sciences for financial support of this study.

Conflict of Interests

The authors declare that they have no competing interests.

References

1. Zhou F, Yu T, Du R, Fan G, Liu Y, Liu Z, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. Lancet. 2020;395(10229):1054-62.
2. Charsouei S, Esfahlani MZ, Dorosti A, Zamiri RE. Effects of COVID-19 Pandemic on Perceived Stress, Quality of Life, and Coping Strategies of Women with Breast Cancer With Spinal Metastasis Under Chemotherapy. Int. J. Women's Health Reprod. Sci. 2021:55-60.
3. Khademian F, Delavari S, Koohjani Z, Khademian Z. An investigation of depression, anxiety, and stress and its relating factors during COVID-19 pandemic in Iran. BMC Public Health. 2021;21(1):1-7.
4. Wang C, Chudzicka-Czupała A, Grabowski D, Pan R, Adamus K, Wan X, et al. The association between physical and mental health and face mask use during the COVID-19 pandemic: a comparison of two countries with different views and practices. Front Psychiatry. 2020;11:901.
5. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. Int J Environ Health Res. 2020;17(5):1729.
6. Tarsitani L, Vassalini P, Koukopoulos A, Borrazzo C, Alessi F, Di Nicolantonio C, et al. Post-traumatic stress disorder among COVID-19 survivors at 3-month follow-up after hospital discharge. J Gen Intern Med. 2021;36(6):1702-7.
7. Bruch E, Feinberg F. Decision-making processes in social contexts. Annu Rev Sociol. 2017;43:207-27.
8. García-Fernández L, Romero-Ferreiro V, Padilla S, David López-Roldán P, Monzó García M, Rodriguez-Jimenez R. Gender differences in emotional response to the COVID-19 outbreak in Spain. Brain Behav. 2021 Jan;11(1):e01934.
9. Wang C, Tripp C, Sears SF, Xu L, Tan Y, Zhou D, et al. The impact of the COVID-19 pandemic on physical and mental health in the two largest economies in the world: a comparison between the United States and China. J Behav Med. 2021:1-19.
10. Qiu J, Shen B, Zhao M, Wang Z, Xie B. Xu YJGp. A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations. General Psychiatry. 2020;33(2):e100213.
11. Shokri A, Moradi G, Piroozi B, Darvishi S, Amirihosseini S, Veysi A, et al. Perceived stress due to COVID-19 in Iran: Emphasizing the role of social networks. Med J Islam Repub Iran. 2020;34:55.
12. Mohammadi SM, Ashtari S, Khosh Fetrat M. The psychological impact of COVID-19 pandemic on mental health of Iranian population. Int J Travel Med Glob Health. 2020;9(1):19-24.
13. Shahriarirad R, Erfani A, Ranjbar K, Bazrafshan A, Mirahmadizadeh A. The mental health impact of COVID-19 outbreak: a Nationwide Survey in Iran. Int J Ment Health Syst. 2021;15(1):1-13.
14. Zhang Y, Ma ZF. Impact of the COVID-19 pandemic on mental health and quality of life among local residents in Liaoning Province, China: A cross-sectional study. Int. J. Environ. Res Public Health. 2020;17(7):2381.
15. Li F, Luo S, Mu W, Li Y, Ye L, Zheng X, et al. Effects of sources of social support and resilience on the mental health of different age groups during the COVID-19 pandemic. BMC Psychiatry. 2021;21(1):1-14.
16. Zandifar A, Badrfam R. Iranian mental health during the COVID-19 epidemic. Asian J Psychiatry. 2020;51.
17. Verity R, Okell LC, Dorigatti I, Winskill P, Whittaker C, Imai N, et al. Estimates of the severity of coronavirus disease. Lancet Infect Dis. 2019:30243-7.
18. Dedovic K, Wadiwalla M, Engert V, Pruessner JC. The role of sex and gender socialization in stress reactivity. Dev Psychol. 2009;45(1):45.

[Downloaded from mjiri.iums.ac.ir on 2026-11-09]

[DOI: 10.47176/mjiri.36.106]

19. Lazarus RS, Folkman S. Stress, appraisal, and coping: Springer publishing company; 1984.
20. Salehi L, Salaki S, Alizadeh L. Health-related quality of life among elderly member of elderly centers in Tehran. Iran J Epidemiology. 2012;8(1):14-20.
21. Kim W, Kreps GL, Shin C-N. The role of social support and social networks in health information–seeking behavior among Korean Americans: a qualitative study. Int J Equity Health. 2015;14(1):1-10.
22. Lim GY, Tam WW, Lu Y, Ho CS, Zhang MW, Ho RC. Prevalence of depression in the community from 30 countries between 1994 and 2014. Sci Rep. 2018;8(1):1-10.
23. Simone M, Lockhart G. Empirical sample size guidelines for use of latent difference score mediation. Struct Equ Model. 2019;26(4):636-45.
24. Cohen S, Kamarck T, Mermelstein R. Una medida global de estrés percibido. Salud Publica Mex.1983;24:385-96.
25. Safaei M, Shokri O. Assessing stress in cancer patients: Factorial validity of the perceived stress scale in Iran. Iran J Psychiatr Nurs. 2014.
26. Kelly KM, Andrews JE, Case DO, Allard SL, Johnson JD. Information seeking and intentions to have genetic testing for hereditary cancers in rural and Appalachian Kentuckians. J Rural Health. 2007;23(2):166-72.
27. Lewis SJ. A Crisis State Assessment Scale: Development and validation of a new instrument: The Florida State University; 2001.
28. Lazarus RS. Stress and emotion: A new synthesis: Springer publishing company; 2006.
29. Montazeri A, Haghighat S, Ebrahimi M. P-297/1099/the cancer fatigue scale (CFS): Translation and validation study of the Iranian version. Qual Life Res. 2005:2132.
30. Bao Y, Sun Y, Meng S, Shi J, Lu L. 2019-nCoV epidemic: address mental health care to empower society. Lancet. 2020;395(10224):e37-e8.
31. Al Dhaheri AS, Bataineh MaF, Mohamad MN, Ajab A, Al Marzouqi A, Jarrar AH, et al. Impact of COVID-19 on mental health and quality of life: Is there any effect? A cross-sectional study of the MENA region. PloS One. 2021;16(3):e0249107.
32. Tan W, Hao F, McIntyre RS, Jiang L, Jiang X, Zhang L, et al. Is returning to work during the COVID-19 pandemic stressful? A study on immediate mental health status and psychoneuroimmunity prevention measures of Chinese workforce. Brain Behav Immun. 2020;87:84-92.
33. Hao F, Tan W, Jiang L, Zhang L, Zhao X, Zou Y, et al. Do psychiatric patients experience more psychiatric symptoms during COVID-19 pandemic and lockdown? A case-control study with service and research implications for immunopsychiatry. Brain Behav. Immun. 2020;87:100-6.
34. Hao F, Tam W, Hu X, Tan W, Jiang L, Jiang X, et al. A quantitative and qualitative study on the neuropsychiatric sequelae of acutely ill COVID-19 inpatients in isolation facilities. Transl. Psychiatry. 2020;10(1):1-14.
35. Le XTT, Dang KA, Toweh J, Nguyen QN, Le HT, Toan DTT, et al. Evaluating the psychological impacts related to COVID-19 of Vietnamese people under the first nationwide partial lockdown in Vietnam. Front Psychiatry. 2020;11:824.
36. Tran BX, Nguyen HT, Le HT, Latkin CA, Pham HQ, Vu LG, et al. Impact of COVID-19 on economic well-being and quality of life of the Vietnamese during the National social distancing. Front Psychiatry. 2020;11.
37. Ribeiro Í. S., Pereira R., Freire IV, Oliveira BGD, Casotti CA, Boery E. Stress and quality of life among university students: a systematic literature review. Health Prof Educ. 2017;4:70-7.
38. Ho CS, Chee CY, Ho RC. Mental health strategies to combat the psychological impact of COVID-19 beyond paranoia and panic. Ann Acad Med Singapore. 2020;49(1):1-3.
39. Zhang MWB, Chow A, Ho RCM, Helen E ,Smith HE. Mobile applications for COVID-19 pandemic. An overview of commercially available apps in the initial months of the COVID-19 pandemic. Front Psychiatry. 2021;12:557299.
40. Szkody E, McKinney C. Appraisal and social support as moderators between stress and physical and psychological quality of life. Stress Health. 2020;36(5):586-95.
41. Woodhead EL, Northrop L, Edelstein B. Stress, social support, and burnout among long-term care nursing staff. J Appl Gerontol. 2016;35(1):84-105.
42. Szkody E, McKinney C. Appraisal and social support as moderators between stress and physical and psychological quality of life. Stress Health. 2020 Dec;36(5):586-95.
43. Uchino BN. Social support and health: a review of physiological processes potentially underlying links to disease outcomes. J Behav Med. 2006;29(4):377-87.
44. Savla J, Roberto KA, Blieszner R, McCann BR, Hoyt E, Knight AL. Dementia caregiving during the "stay-at-home" phase of COVID-19 pandemic. J Gerontol B Psychol Sci Soc Sci.2021 Apr;76(4):e241-5
45. Javed S, Javed S, Khan A. Effect of education on quality of life and well being. Int J Indian Psychol. 2016;3(3):119-28.
46. Silles MA. The causal effect of education on health: Evidence from the United Kingdom. Econ Educ Rev. 2009;28(1):122-8.
47. Khormehr M, Honarmandpour A, Adineh M, Jahangirimehr A, Shahvali EA. A Survey on the Relationship between Quality of life and Happiness among Children and Adolescents under the Supervision of Welfare Organization of Ahwaz in 2017. J Pharm Res Int. 2019;28(2).
48. Bak CK, Tanggaard Andersen P, Bacher I, Draghiciu Bancila D. The association between socio-demographic characteristics and perceived stress among residents in a deprived neighbourhood in Denmark. Eur J Public Health. 2012 ;22(6):787-92.
49. Powdthavee N. Putting a price tag on friends, relatives, and neighbours: Using surveys of life satisfaction to value social relationships. J Soc Econ Res. 2008;37(4):1459-80.
50. Shields MA, Price SW, Wooden M. Life satisfaction and the economic and social characteristics of neighbourhoods. J Popul Econ. 2009;22(2):421-43.
51. Olszewska-Guizzo A, Mukoyama A, Naganawa S, Dan I, Husain SF, Ho CS, et al. Hemodynamic Response to Three Types of Urban Spaces before and after Lockdown during the COVID-19 Pandemic. Int J Environ Health Res. 2021;18(11):6118.
52. Husain SF, Yu R, Tang T-B, Tam WW, Tran B, Quek TT, et al. Validating a functional near-infrared spectroscopy diagnostic paradigm for Major Depressive Disorder. Sci Rep. 2020;10(1):1-9.
53. Husain S, Tang T, Yu R, Tam W, Tran B, Quek T. Cortical haemodynamic response measured by functional near infrared spectroscopy during a verbal fluency task in patients with major depression and borderline personality disorder. EBioMedicine. 2020;51: 102586.
54. Ho CS, Lim LJ, Lim A, Chan NH, Tan R, Lee S, et al. Diagnostic and predictive applications of functional near-infrared spectroscopy for major depressive disorder: a systematic review. Front Psychiatry. 2020;11:378.

[Downloaded from mjiri.iums.ac.ir on 2026-11-09]

[DOI: 10.47176/mjiri.36.106]