

Effectiveness of COVID-19 Prevention Training on the Stress of Mothers of Premature Infants Admitted to the Neonatal Intensive Care Unit

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ARTICLE INFO

Article history:

Received 03 March 2025

Revised 24 March 2025

Accepted 07 April 2025

Keywords:

Premature infants;

Education;

Neonatal intensive care unit

ABSTRACT

Background: Delivery and assuming the parental role, especially for mothers, are often accompanied by anxiety and stress, conditions that are significantly aggravated by the birth of a premature infant. The aim of our study is to "determine the effect of COVID-19 prevention training on the stress levels of mothers with premature infants admitted to the NICU."

Methods: This is a quasi-experimental study. The sample consisted of 100 mothers (50 in the experimental group and 50 in the control group) of premature infants hospitalized in the Neonatal Intensive Care Unit (NICU). Participants were randomly assigned to the two groups. The experimental group received an educational program on preventing respiratory infection transmission, with a focus on the coronavirus, delivered through individual face-to-face sessions lasting between 45 to 90 minutes over three sessions. Data for both groups were collected in two phases, before and after the intervention, using a standard Parental Stress Scale questionnaire. Data were analysed using descriptive and analytical statistical tests and SPSS software.

Results: According to the findings of our study, the mean age of mothers in the control and intervention groups was 26.88 ± 0.32 and 27.10 ± 0.30 years, respectively ($T = -3.482$, $d = 9.98$, $P = 0.527$). Also, the mean age of infants in the control group was 34.90 ± 0.30 weeks and in the experimental group was 35.12 ± 0.52 weeks ($T = -2.582$, $d = 9.98$, $P = 0.114$). The overall stress score in the intervention group after the intervention (93.82 ± 7.15) significantly decreased compared to before the intervention (135.98 ± 0.51) ($P < 0.001$), and this significant decrease was also observed in all stress subscales ($P < 0.001$).

Conclusion: Finally, the findings of our study showed that mothers whose infants are hospitalized in the ICU experience high levels of stress. The COVID-19 prevention training leads to a significant reduction in mothers' stress.

Introduction

Delivery and assuming the parental role, especially for mothers, often come with anxiety and stress, a situation that is significantly exacerbated by the birth of a premature infant [1].

According to statistics, more than fourteen million babies born in a year are premature [2]. The WHO reported that more than 1 in 10 live births are preterm. This results in around 1 million neonatal deaths annually due to these premature births [3]. Premature infants face a high risk of diseases and developmental problems, with heavy reliance on their mothers and often requiring ICU

The authors declare no conflicts of interest.

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admission [2]. Consequently, the admission of the infant to these units brings about significant stress and concern for families, particularly for mothers [4]. Infants who need special care are admitted to the neonatal intensive care unit (NICU). This is where newborns with heart problems and other complications are often brought in for specialized care [5]. In some of these units, mothers are not allowed to hold their infants, breastfeed, or express their feelings towards their child, which leads to distress, stress, and anxiety for the mothers [6]. All of these factors, along with other external influences such as changes in parental roles, unexpected situations concerning the newborn, the noise of specialized equipment, fear of infection transmission, and more, significantly contribute to the stress of mothers of these infants. This stress should be addressed by the healthcare staff [7].

The global outbreak of severe acute respiratory syndrome (coronavirus) has been accompanied by mental health problems and disorders. The issues related to the coronavirus disease are well recognized, and its impact on individuals' psychological responses has been reported [8]. COVID-19 has heightened concerns regarding vulnerable groups in society, including pregnant women and infants [9]. Research in this area has shown that during the Coronavirus epidemic, the levels of stress among mothers concerning their own and their newborns' susceptibility to the disease increased [9-10]. The neonatal outcomes, including length of stay in the ward, the need for resuscitation immediately after birth and throughout the hospitalization, the requirement for intubation, and the need for chest tube placement, along with higher rates of neonatal mortality, asphyxia, and seizures during this period, were greater compared to before the COVID-19 pandemic [9]. This situation has intensified mothers' stress and, to some extent, reduced their interactions with their hospitalized infants.

In order to reduce stress for mothers and considering the significant impact that interactions between the mother and premature infant in the early hours and days of birth have on brain development as well as behavioral and emotional-social development, it is essential to provide mothers with necessary training on various topics related to the conditions and circumstances of their newborns as soon as possible after birth. Additionally, given the low cost and effectiveness of these educational programs, it is recommended that they be utilized as part of care strategies in neonatal intensive care units [2, 11]. Research shows that providing information and education about care tips to parents allows them to gain greater decision-making power, self-control, and empowerment, allowing them to better accept the appearance and problems of their premature and weak baby and thus actively participate in their care. Educating these mothers will increase their level of knowledge and performance in performing maternal behaviors and caring for their

babies, such as how to breastfeed, etc. Furthermore, it contributes to a reduction in negative behaviors towards infant [12]. The positive impact of educational programs on mothers with premature infants admitted to the NICU has also been reported in research. For example, Barekzaei et al. showed in a study that happiness-based education can reduce depression and anxiety in these mothers and help improve their physical and mental health. As a result, they recommended implementing educational programs alongside family-centered plans in health centers and emphasized the importance of including educational programs for mothers [13].

Given the ongoing presence of the coronavirus globally and the possibility of similar epidemics arising in the future, as well as extensive searches conducted by researchers, no studies in this area were found. Therefore, the aim of our study is to "determine the effect of COVID-19 prevention training on the stress levels of mothers with premature infants admitted to the NICU."

Methods

This is a quasi-experimental study. The sample consisted of 100 mothers (50 in the experimental group and 50 in the control group) of premature infants hospitalized in the Neonatal Intensive Care Unit (NICU). This study was conducted at Imam Khomeini Hospital in Tehran in 2021. To calculate the sample size using Cohen's formula, with a significance level of 0.05 and a power of 0.90, the number of participants was determined to be 85 mothers. However, to reduce the margin of error and increase the power of the study, a total of 100 people (50 in each group) were selected. For sampling, mothers were first selected using the convenience method and in the next stage, they were randomly assigned to two control groups (50 participants) and an experimental group (50 participants).

In this study, inclusion criteria included mothers who delivered at less than 37 weeks of gestation and delivered a premature infant, speaking Persian, not having a mental illness or taking medication, no previous NICU experience, infants hospitalized for more than one week in the NICU, and mothers who visited their infants more than once in the NICU setting. Exclusion criteria included a mother's request to withdraw from the study, psychological or physical problems during the infant's hospitalization, the infant's deterioration or development of sepsis, and incomplete questionnaire responses. Throughout the study, none of the participants were withdrawn.

After completing the questionnaires in both groups, coronavirus prevention training was provided to the target group (intervention group). This training program was conducted face-to-face, individually, and consisted of three sessions lasting 45 to 90 minutes for the mothers in the intervention group. Subsequently, an educational

booklet summarizing the training program was provided to them. The training program follows standard practices for infection prevention and control during the coronavirus epidemic and has been approved by the Ministry of Health. To ensure greater reliability, the validity of this educational program was evaluated and confirmed by five specialists in the field. Therefore, a behavioral-educational intervention based on two theories of self-regulation and control was developed for mothers, preparing them to understand the specific characteristics of this virus, as well as methods of transmission and prevention. Three days after completing the intervention, the Parenting Stress Questionnaire was filled out again by both groups. No training was provided to the control group by the researchers. After the post-test phase, in accordance with research ethics, the educational materials were also made available in written form to the control group.

Data was collected using demographic questionnaires (mother's age, occupation and education, gestational age, infant's gender, infant's weight, type of delivery, multiple pregnancies, history of infant death) and a standardized parental stress assessment questionnaire consisting of 34 items. This questionnaire was designed to investigate stressors in parents of premature infants in the NICU. The dimensions of this questionnaire are: stressors in the ward environment (including 6 items), physical characteristics and behaviors of the child (including 17 items), the parent-child relationship and the role of the parent (11 items). The Likert scale is 0 to 5 for scoring. If the parent has not experienced the question in question, a score of zero is given. One indicates having no experience of stress. Two indicates having experienced very little stress. Three indicates having experienced moderate stress. Four indicates having experienced severe stress. And finally, a score of 5 is given for having experienced very severe stress. The lowest and highest scores on this questionnaire are zero and 170. The higher a person's score, the higher the level of stress they experience [14]. This tool has been used in several studies in Iran that were similar to our study. The internal consistency of this questionnaire was reported and confirmed to be 0.87 in a study by Taheri et al. [15]. The psychometric properties of this instrument ($\alpha = 91\%$) were also evaluated and confirmed by Shoghi et al. [1].

All relevant ethical codes were adhered to by the researchers in this study. All mothers participated in the study with awareness of the details and without coercion.

All mothers entered the study consciously and with their full consent. The research units assured participants that their personal information would remain confidential. Additionally, mothers had the right to refrain from participating. No financial costs were imposed on them. They were given the opportunity to ask the researcher any questions or express any concerns. The results of the research were made available to relevant authorities upon request. Adherence to the principles of ethical publishing (COPE) was also among the researchers' commitments in this study. SPSS version 22 software was used. A $P < 0.05$ was the criterion. T-test and Chi-square statistical tests were used in this study.

Results

According to the findings of our study, the mean age of mothers in the control and intervention groups was 26.88 ± 0.32 and 27.10 ± 0.30 years, respectively ($T = -3.482$, $d = 9.98$, $P = 0.527$). Also, the mean age of infants in the control group was 34.90 ± 0.30 weeks and in the experimental group was 35.12 ± 0.52 weeks ($T = -2.582$, $d = 9.98$, $P = 0.114$) (Table 1).

The difference between the mean stress score and all its subscales (environmental stress, infant appearance and behavior, parental relationship and role) in the intervention group was significant after implementing COVID-19 prevention education ($P < 0.001$), while it was not significant at the beginning of the study and before implementing the education ($P > 0.05$) (Table 2).

The overall stress score in the intervention group after the intervention (93.82 ± 7.15) significantly decreased compared to before the intervention (135.98 ± 0.51) ($P < 0.001$), and this significant decrease was also observed in all stress subscales ($P < 0.001$). The results of this study in the control group showed that the overall stress score and two subscales (infant appearance and behavior, parental relationship and role) were not significant in the pre-intervention and post-intervention stages (Table 2).

Discussion

Based on the findings of the present study, stress scores and its subscales were significantly high in both groups of mothers before the intervention, indicating high maternal stress.

Table 1- Demographic characteristics of mothers

Variable		Intervention		Control		Statistical Test	P value
		(F*)	(%**)	(F)	(%)		
Education of Mother	Undergraduate	18	36	10	28	$\chi^2 = 4.409$, df=2	0.110
	Diploma	21	42	31	52		
	University	11	22	9	20		

Variable		Intervention		Control		Statistical Test	P value
		(F*)	(%**)	(F)	(%)		
Mother's Job	Housewife	42	84	36	78	Fisher's test	0.114
	Employed	8	16	14	22		
Type of Delivery	Cesarean	7	14	12	26	Fisher's test	0.105
	Natural	43	86	73	74		
Sex of the Baby	Girl	31	62	22	44	Fisher's test	0.054
	Boy	19	38	28	56		
Weight of the Baby (kg)	Under 1	4	8	8	16	$\chi^2=4.743$, df=2	0.093
	1-2	28	56	33	66		
	More than 2	18	36	9	18		
Previous History of Child Death	Yes	2	4	0	0	Fisher's test	0.247
	No	48	96	50	100		
Multiple Pregnancies	Singlets	0	0	1	1	Fisher's test	0.500
	Multiples	50	100	49	99		

* Frequency, **percentage

Table 2- The mean stress scores and its subscales

Group variable	Step	Intervention	Control	Statistical test* and P value
		Mean \pm SD	Mean \pm SD	
Environmental stressors	Pre-test	26.04 \pm 0.19	24.94 \pm 0.23	T=25.00, p=0.363 T=-75.84, p=0.007
	Post-test	17.84 \pm 0.73	26.04 \pm 0.19	
Paired t-test		t=76.70 , p=0.000	t=-18.67, P=0.000	
Appearance and behavior of the baby	Pre-test	61.98 \pm 0.31	64.18 \pm 1.57	T=-9.68, p=0.151 T=-15.90, p=0.000
	Post-test	47.30 \pm 6.80	63.54 \pm 2.42	
Paired t-test		t=15.22 , p=0.000	t=1.53, P=0.130	
Parent-infant relationship and parental role	Pre-test	47.96 \pm 0.19	49.02 \pm 0.31	T=-19.97, p=408 T= -126.83, p=0.000
	Post-test	28.68 \pm 1.11	49.00 \pm 0.20	
Paired t-test		t=140.58,p=0.000	t=0.44, P=0.659	
Total stress score	Pre-test	135.98 \pm 0.51	138.14 \pm 1.69	T=-8.64, p=0.151 T=-41.81, p=0.000
	Post-test	93.82 \pm 7.15	138.58 \pm 2.46	
Paired t-test		t=41.86, p=0.000	t=1.07, P=0.290	

*Df=98

Multiple studies have shown that mothers of premature infants who are admitted to the NICU experience significant levels of stress [16-19], which aligns with our study. The high stress levels in mothers can be attributed to several factors. In our culture, the primary responsibility for the care and upbringing of a child rests on mothers [20]. Transferring a baby to the NICU immediately after birth does not meet mothers' expectations [21]. After enduring the challenges of pregnancy and while anticipating a typical experience similar to that of other mothers, they find themselves in the situation of having a child who differs significantly in weight and physical condition from healthy infants, along with a low likelihood of survival, which leads to considerable anxiety and stress for them [16]. Heidarzadeh et al. (2019) reported a high level of stress among this mothers. Contributing factors include mothers' unfamiliarity with the unit and its equipment, a lack of caregiving skills for their hospitalized premature infants as well as post-discharge, and their non-

participation in caring for their infants while in the unit. By addressing these issues, the stress levels of mothers can be significantly reduced [17]. In this regard, Beheshtipour et al. (2014) stated that while fathers' stress is less than mothers', both parents experience significant stress when faced with a premature infant. They require information about their child and the environment in which they are admitted, especially from the healthcare team, particularly nurses [18]. A primary reason for the elevated stress levels among mothers in this study may be the prevalence of the COVID-19 epidemic and its peak during the study period.

Therefore, the mean stress score (test group: 135.9 and control group: 138.1) in our study was higher than other Iranian studies that used this questionnaire (like our study). For example, the mean total stress score in Shoghi et al.'s study (in the intervention group; 120.9 and control; 116.2) [1] and in the study by Barzegar et al. (in the intervention group; 93.8 and control; 97) [9] and also this mean in the study by Khoramirad et al. (81.6) were lower

than in the present study [22]. According to the results of this study, in the control group, the average stress score regarding environmental stress factors in the section significantly increased over time (from the beginning to the end of the study, based on the results in (Table 2). In contrast, other similar studies did not show any change in this aspect, or they even reported a reduction [1, 9, 22]. It can be noted that during the time this study was conducted, the COVID-19 epidemic and peak infections were prevalent in Iran. Therefore, the increase in stress in this context may be attributed to the anxiety and concerns of mothers regarding the possibility of contracting COVID-19 themselves or having their newborns infected, especially due to the prolonged hospital stay. Bajani et al. (2024) conducted a study on mothers of premature infants who were admitted to the NICU during the COVID-19 pandemic. The results indicated significantly elevated stress levels in these mothers [19], aligning with the present study. The COVID-19 pandemic has presented numerous challenges to many healthcare systems, particularly in intensive care units, for both staff and patients, thereby threatening their health and well-being [23]. The results of the study by Aldini Ardakani et al. (2024) conducted a study on the coronavirus epidemic. The results indicated that the virus's prevalence caused significant psychological problems for individuals. Furthermore, the rate of depression was considerably higher in women than in men. This difference is related to psychological, social, and biological factors. Changes in gonadal hormones and the pituitary-hypothalamic-ovarian axis during pregnancy, childbirth, and breastfeeding in the onset of depression-specific syndromes in women. Therefore, considering the uncertainty regarding the end of the coronavirus epidemic, it is recommended to provide various forms of group education to enhance their quality of life and adapt to the altered and new lifestyle resulting from COVID-19 [24]. In this context, Barzgar et al. (2024) reported in a study titled "Maternal and Neonatal Outcomes Before and During the COVID-19 Pandemic" that the Apgar score of newborns decreased significantly, while neonatal mortality and asphyxia at birth notably increased during this time. Given that neonatal outcomes have worsened during the COVID-19 pandemic compared to pre-pandemic times, providing accurate prenatal care, essential education, and thorough fetal monitoring and care is crucial [9].

Our study results in the post-training phase showed a significant difference in total stress scores and its subscales between the two groups. In other words, it indicates the effective impact of COVID-19 prevention training on mothers. Due to the lack of similar studies, related research was used to develop the discussion in this study. A study by Shomaliahmadabadi et al. (2022) on mothers of premature infants revealed that an educational program significantly reduced maternal stress, which aligns with our findings. The researchers noted that the lack of competencies and necessary skills to effectively cope with new and challenging situations intensified the

mothers' stress. Indeed, part of the stress they experienced stemmed from a lack of correct knowledge and ineffective beliefs, while the other part resulted from not knowing the skills needed to handle stressful situations. Therefore, providing an educational package to mothers helped modify their attitudes towards their circumstances, increased their awareness of stress-inducing and stress-relieving factors, identified negative thoughts and cognitive distortions, and replaced negative thoughts with logical reasoning [16]. Heydarzadeh et al. (2019) reported in a study on mothers with premature babies that reducing mothers' stress by designing appropriate educational programs to familiarize them with the conditions and environment and involving mothers in caring for the infant not only alleviated parental stress but also reduced the risk of the infant being readmitted to the unit [17]. Begjani et al. (2024) reported in a study during the coronavirus epidemic that mothers of premature infants suffered from high stress. Practicing mindfulness exercises can be effective in reducing stress for mothers, so it was recommended to the managers of health centers to add interventions to the care program and consider classes for teaching and implementing mindfulness exercises to improve the mental state and reduce stress in mothers in intensive care units [19]. The results of other studies on the stress of mothers with premature infants who were hospitalized in the NICU for various reasons, such as the study by Khormirad et al., entitled "Developmental care combined with mindfulness on maternal stress" [22], Barzegar et al., entitled "Mother-infant visual communication as a guide to mother-colleague visual communication on maternal stress" and Shoghi et al. [1] showed that implementing educational programs significantly reduces maternal stress, which is consistent with the our study.

Strengths and Limitations

Given the ongoing coronavirus pandemic and the need for research in this field, conducting this study is a strength. A limitation of the present research was the poor cooperation of some participants due to the coronavirus situation and high stress levels. However, this limitation was overcome by selecting an appropriate time (early morning) for training sessions, providing sufficient information, and answering their questions, thereby obtaining informed consent, after which the participants cooperated as required.

Conclusion

Finally, the findings of our study showed that mothers whose infants are hospitalized in the ICU experience high levels of stress. Also, Corona prevention education significantly reduced mothers' stress. Therefore, implementing an educational program and planning for mothers' participation in caring for their infants is recommended to improve their psychological state and reduce their stress. It is recommended that more research

be conducted on mothers of premature infants in other regions of Iran and other countries. It is also recommended to conduct similar research on other stressors in parents (mothers and fathers).

Acknowledgment

The ethics code for this article is IR.TUMS.MEDICINE.REC.1399.652. We would like to thank all mothers and the treatment team for their cooperation in conducting this study.

References

- [1] Shoghi M, Heidari Rohban A, Kheradmand M. Evaluation of peer education on parental stress and situational anxiety in mothers of premature infants hospitalized in NICU. *J Mazandaran Univ Med Sci*. 2024;34(234):101-13.
- [2] Hendy A, El-Sayed S, Bakry S, Mohammed SM, Mohamed H, Abdelkawy A, et al. The stress levels of premature infants' parents and related factors in NICU. *SAGE Open Nurs*. 2024; 10:23779608241231172.
- [3] World Health Organization. Preterm birth [Internet]. 2023 [cited 2024]. Available from: <https://www.who.int/news-room/fact-sheets/detail/preterm-birth>
- [4] Goral E, Geçkil E. The effect of a comprehensive support program on the stress level of mothers in a neonatal intensive care unit. *Nurs Pract Today*. 2021;9(1):54-61.
- [5] Williams KG, Patel KT, Stausmire JM, Bridges C, Mathis MW, Barkin JL. The neonatal intensive care unit: Environmental stressors and supports. *Int J Environ Res Public Health*. 2018;15(1):60.
- [6] Ma RH, Zhang Q, Ni ZH, Lv HT. Transitional care experiences of caregivers of preterm infants hospitalized in a neonatal intensive care unit: A qualitative descriptive study. *Nurs Open*. 2021;8(6):3484-94.
- [7] Ramkumar V, Nagarajan R, Shankarnarayan VC, Kumaravelu S, Hall JW. Implementation and evaluation of a rural community-based pediatric hearing screening program integrating in-person and tele-diagnostic auditory brainstem response (ABR). *BMC Health Serv Res*. 2019;19(1):1.
- [8] Wang C, Horby PW, Hayden FG, Gao GF. A novel coronavirus outbreak of global health concern. *Lancet*. 2020;395(10223):470-3.
- [9] Barzegar M, Salmei S, Kamiab Z. Neonatal and maternal outcomes before and after COVID-19 pandemic: A cross-sectional study. *JRUMS*. 2024;23(2):157-68.
- [10] Abedzadeh-Kalahroudi M, Karimian Z, Nasiri S, Khorshidifard MS. Anxiety and perceived stress of pregnant women towards COVID-19 disease and its related factors in Kashan (2020). *Iran J Obstet Gynecol Infertil*. 2021;24(5):8-18.
- [11] Barzegar M, Janmohammadi S, Seyed Fatemi N, Mehran A. The effect of video interaction guidance of mother-infant interaction on stress in mothers with premature neonates in Neonatal Intensive Care Units. *JPEN*. 2019;5(2):68-74.
- [12] Asadi Noghabi F, Yousefi M, Golalipour E, Zarei A, Yousefi H, Amini E. The effect of educational intervention based on Bandura's social cognitive theory on breastfeeding behaviors of mothers with premature infants: A quasi-experimental study. *J Prev Med*. 2022;9(3):256-67.
- [13] Barezaei F, Navidian A, Rezaee N. The effect of Fordyce happiness training on the depression of the mothers of premature infants admitted to the neonatal intensive care unit. *Iran J Nurs*. 2020;33(124):1-12.
- [14] Miles MS, Funk SG, Carlson J. Parental Stressor Scale: neonatal intensive care unit. *Nurs Res*. 1993;42(3):148-52.
- [15] Taheri M, Nikfarid L, Farahani AS, Shakeri N. The effect of a peer-group support intervention program on the tensions of mothers with premature neonates admitted to the intensive care units in Babol, Iran. *Adv Nurs Midwifery*. 2019;28(1):15-9.
- [16] Shomaliahmadabadi M, Tavangar H, Dehghani K. Effect of stress management training on stress and anxiety level of the mothers of premature infants admitted to NICU. *Payesh*. 2022;21(2):163-71.
- [17] Heidarzadeh A, Azizzadeh Forouzi M, Taheri Z, Dehghan M. Study of effect of educational program on stress of parents of premature infants in neonatal intensive care units: A clinical trial. *JPEN*. 2019;5(4):18-25.
- [18] Beheshtipour N, Baharlu SM, Montaseri S, Razavinezhad Ardakani SM. Comparison of parental stress in premature infants admitted in neonatal intensive care unit (NICU). *Sadra Med J*. 2014;2(4):361-8.
- [19] Begiani J, Khoshnavay Fomani F, Asadi N, Ranjbar H, Rajabi MM. The effect of mindfulness exercises on stress of mothers with premature infant: A quasi-experimental study. *IJNR*. 2024;19(2):1-11.
- [20] Pandey D, Dubey P. Mediating effect of social support on stress among parents of children with intellectual disability. *Indian J Public Health Res Dev*. 2019;10:57-67.
- [21] Zeraati H, Nasimi F, Ghorbanzadeh M, Sarani A. Effects of a quiet time protocol implementation on respiratory rate and SpO2 in preterm infants. *Shiraz E Med J*. 2019;20:e83748.
- [22] Khoramirad A, Ansari Shahidi M, Rezaii Jamaloi H, Sadeghimoghaddam P. The effect of mindfulness-based developmental care on maternal stress and bonding with premature infants hospitalized in NICU. *Qom Univ Med Sci J*. 2020;14(1):61-73.
- [23] Neto MLR, Almeida HG, Esmeraldo JD, Nobre CB, Pinheiro WR, De Oliveira CR, et al. When health professionals look death in the eye: The mental

health of professionals who deal daily with the 2019 coronavirus outbreak. *Psychiatry Res.* 2020;288:112972.

[24] Aldini Ardakani TS, Amiri B, Amiri B, Marvastinia

G. Investigating the depression of women at reproductive age during the COVID-19 pandemic: A narrative review. *J Prev Med.* 2024;11(1):8-19.