

## Correlation between the General Health and Self-efficacy of Mothers with Premature Neonates

Hadian Shirazi Z.<sup>1</sup> PhD, Ghaedi M.H.<sup>2</sup> MSc, Sharifi N.<sup>1</sup> PhD, Soltanian M.\*<sup>1</sup> PhD

<sup>1</sup> "Community Based Psychiatric Care Research Center" and "Department of Nursing, School of Nursing and Midwifery", Shiraz University of Medical Sciences, Shiraz, Iran

<sup>2</sup> "Student Research Committee" and "Department of Nursing, School of Nursing and Midwifery", Shiraz University of Medical Sciences, Shiraz, Iran

### Abstract

**Aims:** The birth of a premature neonate and separation from the family due to hospitalization in the neonatal intensive care unit lead to tension in the parents, especially the mother. The aim of the present study was to determine the correlation between general health and self-efficacy of mothers with premature neonates admitted to the hospitals affiliated to Shiraz University of Medical Sciences.

**Instruments & Methods:** This descriptive-correlational study was performed on 100 mothers whose premature neonates were hospitalized in NICUs of Hafez, Namazi and Hazrat Zeinab hospitals in Shiraz City in 2018.

Data were collected through demographic, self-efficacy and general health questionnaires and analyzed by SPSS 25 software. The correlation between general health and self-efficacy of mothers was measured using Pearson correlation test.

**Findings:** The mean scores of mothers' self-efficacy and general health were  $63.60 \pm 13.17$  and  $28.13 \pm 16.96$ , respectively. 50% of the mothers had no general health problem. 31%, 11% and 8% of the mothers suffered from mild, moderate and severe levels of general health problem. The correlation between the mean scores of general health ( $r = -0.903$ ) and its subscales with the mean score of mothers' self-efficacy was inverse and significant ( $p < 0.001$ ).

**Conclusion:** There is an inverse correlation between mothers' self-efficacy and their general health. Therefore, with the increase of physical problems, anxiety, social isolation and depression, their self-efficacy decreases.

### Keywords

Self-efficacy [<https://www.ncbi.nlm.nih.gov/mesh/68020377>];

Mental Health [<https://www.ncbi.nlm.nih.gov/mesh/68008603>];

Neonatal Intensive Care Unit [<https://www.ncbi.nlm.nih.gov/mesh/68007363>];

Neonate [<https://www.ncbi.nlm.nih.gov/mesh/68007231>]

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\*Corresponding Author

Tel: +98 (71) 36474254

Fax: +98 (71) 36474252

Post Address: Community Based Psychiatric Care Research Center, Shiraz University of Medical Sciences, Shiraz, Iran.

Postal Code: 71936-13119

Email: [soltanian@sums.ac.ir](mailto:soltanian@sums.ac.ir)

Received: April 4, 2022

Accepted: August 15, 2022

ePublished: October 6, 2022

## Introduction

Pregnancy is a highly stressful event for mothers, and problems such as depression, isolation, irritability, sleep and sexual disorders are common during this period [1]. The birth of a newborn is critically important for parents, because the family is usually overwhelmed with preparations and upcoming events. Nonetheless, when a baby with special care needs is born, family expectations suddenly turn into unpleasant and paradoxical experiences [2].

In recent years, medical technologies have advanced with respect to fertility methods, premature neonates care, the facilities and technologies for their birth and survival [3]. Annually, 15% of neonates have to be admitted to The Neonatal Intensive Care Units (NICUs), globally. The delivery of premature neonates constitutes 8-10% of the whole number of deliveries. Prematurity is known as one of the most important causes of infant mortality worldwide. The proportion of premature neonates to the whole born neonates in Australia, England and the USA are 7, 10, and 13.5%, respectively [4, 5]. This proportion in Iran, as a country with a high rate of premature birth, is 10% [6].

Prematurity of neonates and their admission to the NICU lead to their separation from the family, which causes stress amongst family members [7]. This can also result in disturbing mothers' thought capabilities, which deteriorates maternal tension [8]. Nystrom and Axelsson' study showed that these mothers are overwhelmed with sorrow and incapability of providing care for their newborns in critical conditions. They also experience loneliness, frustration, powerlessness, confusion, and severe mental pressure [9].

Do Vale *et al.* reported that parents with premature neonates admitted to the NICUs may face problems such as fear, the risk of disturbance in neonate-mother attachment, the paradox in playing the parent roles and not providing the care-giver's roles efficiently [10]. Nystrom and Axelsson [9] and Davis *et al.* [11] revealed that the changes in the parent's role and separation from neonates were the main source of mother's stress. Studies have indicated that the level of stress of these mothers is the same as that of mothers having children with cancer [12]. They also had less self-confidence to play their parental role [13]. This can lead to the incapability to take care of the neonates and increase their stress and depression [14]. Mothers who are separated from their neonates instantly after delivery experience high stress, anxiety and depression. This negatively affects their cognitive and decision-making abilities, which leads to stress and lack of self-efficacy in caring for the neonate [9, 15]. Effective caregiving meets the mother's self-efficacy needs [16]. This concept was first presented by Bandura as one of the

main constructs of Social Learning Theory. In fact, parents' self-efficacy is the ability to organize and play their roles in relation to their offspring [17].

The condition of the premature neonate disrupts the mother's self-efficacy by inducing feelings of guilt and inefficiency in the role of mother. Hence, mother's quality of life decreases in this chain of events [18]. The sense of self-efficacy leads to determined effort, resistance and flexibility. People with high level of self-efficacy believe that they have control over the life matters. They also have higher expectations [19]. A study showed that self-efficacy leads to increase the mother-neonate interaction [20]. Another study showed that mothers with neonates in the NICU had lower self-efficacy during feeding than mothers with healthy neonates [21]. Maghrebi *et al.*, reported that the mothers with low level of self-efficacy showed less sensitivity to their neonate's care. They were more incapable compared to mothers who had higher self-efficacy and a more intimate relationship with their babies [22].

As mentioned before, the birth of premature neonates causes problems such as stress, anxiety, feeling of guilt and depression in the involved mothers. Numerous studies have shown that mothers' self-efficacy is likely to be affected by these problems. Researchers have emphasized the importance of revealing the relationship between maternal self-efficacy and their general health [23], but researchers have not found any relevant evidence. Therefore, the aim of the present study was to determine the correlation between general health and self-efficacy of mothers with premature neonates admitted to the hospitals affiliated to Shiraz University of Medical Sciences.

## Instrument and Methods

This descriptive-correlational study was performed on 100 mothers whose premature neonates were hospitalized in NICUs of Hafez, Namazi and Hazrat Zeinab hospitals in Shiraz City in 2018.

The sample size was determined based on Solhi *et al.*'s study [24] and with the following characteristics:  $r=0.3$ ,  $\beta=0.2$ ,  $\alpha=0.05$ , and attrition rate=10%. After collecting the data from 100 mothers and analyzing them, sampling was stopped due to data saturation. The inclusion criteria of the study consisted of the birth of neonate in weeks 32-37 of gestation, mothers' willingness to participate in the study, having at least primary school education level, ability to speak Farsi, being Iranian, receiving no mechanical respiration by the neonate, passing 48 hours since neonate admission to the NICU, and stability in the clinical condition of the neonate. The exclusion criteria included the occurrence of any unexpected events in the family, having a history of abortion or stillbirth, history of infertility in mother, history of any psychological problems in mother, poor condition of neonate and his/her need to

connect to mechanical respiration, and the of mother's unwillingness to participate in this project. Data were collected through demographic, self-efficacy and general health questionnaires. Demographic questionnaire included the mother and neonate information.

**Perceived Maternal Parenting Self-Efficacy (PMP S-E):** The self-efficacy questionnaire designed by Adamsson-Mascedo in 2007 was used to examine parents' perceived self-efficacy. This instrument measures parents' perception of their ability to care for a premature neonate. It also assesses their sensitivity to the different levels of care to be provided to the premature neonate. Its validity and reliability were measured by Adamsson-Mascedo *et al.* in 2007. Internal consistency was tested among 160 cases and Cronbach's alpha was 0.91. This questionnaire has 4 items including care processes (4 questions), motivating behaviors (7 questions), perception of behaviors and messages (6 questions), and situational beliefs (3 questions). The range of scores was 20-80 and a higher score indicates higher levels of self-efficacy [25]. The validity of PMP S-E was measured by three methods of exploratory factor analysis, comparison of contrasted groups and divergent validity. The validity and reliability of this questionnaire was confirmed in Iran and Cronbach's alpha was 0.97 for the translated version by Aliabadi *et al.* [26].

**General Health questionnaire (GHQ):** The General Health Questionnaire is a self-reported "screening tool" that is used in clinical records to study people with mental health problems. Therefore, its objective is not to achieve a special diagnosis according to psychiatric categories. It is designed to distinguish mental disorders from health status. Its 28-question form is appropriate for all individuals in society. This instrument has four subscales including physical signs, anxiety and insomnia, social isolation and depression. Scores of 0 to 3 were specified for options A to D. Hence, the score can be considered from 0 to 21. The total score can be obtained from 0-84. The lower score represents higher level of mental health.

More than 70 studies since 1988 have confirmed the validity of this questionnaire. The meta-analysis of these investigations have shown that the average sensitivity and specificity of this questionnaire was 82-84% [27]. The validity coefficient of the 28-question version of this questionnaire achieved 0.91 by retest method in 7 to 10 episodes over 80 studied cases. Yaghoubi *et al.* [28] reported the total validity coefficient of 0.88 and the validity coefficient of the subscales between 0.50 and 0.81. The reliability of this questionnaire based on internal consistency (Cronbach's alpha) was obtained as 0.85, 0.78, 0.79 and 0.91 respectively for physical signs, anxiety-insomnia, social isolation and depression. The reliability of the whole questionnaire in the mentioned research was 0.85 [27].

After referring to the hospitals, the permission to enter NICUs was received. Next, the researcher introduced himself to willing participants and explained the study objectives. Participants completed written informed consent forms. The researcher described how to fill them. Finally, participants were assured that their data are confidential and that they could leave the study whenever they wished.

The collected data were analyzed by SPSS 25 software. Data were presented as mean, standard deviation, frequency and percentage. The correlation between general health and self-efficacy of mothers was measured using Pearson correlation test.

## Findings

The mean age of mothers was 29.36±5.73 years old. The mean delivery age of mothers was 31.65±2.77 weeks. Also, the mean weight of the premature neonates was 162.70±562.95 grams. Frequency distribution of demographic characteristics of mothers and infants is presented in Table 1.

**Table 1)** Frequency distribution of demographic characteristics of mothers and neonates

Characteristics	No. (%)
<b>Neonate gender</b>	
Male	47 (47.0)
Female	53 (53.0)
<b>Delivery type</b>	
Caesarean section	80 (80.0)
Normal Delivery	20 (20.0)
<b>Birth turn</b>	
First	45 (45.0)
Second	27 (27.0)
Third and more	20 (20.0)
No answer	8 (8.0)
<b>Educational level of mother</b>	
Undergraduate	35 (35.0)
Postgraduate	61 (61.0)
MS and PhD	4 (4.0)
<b>Occupation</b>	
Housewife	82 (82.0)
Clerk	13 (13.0)
Business	5 (5.0)

The mean score of mothers' general health was 28.13±16.96. The highest and lowest mean of the subscales were related to anxiety-insomnia and depression, respectively (Table 2). 50% of the mothers had no general health problem. 31%, 11% and 8% of the mothers suffered from mild, moderate and sever levels of general health problem.

There was an inverse correlation between general health and maternal age ( $r=-0.245$ ;  $P=0.008$ ), neonate weight ( $r=-0.448$ ;  $P<0.001$ ) and delivery type ( $r=-0.191$ ;  $P=0.008$ ). However, there was no correlation between general health and some demographic variables including neonate gender, birth turn, and mothers' education and occupation.

The mean score of mothers' self-efficacy was  $63.60 \pm 13.17$ . There was a direct correlation between mothers' self-efficacy with maternal age ( $r=0.254$ ;  $P=0.006$ ) and neonate weight ( $r=0.457$ ;  $P<0.001$ ). However, no significant correlation was reported between mothers' self-efficacy with neonate gender, birth turn, and mothers' education and occupation.

The correlation between the mean scores of general health and its subscales with the mean score of mothers' self-efficacy was inverse and significant ( $p<0.001$ ; Table 2).

**Table 2)** The mean scores of general health and its subscales and their correlation coefficients with the mean score of mothers' self-efficacy

Subscales of general health	Mean $\pm$ SD	Correlation coefficient
Physical signs	6.46 $\pm$ 4.57	-0.861*
Anxiety-insomnia	9.25 $\pm$ 5.06	-0.835*
Social isolation	7.94 $\pm$ 4.55	-0.780*
Depression	4.69 $\pm$ 4.29	-0.886*
General health	28.13 $\pm$ 16.96	-0.903*

\* $p<0.001$

## Discussion

The aim of this study was to determine the correlation between general health and self-efficacy of the mothers with premature neonates.

In present study, there was a reverse correlation between mothers' general health and some variables including mother age, neonate weight and the delivery type. In other words, the older mothers who had neonates with higher weight were mentally healthier, which is in line with the study of Garousi *et al.* [29].

The present study revealed that there was a correlation between mothers' self-efficacy and two variables of mother's age and neonate weight. Nursan *et al.* reported that there is no relation between mothers' self-efficacy in breast feeding with variables, such as mother age, education level, economic status and delivery type. Nonetheless, the mean self-efficacy score of mothers who received education was higher than that of mothers who did not receive education [30].

According to the findings, 8, 11 and 31% of the studied mothers suffered from severe, moderate and mild mental problems. The birth of premature neonate leads to stress and mental and physical problems for mothers [31]. A study by Heydarpoor *et al.* showed that mothers whose neonates were hospitalized in NICU suffered from moderate level of anxiety [32]. Mothers in Trumello *et al.*'s study had high levels of anxiety and depression [33]. The findings of several studies showed the impact of premature neonate on mothers' mental health.

There was a negative correlation between mothers' self-efficacy and their general health. In other words,

if the score of general health was higher, the self-efficacy in taking care of baby was lower. Studies by Solhi *et al.* and Afrooz and Motamedi also reported the same results [24, 34]. The present study investigated the correlation between self-efficacy and general health of mothers with premature neonates; however, as far as we know, there are no similar studies.

There was a significant correlation between the subscales of general health and mothers' self-efficacy. This means that with the increase in physical problems, anxiety, social isolation and depression, their self-efficacy decreased. Marzabadi *et al.* studied the relationship between physical and mental health with self-efficacy. Their results showed that there is a positive correlation between physical and mental health with self-efficacy. In other words, sufferings, distresses and psychophysical pressures leads to decline of self-efficacy [35]. Khoshnevisan and Afrooz showed that there is an inverse correlation between self-efficacy with depression, anxiety and stress in high school students in Tehran [36]. Ahmadi *et al.* found that self-efficacy has a significant positive relationship with social support and when social support increases and social isolation is limited, self-efficacy advances [37]. Schwartzer and Luszynska showed that self-efficacy has a negative correlation with anxiety, depression, stress, mental depression and physical complaints and a positive correlation with self-esteem, optimism and positive emotions [38]. The results of Muris reported that a low level of self-efficacy is negatively correlated with depression and anxiety [39]. Hence, it can be stated that social support and decrease in depression and anxiety help people to experience less tension by being able to resist mental disturbance. In addition, the negative correlation between self-efficacy and all subscales of general health showed that mothers who believed in their abilities were less likely to suffer from mental disorders.

According to the findings of the present study and the reported correlation between general health and self-efficacy of mothers, it is suggested to design an intervention and educational program. As a result, measures such as psychological counseling are recommended to improve the health of mothers. This can be conducted by involving the mothers in neonates' care based on the philosophy of care process in pediatric wards. These measures can affect the health of mothers and neonates admitted to the NICU.

This study was correlational, so it could not exactly determine the effect of general health on the self-efficacy of mothers with hospitalized premature neonates. It is recommended to design interventional studies to investigate the effect of psychological support on the self-efficacy of mothers with premature newborns hospitalized in the neonatal intensive care units.

## Conclusion

There is an inverse correlation between mothers' self-efficacy and their general health. Therefore, with the increase of physical problems, anxiety, social isolation and depression, their self-efficacy decreases.

**Acknowledgements:** It is greatly appreciated moral and financial support provided by Research chancellor of Medical Sciences of Shiraz University. In addition, the studied mothers and the staff of the hospitals in which this project was carried out were acknowledged. The authors wish to thank Mr. H. Argasi at the Research Consultation Center (RCC) of Shiraz University of Medical Sciences for his invaluable assistance in editing this manuscript.

**Ethical Permission:** This study was approved by local Research Ethics Committee of Shiraz University of Medical Sciences (No: IR.SUMS.REC.1397.941). The serial number of present research is 97-01-08-18209 affirmed by Postgraduate Council of Shiraz University of Medical Sciences.

**Conflict of Interests:** The authors declared no conflict of interest.

**Authors' Contribution:** Hadian Shirazi Z. (First author), Introduction author/ Methodologist/ Original researcher/ Discussion author (25%); Ghaedi M.H. (Second author), Introduction author/ Assistant/ Discussion author (25%); Sharifi N. (Third author), Methodologist/ Statistical analyst/ Discussion author (25%); Soltanian M. (Fourth author), Introduction author/ Methodologist/ Original researcher/ Discussion author (25%)

**Funding:** This study was financially supported by the Research Chancellor of Medical Sciences of Shiraz University.

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