

The Predictors for Maternal Self-efficacy in Early Parenthood

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ABSTRACT

Background & aim: Many parents do not believe in their ability to fulfill their parental responsibilities. Parental self-efficacy is crucial to parents' sense of well-being and is considered a predictor for quality of life. However, evidence is scarce on the factors that influence parents' perception of efficacy. Therefore, this study aimed to investigate the predictors for parental self-efficacy in the early postpartum period.

Methods: This descriptive analytical study was conducted on 150 primiparous women referring to the health care centers of Mashhad during their early postpartum months. For data collection, we used demographic questionnaires, Bates' Infant Characteristics Questionnaire (ICQ), Scale of Perceived Social Support, Reece's parent expectations survey (PES), and Edinburgh Postnatal Depression Scale (EPDS). For data analysis, independent T-test, one-way ANOVA, Pearson's correlation coefficient, and stepwise regression were performed, using SPSS version 16.

Results: In this study, a significant association was observed between self-efficacy scores and the parents' income, educational status, depression, and infant's gender. Furthermore, there was a significant correlation between self-efficacy scores and infant's characteristics, mother's satisfaction with childbirth experience, perceived support from friends, infant's perceived temperament, infant's gender, mother's educational level, and depression, which could predict 26.1% of parental self-efficacy.

Conclusion: According to the results of this study, the most significant predictors of maternal self-efficacy during the early postpartum months were maternal depression and educational status, infant's gender, and infant's characteristics.

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Introduction

Fulfillment of maternal responsibilities is an interactive, social-cognitive process, which could be easily achieved. It is closely correlated with cultural background, family, maternal, and infant characteristics, reflected in the behavior of mother towards the infant (1, 2).

One of the principal factors for mother-child attachment is parental self-efficacy. Even under optimal circumstances, being a parent is a challenging task. Differences in self-efficacy influence the mother's coping mechanism to deal with such challenges (3, 4). In general, self-efficacy is defined as the ability to successfully perform a particular task (5). Accordingly, self-efficacy reflects parents' ability to influence the child and his/her environment in order to facilitate the proper development and care of the child (6).

According to Bandura's social learning theory of self-efficacy, parents' beliefs in their ability to exercise control over their own functioning may eventually result in desirable parental self-efficacy (4). Self-Efficacy in Infant Care Scale (SICS) is the measurement of the mother's ability to care for the baby (7). High parental self-efficacy is associated with the mother's enthusiasm, compatibility, and devotion to the child; hence, it is associated with lower parental depression. On the other hand, dissatisfaction with the parental role leads to a lower parental self-efficacy, which is associated with avoidance and negative attitudes towards the child (6, 8, 9).

Moreover, it has been suggested that parental self-efficacy directly affects the quality of infant care (10, 11). Achieving high self-efficacy in

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raising children is regarded as a challenge rather than a threat for parents, which increases parents' assurance in their ability to cope with the child, promotes their persistence, and lowers their stress level (5, 12).

According to Bandura's theory, self-efficacy is measured by four main sources: mastery experience, vicarious experience, verbal persuasion, and emotional arousal. In order to improve one's mastery experience, prior experience of infant care before motherhood could contribute to the promotion of self-efficacy.

Another strategy to promote self-efficacy is to compare oneself with other individuals in similar situations. The third source of nurturing self-efficacy is a strong belief in one's ability to succeed in a task. In this regard, health care providers are expected to repeatedly remind mothers of their natural capability in infant care. Emotional arousal is regarded as another determinant of self-efficacy.

Emotional and psychological health is enhanced through the social support provided by people in close contact with the mother. Regarding the four strategies of self-efficacy promotion, factors such as social support and psychological conditions (e.g., depression and anxiety), could highly influence maternal self-efficacy (4, 13).

Based on the Barnard model of mother-infant interactions, self-efficacy is also influenced by the following factors: 1) mother's characteristics; 2) infant's characteristics; and 3) environmental factors. These parameters could be considered to provide support for the parents who are at the risk of low self-efficacy (13). Several studies have been conducted on the impact of these factors on self-efficacy; however, most of them have reported conflicting results.

A number of studies have proposed maternal characteristics such as age, marital status, educational status, depression, stress, anxiety, parity, mother's delivery experience, and understanding of the infant's condition to be the most influential factors on parental self-efficacy (3, 9, 13). For instance, the effect of parental educational status on self-efficacy was noticeable in a study conducted by Cutrona and Troutman (14).

However, this finding was inconsistent with a study by Salonen et al., which claimed that people with academic education had inadequate

parental self-efficacy (13). With respect to the infant, such features as gender, age, health conditions, and temperament were found to be influential on self-efficacy (9, 13, 15). Accordingly, Froman and Owen found a significant correlation between maternal self-efficacy and infant's gender (16).

On the contrary, the findings reported by Salonen et al., Porter, and Hui-Chi indicated no association between the infant's gender and maternal self-efficacy (7, 13). Mode of delivery, social support and environmental factors were also found to affect maternal self-efficacy (3, 4, 17). Given the critical role of maternal self-efficacy in the development of a child, identification of the predicting factors is of paramount importance since it provides useful information for designing clinical interventions.

On the other hand, postpartum self-efficacy evaluation at the hospital may not be reliable due to the particular circumstances and lack of adequate contact with the newborn. Consequently, predetermining the risk factors for self-efficacy is likely to yield reliable data (2, 3, 18). Several studies have attempted to determine the predictors for maternal self-efficacy in modern countries (2). According to White and Kiehl, the results largely depend on family values and policies on maternal self-efficacy in different countries.

Culture has a prominent impact on the notion of motherhood (19). As a result, the contribution of each of the aforementioned variables to parental self-efficacy differs in every culture. Considering the scarcity of performed studies on this subject in Iran and the significance of this issue, the present study aimed to determine the predictors for maternal self-efficacy during early parenthood.

Materials and Methods

This descriptive analytical review was conducted on 150 primiparous women (first-time mothers), referring to the health care centers of Mashhad from February 2013 to November 2013 for postpartum care and infant growth monitoring. According to the pilot study, which was performed on 20 women, the sample size consisted of 142 subjects. Multi-stage sampling was applied and 150 women were enrolled in the study.

The study was conducted at five health care centers of Mashhad (No. 1, 2, 3, 5 and Samen). Initially, 10 health care centers were selected via cluster sampling. In total, 150 women, who met the inclusion criteria, voluntarily participated in the study. Informed consents were obtained from the subjects.

The inclusion criteria were as follows: 1) ability to read and write; 2) reproductive age range of 18-35 years; 3) singleton pregnancy; 4) having a spouse; 5) having a healthy infant with no abnormalities.

The exclusion criteria were as follows: 1) use of drugs and alcohol; 2) smoking habits; 3) readmission of mother and infant at the hospital for any reason; 4) history of infertility; 5) prior history of mental and medical disorders.

The subjects were asked to complete demographic, obstetrics & gynecology, and infants' data questionnaires. Edinburgh Postnatal Depression Scale (EPDS) was used to check maternal depression status. According to this scale, the cut-off point to detect depression was over 10 (20). The Multidimensional Scale of Perceived Social Support, consisting of 12 items, was used to evaluate the source of social support provided by the mother's family and friends and social support in general (21).

Moreover, Bates' Infant Characteristics Questionnaire (ICQ) consisting of 24 items and 7 degrees (1=best, 7=worst) was used for evaluating the infant's temperament (22).

Parent expectations survey (PES) (Reece and Harkless, 1998), consisting of 25 questions, was used for measuring maternal self-efficacy (score range: 25-250). According to Bandura's theory, all the items in this scale have a positive background (23). In order to assess maternal satisfaction with pregnancy and delivery, a questionnaire with 11 items and 2 degrees (satisfied vs. dissatisfied) was used.

The questionnaires were completed by the subjects within 30 minutes after receiving postpartum care.

The validity of the Persian version of EPDS has been confirmed by Khodadoostan and colleagues (24). The multidimensional scale of perceived social support was also translated and validated in Iran by Masoudnia and colleagues. The validity of ICQ, PES and satisfaction with pregnancy and childbirth experience was

examined by content validity using qualitative and quantitative methods.

In the qualitative method, a panel of experts determined the content validity. In the quantitative approach, content validity ratio (CVR) and content validity index (CVI) were used. Ultimately, the validity of the data was approved by ten experts according to Lawshe's quantitative approach (quantitative value higher than 0.62). After running on 20 subjects, the reliability of the questionnaires was also confirmed by Cronbach's alpha (> 0.7).

Data analysis was performed by Spearman's rank correlation coefficient and stepwise regression, using SPSS. Moreover, descriptive statistics, frequencies, and measures of central tendency were calculated.

In stepwise regression during each stage, the variable with the largest p-value of the model was removed and the final model was obtained after several stages of analysis. To enter the qualitative variables in the regression model, artificial coding (dummy coding) was the method of choice. In addition, a group was selected as the reference for each of the qualitative variables. In all the tests, the significance level of P was considered less than 0.05. It is also noteworthy that all the ethical guidelines involving human subjects in medical experiments were taken into account in this study.

Results

In the current study, the mean age of the subjects and their spouses was 24.49 ± 3.44 and 28.45 ± 3.14 years, respectively. Most of them were high school graduates (47.4%) and housewives (94.7%). In addition, more than half of the infants were female (52.6%). All the mothers had full-term deliveries and only 2.2% of the infants weighed less than 2500 grams. Approximately 88.4% of the subjects and 90.5% of their partners were willing to have a baby.

For another thing, 50.5% of the infants were born via natural vaginal delivery, while 27.4% and 22.1% were born via planned cesarean and emergency cesarean, respectively. Approximately 17.9% of the mothers had prior experience of infant care before their own child.

According to the results of this study, the mean score of maternal self-efficacy was 178.57 ± 33.88 (scoring range: 25-250).

Table 1. Comparison of maternal self-efficacy via personal variables

Variable	Self-efficacy		P value
	Mean \pm SD		
Educational status			
below high school	192.86 \pm 29.14		0.049
high school	171.69 \pm 36.76		
high school graduate	177.80 \pm 29.32		
Occupation			
housewife	179.19 \pm 33.68		0.460
employed	167.60 \pm 39.68		
Income status			
below average	160.64 \pm 35.06		0.031
average	181.75 \pm 32.88		
Wanted pregnancy (mother's view)			
yes	178.67 \pm 33.32		0.938
no	177.82 \pm 39.57		
Wanted pregnancy (spouse's view)			
yes	178.67 \pm 34.24		0.933
no	177.67 \pm 32.21		
Mode of delivery			
normal	178.54 \pm 30.72		0.130
planned cesarean	178.72 \pm 33.17		
emergency cesarean	167.20 \pm 39.85		
Maternal depression status			
yes	166.21 \pm 32.92		0.002
no	187.73 \pm 31.29		
Prior experience of infant care			
yes	189.88 \pm 37.87		0.121
no	176.73 \pm 32.84		
Infant's gender			
female	186.15 \pm 28.51		0.025
male	170.49 \pm 37.45		
Mother's satisfaction with infant's gender			
yes	198.88 \pm 37.87		0.117
no	174.73 \pm 32.84		
Spouse's satisfaction with infant's gender			
yes	176.40 \pm 41.24		0.884
no	178.69 \pm 70.33		
Spouse's help in infant care			
none	168.00 \pm 23.33		0.603
partly	176.81 \pm 32.19		
a lot	181.37 \pm 35.97		

The results of independent T-test indicated no significant differences between self-efficacy and maternal employment status ($P=0.460$), the willingness of the mother and spouse for pregnancy ($P=0.938$) ($P=0.933$), prior infant care experience ($P=0.121$), mother's satisfaction with the infant's sex ($P=0.117$) and the spouse's satisfaction with the infant's sex ($P=0.924$).

On the other hand, there was a significant difference between self-efficacy and the family's income. Accordingly, self-efficacy was observed to be higher in the subjects with a higher average

income in comparison with those with low-income families ($P=0.031$). Self-efficacy scores were higher in women with a female infant (186.15 \pm 28.51) compared to those with a male infant (170.49 \pm 37.45) ($P=0.025$).

According to the results of independent t-test, inadequate self-efficacy was observed in mothers with postpartum depression (166.21 \pm 32.92) compared to those without depression (187.73 \pm 31.29) ($P=0.002$).

According to the results of ANOVA, there was a significant difference between self-efficacy and

educational status. Average self-efficacy scores were higher in mothers without a high school degree compared to those with a college or university education ($P=0.049$); however, based on the results of this test, no significant differences were observed between the mean scores of self-efficacy, mode of delivery ($P=0.130$) and spouses' participation in infant care ($P=0.603$) (Table 1).

Furthermore, the results of Pearson's and Spearman's correlation coefficient indicated no significant correlations between self-efficacy and

maternal age ($P=0.522$), infant's age ($P=0.418$), satisfaction with the pregnancy experience ($P=0.095$), perceived social support ($P=0.436$) and the subscales of maternal perceived social support from the family and spouse ($P>0.05$).

On the other hand, the same results were indicative of a significant correlation between self-efficacy and the infant's temperament ($P=0.001$), mother's satisfaction with childbirth ($P=0.007$) and subscales of perceived social support from friends ($P=0.037$) (Table 2).

Table 2. The relationship between self-efficacy scores and the demographic, pregnancy and childbirth information

Variable	Mean \pm SD	Self-efficacy	
		r	p
Age	24.49 \pm 3.44	-0.67	0.522
Infant's age	29.20 \pm 12.97	0.086	0.418
Satisfaction with pregnancy	8.20 \pm 2.71	0.174	0.095
Satisfaction with childbirth	6.61 \pm 3.44	0.227	0.007
Infant's characteristics	51.60 \pm 10.68	-0.371	0.001
Perceived social support	65.11 \pm 11.78	0.084	0.436
Perceived social support from family	23.60 \pm 4.57	-0.029	0.788
Perceived social support from other significant people	23.33 \pm 3.97	0.184	0.086
Perceived social support from friends	19.32 \pm 8.11	0.223	0.037

Table 3. Regression coefficients of parental self-efficacy predictors

Predictor	Non-standardized coefficients		Standardized coefficients (Beta)	t	P
	Non-standard B	Standard error			
Perceived infant's characteristics	-0.975	0.3	-0.314	-3.24	0.002
Infant's gender ^a (female)	14.73	6.40	0.224	2.30	0.024
Educational status (below high school) ^b	17.16	7.20	0.228	2.38	0.020
Maternal depression ^c (no)	12.98	6.44	0.198	2.014	0.047

a : reference group: male infant b: reference group: high school graduate c: reference group: depressed mothers

With regard to Barnard's model, only four variables were regarded as suitable predictors for self-efficacy, including perceived infant temperament, infant's gender, parental educational status (below high school) and maternal depression.

The maximum self-efficacy variance score was predicted as 28.1%. In this regard, the results of stepwise regression analysis indicated that the infant's characteristics, as the strongest predictor, could only predict 11.6% of self-efficacy variance.

During the third step of the tests, the infant's gender (19.3%), along with the maternal educational status (below high school), could predict 24.4% of parental self-efficacy variance.

Finally, with the added risk of maternal depression in the fourth step, 28.1% of the variance was also predicted.

According to the information in Table 3, by increasing each point in the total score of perceived infant's characteristics in the fourth step of the tests, self-efficacy scores would decline to -0.314 ($P=0.000$). The average score of self-efficacy in mothers with a female infant was significantly higher ($P=0.224$) compared to those with a male infant (reference group) ($P=0.024$).

Moreover, self-efficacy scores were higher in mothers without a high school degree ($P=0.228$), compared to those with a college or university education (reference group) ($P=0.047$).

Finally, mothers without depression were found to have higher self-efficacy scores ($P=0.198$), in comparison to depressed mothers (reference group) ($P=0.047$) (Table 3).

Discussion

The framework of the current study was based on Barnard's parent-infant interaction model (1994). Given the unique characteristics of the mother and the child, mother-infant interaction is considered as an adaptive process. According to the results of this study, environmental factors, as well as family-focused care, could influence this process while benefiting other family variables (18).

The findings of the present study are within the following frameworks of the Barnard model:

The primary results of this study showed no significant correlations between maternal age and self-efficacy. This is consistent with the findings of Salonen et al. and Eaton and colleagues (13, 15). In a meta-analysis by Yarcheski et al., it was also found that as a predictor, maternal age has little association with mother-infant interaction (25). This finding is inconsistent with a study by Froman and Owen, who considered maternal age as one of the strongest predictors for maternal self-efficacy (16).

By contrast, in another study by Bryanton, a significant inverse correlation was observed between maternal age and parental self-efficacy, indicating that young mothers are likely to have higher self-efficacy (13). This inconsistency could be due to the sample size of the present study, which consisted of primiparous women within a limited age range.

In the present study, a significant difference was observed between the average score of self-efficacy and maternal educational status. Similarly, Salonen et al. claimed that mothers with a college or university degree had the lowest self-efficacy scores. On the other hand, Tarkka observed a significant correlation between maternal educational status and self-efficacy (13, 26).

In addition, no significant association was observed between the employment status of the mothers and self-efficacy in our study. On the other hand, Goto et al. reported that lack of maternal confidence was significantly more evident in housewives compared to working

mothers (27). This inconsistency could be associated with mothers' preference to stay with their newborn at home.

In the current study, there was no association between parental self-efficacy and the willingness of the parents to have a baby. This finding is inconsistent with the study of Maxson, who claimed that women with unwanted pregnancies had the lowest self-efficacy scores (28). This difference could be due to the limited number of women with unwanted pregnancies in the present study compared to other studies.

Furthermore, no significant correlations were found between the mother's satisfaction with pregnancy and maternal self-efficacy. However, Kiehl et al. believed that women who were more satisfied with their first pregnancy experience showed more compatibility after childbirth (19). Similarly, Salonen et al. and Tarkka concluded that women with a positive attitude towards pregnancy had higher parental self-efficacy (13, 26). This inconsistency could be due to the different tools used to measure the mother's attitude towards pregnancy.

In the present study, a significant correlation was found between the mother's satisfaction with childbirth and self-efficacy. This is a finding similar to the studies of Salonen et al, Tarkka and Bryanton, who concluded that parental labor plays a pivotal role in self-efficacy (9, 13, 26).

As a result, midwives and other health workers are required to help mothers develop a positive attitude towards labor, so that they would achieve better parental self-efficacy.

According to Bandura's theory, creating a strong sense of efficacy is possible through enhancing the mastery experience (5). In this regard, several studies have reported a significant correlation between the number of children and self-efficacy. It seems that mothers with prior experience of infant care have more self-confidence in childcare while in this study, we observed no significant correlations between self-efficacy and prior childcare experience, which is compatible with the findings of Porter and Hui-Chin (17). This particular finding is confirmative of the fact that mother-child interaction is a unique form of relationship (4).

Furthermore, maternal depression is regarded as a strong predictor for self-efficacy.

In the current study, mothers with postpartum depression had a significantly lower self-efficacy compared to the mothers who were not depressed. According to the study of Gross, depressed mothers hardly view themselves as capable of childcare compared to the mothers who are not depressed (29).

Similarly, maternal depression status was regarded as a significant predictor for self-efficacy by Salonen et al. (13), while Shorey did not hold the same opinion. This inconsistency could be due to the differences in the time of these two studies; Shorey analyzed the predictors of maternal self-efficacy in primiparous women within the first 3 days of the postnatal period (2).

According to Bandura's theory, perceived difficulty of parental responsibility is normally associated with negative experiences. For instance, challenges associated with the infant's gestational age, developmental status and temperament are among the factors that increase the perceived difficulty of parental responsibility, resulting in parental negative attitudes towards childcare (30).

Some characteristics of the infant such as fussiness, persistent crying, irritability and difficulty with pacifying, which are associated with the nature of infancy, are known as negative infantile temperament (4).

In the current study, a reverse correlation was observed between self-efficacy and mothers' understanding of the infant's temperament. This finding is consistent with the studies of Cutrona, Troutman, Porter, Hui-Chin and Gross (14, 17, 29). On the other hand, another study by Eaton was indicative of a significant relationship between the maternal perception of infant's temperament and maternal self-efficacy (15).

Infant's gender was another predictor for parental self-efficacy investigated in this study. According to the obtained results, mothers with a male infant had a lower self-efficacy score, which is compatible with the findings of Froman and Owen (15).

In another study, de Tyche et al. (2008) claimed that male infants were likely to reduce the mother's quality of life more significantly than female newborns (31). On the other hand, Hudson, Salonen et al., Porter and Hui-Chin

found no such relationship between the infant's gender and self-efficacy (13, 17, 32).

In the present study, no significant correlation was observed between self-efficacy and parental satisfaction with the infant's gender. Therefore, it is only the gender of the infant which affects the level of self-efficacy, not the satisfaction with his/her gender.

According to another study by Salonen et al., there were no significant correlations between the infant's age and maternal self-efficacy, which was inconsistent with the findings of Pridham, Elek and Porter (33, 34). This difference is probably due to the limited age range of the infants in the present study compared to other studies.

According to Bandura's theory, the emotional status of parents largely affects parental self-efficacy (6). Receiving adequate support during the parental period results in a more efficient mother-child interaction, as well as a much lower incidence of depression.

However, according to the results of this study, there were no significant correlations between postpartum self-efficacy and the perceived social support from the family and the help of the spouse in infant care. Similarly, Warren et al. observed a significant relationship between the perceived social support from the mother's family and friends for the six-week postpartum self-efficacy (35).

Similarly, Yarcheski et al. concluded that self-efficacy had little association with maternal postpartum perceived support (25). This inconsistency is probably due to the different measuring tools used in the studies.

In the present study, a significant correlation was observed between maternal self-efficacy and the perceived social support, which is indicative of the key role of friends and family for primiparous women.

For another thing, we found a significant correlation between self-efficacy and the family's income status. This finding is compatible with the studies of Bryanton (2008), Teti and Gelfand (1991) and Coleman (2000) (9, 10, 36); however, Tarkka reported of no such relationship between these two variables in his study (37).

In the current study, no significant correlations were found between the mode of

delivery and self-efficacy, which is consistent with the findings of Salonen and colleagues (13).

According to the results of stepwise regression analysis, four variables including perceived infant's temperament, infant's gender, maternal educational status (below high school) and maternal depression could predict 28.1% of the self-efficacy variance, among which perceived infant's temperament by the mother was the strongest predictor (11.6% of the variance). Similar to the results of Salonen et al., perceived infant's temperament was the most significant predictor for self-efficacy in our study (16.1%) (13).

The study of Kohlhoff et al. also indicated that 49% of the variance could be predicted by factors such as attachment parenting, infant's gender, parental history of childhood abuse and maternal depression status (38).

On the contrary, Sevigny evaluated the predictors for parental self-efficacy in children between 18-36 months, indicating that infant's characteristics and parental depression are not important predictors for self-efficacy. This difference is probably due to the role of other factors, which could affect the development of a child (39). On the other hand, Tarkka introduced maternal depression and perceived social support as the strongest predictors for parental self-efficacy in Finnish women (37).

The present study had some limitations. For instance, variables such as maternal attachment, general self-efficacy and self-esteem were not evaluated in our subjects. Evidently, more questionnaires need to be completed for evaluating these factors. Otherwise, the accuracy of the data might decline.

Furthermore, the findings of the current study may not be generalized, since our subjects were low-risk women with uncomplicated pregnancies and childbirths.

Researchers tend to have confidence in the maternal perception of the infant's temperament and social support rather than objective measurement. Therefore, further research is required in order to confirm the results of this study, and to discover other factors influencing maternal self-efficacy in Iran.

Conclusion

In conclusion, since the major predictors for maternal self-efficacy included maternal

depression, infant's gender, mothers' educational status and infant's temperament, further analysis of these factors is crucial.

Moreover, parents who are at the risk of low self-efficacy need to be screened via face-to-face interviews, or by using authentic instruments in hospitals and health care centers, so as to create opportunity to identify and offer priority health education and interventional programs.

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Conflicts of interest

Authors declared no conflicts of interest.

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