

Relationship of Mothers' Spiritual, Social, and Mental Health and Self-efficacy with Child Development: A Path Analysis

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Abstract

Background

Developmental disorders are important in children, but there is not enough information regarding risk factors, and their effects on developmental disorders. We aimed to design a relational model and assess the relationship of mothers' spiritual, social, and mental health and self-efficacy with child development.

Materials and Methods: The present analytical cross-sectional study enrolled 285 mothers with 18-month-old children through multistage sampling in health centers in Tehran, Iran. Mothers completed the following questionnaires in four months to collect the data: a demographic questionnaire, Paloutzian and Ellison's Spiritual Health Scale, Keyes' Social Health Scale, Goldberg's mental health scale, Sherer's Self-Efficacy Scale (SES), and the Ages and Stages Questionnaires (ASQ). The data and theoretical Path Model were analyzed using SPSS software version 19.0 and LISREL software version 8.8.

Results: Developmental delay was observed in 21.8% (n=62) of children. Maternal spiritual health, both directly ($\beta=0.35$), and indirectly, had an increasing and positive effect on the children's development through increasing social health, increasing self-efficacy and decreasing mental health score ($\beta=0.206$). Maternal social health, both directly ($\beta=0.16$), and indirectly, had an increasing and positive effect on the children's development through increasing self-efficacy ($\beta=0.0465$). Maternal mental health had a direct and decreasing effect on the children's development ($\beta= -0.14$), but mother's self-efficacy had a direct and increasing effect on the children's development ($\beta= 0.31$). The final path model was well-fitted (RMSEA=0.025, GFI=1, NFI=1).

Conclusion

Considering the results and the impact of factors such as spiritual, mental health, social health and self-efficacy on one another and the developmental delay in children, it appears necessary to screen for these factors for early diagnosis and intervention.

Key Words: Child, Developmental delay, Spiritual health, Social health, Mental health.

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1- INTRODUCTION

Development is the progressive increase in individual's skills and functional capacity, and involves the changes that individuals acquire throughout life to improve physically, mentally, verbally, and socially. The early years of a child's life, especially the first two years, are the most important period for developing skills (1). Human development is the result of dynamic and interdependent interactions of biological and acquired factors. In this regard, a specific factor cannot be mentioned in many cases. Developmental delay is a term commonly used to refer to children who have not acquired the developmental milestones that are expected of them for their age. The prevalence of developmental delay varies around the world and has a high prevalence even in developed countries. Its prevalence is reported to be up to 30% in high-risk populations (2).

Mothers' general health affects children's health and development. Children who have healthy mothers are in better health, and if the mother develops a specific illness or problem, children's health will also be affected (3). Health has physical, mental, social, and spiritual dimensions. Spirituality and religion are related to physical and mental health. Given that the spiritual dimension is the core of these dimensions, attention to spiritual dimension can significantly impact public health (4). Researchers have shown that religiosity strengthens the parent-child bond. Parental religiosity is associated with positive parenting practices, which in turn has a positive relationship with cognitive and social competence and a negative relationship with children's problems. Findings suggest that parents who engage in religious activities are more likely to have more harmonious marital relationships and better parenting skills, which in turn increases their children's competence, self-regulation, psychological

adaptation, and school performance. Religious participation strengthens the parent-child relationship, which can influence children's development (5). Research on the relationship of religion and spirituality with mental health has shown that religion and spirituality are protective factors against a variety of psychological problems, including depressive disorders (6), which can affect children's development (7). Increasing spiritual health predicts increased self-efficacy in pregnant women (8). Mental health is another aspect of health. Mother's psychological problems affect the quality and quantity of childcare. Failure to attend to children and factors that motivate their learning will lead to learning difficulties in them. Furthermore, mother's lack of attention is extremely irritating to children, leading to behavioral problems (5). Recent evidence has revealed a relationship between children's developmental delays and mother's stressful life events, anxiety, depression, stressful jobs, physical abuse, and low social support (9).

Depressed mothers are often unable to meet the social and emotional needs of their children, leading to a series of limitations and inability to perform maternal tasks that cause cognitive impairment, negative cognition, and negative performance of the mother toward the child and other family members, and increases the child's behavioral problems (10). Evidence also shows strong relationships between stressful events among women and children's developmental delay. Parents' mental disorders are related to their stress, and their performance is specifically related to children's behavioral, psychological, and emotional problems (11). Another dimension of health is social health, which refers to an individual's ability to interact effectively with society and others to build relationships that satisfy them and fulfill social roles (12).

As a risk factor in the form of social harms, or as a protective factor in the form of healthy social behaviors and an environment that boosts social capital, social health can effectively increase or decrease the disabilities and losses caused by diseases (13). Women with higher social health will have better mental health and will be less likely to develop depression and anxiety (14). One of the factors that leads to increased public health is self-efficacy. Self-efficacy is an individual's belief and confidence in their ability to succeed in performing their duties. Solhi et al. reported a significant correlation between women's general health and self-efficacy (15). Self-efficacy along with spiritual health can act like a shield against maternal stress, which in turn is linked to maternal mental health and children's developmental delay (16).

There is a relationship between low levels of parental self-efficacy and maternal depression, anxiety, and insecure attachment (17). Farkas and Valdes (2010) studied women and their 4-9 month-old children, and found a high level of stress associated with lower perceived self-efficacy in mothers (18). Parents' self-efficacy in the first year of life affects child's socioemotional development and subsequently their other developmental skills (19). Given the impact of maternal health as a key element on family health and ultimately community health and the multifactorial nature of child development, this study aimed to examine the relationship of maternal spiritual, social, and mental health and self-efficacy with the development of 18-month-old children in the form of a designed test model among clients of the clinics affiliated to Shahid Beheshti University of Medical Sciences in Tehran, Iran.

2- MATERIALS AND METHODS

After the approval of the project and receiving the code of ethics

(IR.SBMU.PHNM.1396.744) from the Ethics Committee of Shahid Beheshti University of Medical Sciences, the present analytical cross-sectional study was conducted in three phases:

2-1: The first phase: Review of the literature to design a relational model of maternal social, spiritual, and mental health and self-efficacy with child development

Review of literature was necessary for designing the model, so reputable national and international databases such as SID, IranDoc, Medline, Science Direct, Scopus, and Google Scholar were searched for relevant published papers, using key words such as "social health", "spiritual health", "mental health", "self-efficacy", "mother", "child development", and "developmental delay". Based on the review of related articles and the use of the opinions of pediatricians and maternal and child health professionals who were experts in the child development and that had no connection with the project, the initial model was designed (**Figure.1**).

2-2. The second phase: Determining the state of maternal spiritual, social, and mental health and self-efficacy, children's developmental status, and the relationship between them

This phase used an analytical cross-sectional method. The following formula was used to determine the sample size.

$$n = \frac{p(1-p)z_{1-\alpha/2}^2}{d^2}$$

$$p=0.2 \quad \alpha=0.05 \quad z=1.96 \quad d=0.05$$

Path analysis requires at least 200 subjects (20), the study sample size was determined as 270 individuals, and finally 285 individuals entered the study. Multistage random sampling was performed. First, a list of clinics in the areas covered by

Shahid Beheshti University of Medical Sciences was prepared. Then, five centers were randomly selected from each region and assigned a quota proportionate to the population covered by the center. The inclusion criteria for mothers included being Iranian, 18-35 years old, with 4 or fewer childbirths, with no known medical issues during the study or the recent pregnancy like diabetes, cardiovascular, renal pulmonary, or autoimmune diseases, no history of problems during the recent pregnancy such as preeclampsia, placental abruption and polyhydramnios; and having no child with history of known developmental (genetic) disorders or a history of known congenital anomalies in her, her mother's family, and her

husband's family, and no history of adverse events such as the death of a first-degree relative in the last 6 months. Furthermore, inclusion criteria regarding their recent delivery included not being long, or complicated with bleeding, dystocia, prolonged labor, or using forceps or vacuum. The inclusion criteria for their infants included being the product of a singleton term pregnancy with a birthweight of above 2500 grams, Apgar score over 7, no history of prolonged labor, no history of intrauterine growth retardation, no exclusive formula feeding, no hospitalization for any reason, with an active health record with their physical health being approved by a physician, and receiving iron supplements.

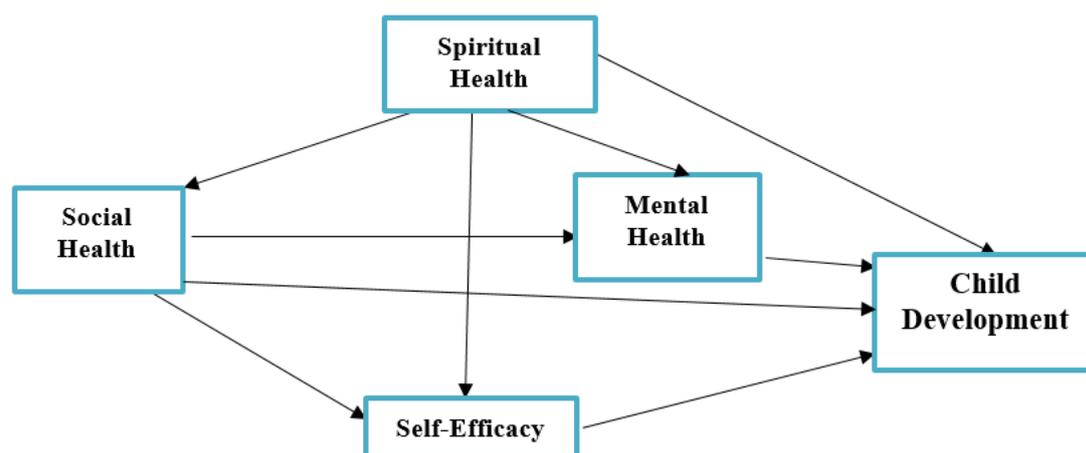


Fig1: Theoretical Path Model for effects of maternal social, spiritual, and mental health and self-efficacy on child development.

2-3. Measuring tools

The Persian version of ages and stages questionnaire (ASQ) was used to measure children's developmental status. The questionnaire contains 30 items arranged in five domains including communication, gross motor, fine motor, problem-solving, and personal-social skills. Due to their simplicity, the items can be comprehended and answered by all parents, even those with the lowest level of literacy. The items can be answered as "Yes" (the infant can perform the activity well), "Sometimes"

(the infant can sometimes perform the activity), and "Not yet" (the infant has not done the activity). These options are scored as 10, 5, and 0, respectively. If an infant's total score is lower than the standard score (cut-off point), they will need more careful examinations. Scores lower than the cut-off point in each domain indicates problems in that specific domain. The cut-off points for Iranian infants were determined based on the Ministry of Health and Medical Education guidelines (21). The content validity and construct validity of the standardized

Persian version of ASQ was reported to be desirable and its reliability for Iranian population was approved by Cronbach's alpha coefficient of 0.86 and test-retest reliability of 0.93 (22). Its reliability was also approved in the present study with a Cronbach's alpha of 0.90. Keyes' Social Health Scale was used to assess mothers' social health. This questionnaire was developed by Keyes in 1998 with 20 items. Each item was scored on a five-point Likert scale from 1-5. The total scores of the questionnaire ranged between 20 and 100. Higher scores indicated greater social health (23). The validity and reliability of this questionnaire have been approved in various studies with a Cronbach's alpha of 0.80 (24). Its reliability was also approved in the present study with a Cronbach's alpha of 0.73.

For measuring mothers' spiritual health, we used Paloutzian and Ellison's Spiritual Health Scale developed in 1982. This questionnaire contains 20 items. Each item is scored on a six-point Likert scale from 1 to 6. The total score of the questionnaire ranged between 20 and 120. Higher scores indicate greater spiritual health (25). The reliability of this questionnaire has been approved with a Cronbach's alpha of 0.82 (26). Its reliability was also approved in the present study with a Cronbach's alpha of 0.89. For measuring mothers' mental health, Goldberg's mental health scale (GHQ) developed by Goldberg (1979), was used. This 28-item version of the scale assesses somatic symptoms, anxiety, and insomnia, social dysfunction and severe depression. Each item is scored on a four-point Likert scale of 0-3. The total score of the questionnaire ranges between 0 and 84(27). Taghavi et al. performed the psychometric analysis of this questionnaire for Iranian society and approved it (28). In 2017, Moradi-Joo et al., reported a Cronbach's alpha coefficient of 90% (26).

Its reliability was also approved in the present study with a Cronbach's alpha of 0.87. Sherer's Self-Efficacy Scale (17 items) developed by Sherer et al. (1982), was used to measure mothers' self-efficacy. Each item was scored on a 5-point Likert scale of 1-4. The total score of the questionnaire ranges between 17 and 85. Higher scores indicate greater self-efficacy (29). In 2006, Asgharnejad et al. performed its psychometric analysis on an Iranian sample and approved it (30). Its reliability was also approved in the present study with a Cronbach's alpha of 0.77. At this stage, the data were analyzed in SPSS software version 19.0 using the descriptive statistics and bivariate correlation test at a significance level of 0.05.

2-4. Third phase: Relational model test using the path analysis method

In the present study, Root Mean Square Error of Approximation (RMSEA) values equal to or less than 0.05 indicate a good fit, and values up to 0.08 are acceptable. Goodness-of-Fit Index (GFI), Normed Fit Index (NFI), and Comparative Fit Index (CFI) were used to determine the fit of the model with preferred values over 0.9 (20). The theoretical path model was analyzed using LISREL software version 8.8.

3- RESULTS

The results showed that most mothers were housewives and had high school level of education and most of the children were female and were breastfed to six months of age (**Table.1**). Most mothers had moderate levels of spiritual (54.4%), and social health (84.6%). Simultaneously, most mothers had high scores of mental health (50.3%) and high levels of self-efficacy (80.7%). **Table.2** shows the mean of studied main variables in mothers and children's developmental scores.

Table-1: Some characteristics studied in parents and 18-month-old children

Variables		Min	Max	Mean \pm SD
Age (year)	Mother	18	35	29.76 \pm 4.84
	Father	20	48	33.32 \pm 4.72
Maternal age during pregnancy		17	34	28.26 \pm 4.84
Mother's education level	Frequency (%)			
	High school dropout	132 (46.3)		
	High school diploma	68 (22.5)		
	Higher education	85 (31.2)		
Father's education level	High school dropout	82 (28.8)		
	High school diploma	107 (37.5)		
	Higher education	96 (33.7)		
Mother's employment	Unemployed (Housewife)	193 (67.7)		
	Employed	92 (32.3)		
Type of Delivery	NVD	191 (67)		
	Cesarean section	94 (33)		
Gender	Male	160 (56.1)		
	Female	125 (43.9)		
First 6 months feeding	Exclusive breastfeeding	160 (56.1)		
	Non-exclusively	125 (43.9)		

NVD: Normal vaginal delivery, SD: Standard deviation.

Table-2: Mean of main variables studied in 18-month-old children and their mothers.

Variables	Minimum value	Maximum value	Mean (SD)
Total ASQ score	105	300	247.53 (47.38)
Spiritual health score	46	120	95.03 (15.25)
Social health score	37	85	61.59 (9.25)
Mental health score	6	57	22.9 (10.22)
Self-efficacy score	40	81	57.17 (9.51)

SD: Standard deviation; ASQ: Ages and Stages Questionnaire.

The results showed that the children's developmental delay was 21.8%, which was mostly in the problem-solving field (**Table. 3**). The results revealed a positive and significant correlation between infant's development and variables of

mothers' spiritual health, social health and self-efficacy, and a negative and significant correlation between children's development and mothers' mental health (**Table. 4**).

Table-3: The developmental status of the children by developmental fields.

Domain of development	Delayed development Frequency (%)	Normal development Frequency (%)
Communication	18 (6.3)	267 (93.7)
Gross Motor	5 (1.8)	280 (98.2)
Fine Motor	16 (5.6)	269 (94.4)
Problem solving	25 (8.8)	260 (91.2)
Personal-Social	19 (6.7)	266 (93.3)

Table-4: Correlation between children's development and mothers' mental, spiritual, social health and self-efficacy.

Variables	ASQ Score	Spiritual Health	Social Health	Mental Health	Self-efficacy
ASQ Score	1	0.572**	0.466**	-0.309**	0.453**
Spiritual Health		1	0.534	-0.315**	0.278**
Social Health			1	-0.258**	0.254**
Mental Health				1	-0.043
Self-efficacy					1

** Correlation is significant at the 0.01 level (2-tailed). ASQ: Ages and Stages Questionnaire.

Analysis of the model by path analysis showed that maternal spiritual health has the greatest positive effect on infant development ($\beta = 0.35$) both directly and indirectly through increasing social health,

increasing self-efficacy and decreasing mental health scores ($\beta = 0.206$). Other effects of the variables are shown in **Table 5**.

Table-5: Path coefficients for maternal social, spiritual, and mental health and self-efficacy on child development.

Predictor Variables	Effect (standardized β)			T-value
	Direct	Indirect	Total	
Spiritual Health	0.35	0.206	0.556	6.63 ^a
Social Health	0.16	0.0465	0.206	3.08 ^a
Mental Health	-0.14	-	-0.14	-3.06 ^a
Self-efficacy	0.31	-	0.31	6.69 ^a

^a Significant at 0.05 level.

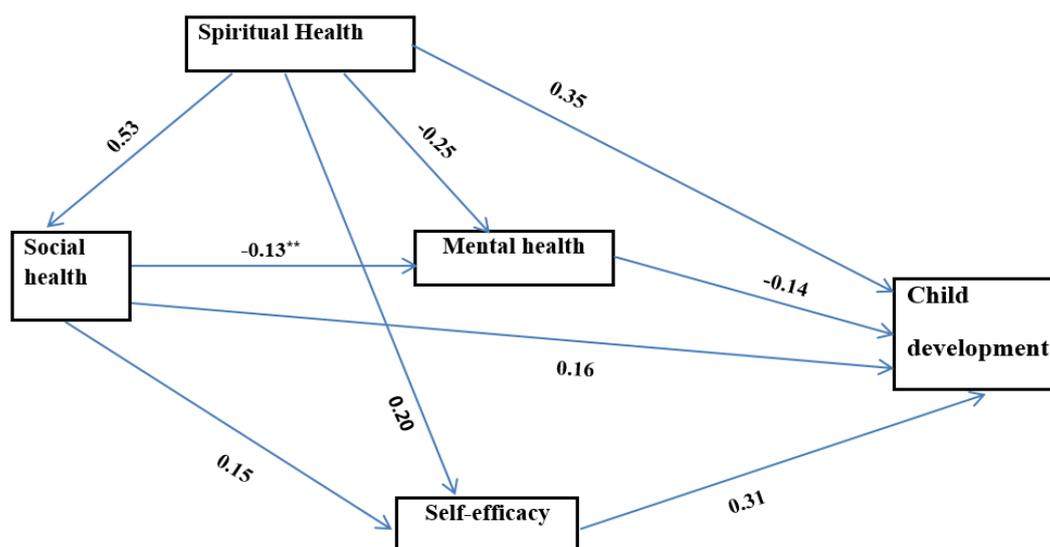
The results showed that the tested model has appropriate goodness of fit indices (**Table.6**). The effects of maternal social, spiritual, and mental health and self-

efficacy on each other as well as on child development determined by pathway are shown in **Figure.2**.

Table-6: Goodness of Fit Indices for the Model.

	χ^2	df	RMSEA	NFI	CFI	GFI
Model index	1.18	1	0.025	1	1	1

NFI: Normed Fit Index; CFI: Comparative Fit Index; GFI: Goodness of Fit Index; RMSEA: Root Mean Square Error of Approximation; X2: Chi-square test.*90% percent CI (confidence interval) for RMSEA (0.00-0.049).



**Non-Significant. Numbers signify standardized β

Fig.2: Full empirical path model for the effects of maternal social, spiritual, and mental health and self-efficacy on child development (β standardized was showed in model).

4- DISCUSSION

The results showed that the developmental delay among 18-month-old children was 21.8%. Maternal spiritual and social health, both directly and indirectly, had an increasing and positive effect on the children's development. Maternal mental health had a direct and decreasing effect, and mother's self-efficacy had a direct and increasing effect on the children's development. Spiritual health had the greatest effect on the children's development. Furthermore, the designed model had an appropriate goodness of fit. In a study on 11000 participants from different cities of Iran, Sajedi et al. reported a developmental delay of 3.69-4.31% in various fields, with the highest delay in fine motor skills and the lowest in personal-social domain (31). In the present study, the rate of developmental delay was the highest in problem-solving domain and the lowest in gross motor skills. Differences in the results of these studies can be attributed to the age of the studied children, the sample size, or differences in genetic and acquired factors affecting the

child's development that may vary in different ethnic and geographical areas within the country. The findings showed that the mother's spiritual health had an increasing and positive effect on children's development both directly and indirectly by increasing social health and self-efficacy, and decreasing mental health scores. Spiritual health is a predictor of mental health (32), Safara et al. showed that spirituality has a strong effect on mental health (33). Taheri et al. reported positive relation between religious-spiritual well-being and mental health (34). Unterrainer et al. showed that religion and spirituality have a positive relationship with various indicators of mental health (35). Religion and spirituality affect and can promote mental health through positive social religious attitudes and positive beliefs (36). Abdel-Khalek and Lester reported a relationship among religiosity, mental health and self-efficacy (37). Spiritual health changes health-related behaviors by influencing self-efficacy (38). Spirituality and religiosity are two separate categories, but many people find spirituality through religion

(39). Bartkowski et al. showed that parental religiosity positively affected children's self-control, social interaction, individual skills, and learning (40). Religious support through religious leaders and maternal motivation affects the psychological functioning of mothers, which is related to children's development (41). Religiosity strengthens the parent-child relationship. Parental religiosity is associated with positive parenting practices, which in turn have a positive relationship with cognitive and social competence and a negative relationship with children's problems (9). Findings suggest that parents who engage in religious activities are more likely to have more harmonious marital relationships and better parenting skills, which in turn increases their children's competence, self-regulation, psychological adaptation, and school performance (10). Religious parents show a higher level of participation, supervision and quality communication with their children. Parental religiosity is associated with positive parenting practices and parental health. Parental religiosity affects the quality of parent-child communication, and mothers' religiosity is associated with less behavioral problems among children, which has a positive effect on the child's development (42). Mohammadyari in 2012 showed that parents' spiritual intelligence has had a positive and significant effect on their children's mental health (43). According to the model tested in the present study, mothers' social health has a positive effect on the children's development both directly and indirectly through increasing self-efficacy and mental health. Social health promotion in the family environment increases family cohesion and reduces social-mental problems in children (44). Firouzbakht et al. showed a relationship between women's social support and social health (45). Evidence suggests that mother's and child's general health is directly related to

social support (46). Bunting and McAuley reported that mothers with good social support have better mental health and play their parenting role better (47). Maternal social support improves mother's stress coping skills, and mother-child communication (48). Social support for mothers reduces maternal stress. Also, there is a negative relationship between maternal stress and child development (49). Women with higher social health have better mental health (45). Zheng et al. reported a significant relationship was observed between social support and child's health as well as maternal employment and maternal self-efficacy 6 weeks after delivery, and among depression, social support, child's health and comfort, and self-efficacy 12 weeks after delivery (50). According to the tested model, maternal self-efficacy has a direct positive and increasing effect on children's development. Little research was found on this finding, and most research has focused on the indirect relationship between self-efficacy and children's development. Farkas and Valdes showed that parents' self-efficacy in the first year of life affects child's socio-emotional development and subsequently other developmental skills (18). Improving self-efficacy can improve a sense of competence in parenting (51). Mothers with high self-efficacy in caring for their children have better parental performance despite their low awareness of infant development than mothers who do not have the desired self-efficacy (52). Strengthening parenting skills following parents' training has led to increased parental self-efficacy, which has played a moderating role in childhood behavioral problems (53). According to the current tested model, the mother's mental health directly affects the children's development. Hoffman et al. showed that parents' mental disorders, including depression and anxiety, affect a child's neurosynaptic development, especially in the first 6 months after delivery (54).

Vameghi et al. reported a significant relationship between maternal stress and developmental delay in children (55). Vameghi et al. also showed a correlation between maternal depression and children's developmental delay, as well as a significant relationship between maternal depression and developmental delay in problem-solving and gross motor skills (7, 56). Stress and family tension affect children's physical, social, emotional, and cognitive development (57). Koutra et al., showed a correlation between maternal depression and developmental delay in the gross motor skill of 18-month-old children (58). The mother's psychological problems can have consequences such as the child's cognitive and behavioral problems. Thus, neuroplasticity in the brain of a young child is affected by environmental stimuli such as the amount and type of communication with the caregiver and their cognitive and developmental stimuli, and the long-term cognitive, emotional and social development of the child is related to this. Depressed mothers are unable to interact well with their children and are psychologically unfit to provide adequate cognitive and developmental stimuli for their children, so their children have less opportunity for the brain to be neuroplastic for better development. (59). Depressed mothers have fewer social interactions and play less with their children, so these children receive less stimuli (60).

4-1. The Strengths and Weaknesses

Due to the small number of studies in Iran in the field of non-medical factors related to child development and the study of one or two factors in this limited research, this study examined the causality of child development based on maternal health in the form of a model by analyzing path analysis. In this study, some factors affecting maternal health, such as lifestyle and family nutrition, which could have affected the model, were not investigated due to executive problems. It is

recommended that similar studies be performed in children of older age groups (e.g., 24 months, 36 months, etc.). The importance of such studies is that they may show that both developmental assessment tools are more sensitive and specific at older ages, and that some developmental delays that have not manifested themselves at a younger age will emerge at older ages.

4-2. Study Limitations

There are many social determinants that affect maternal health that cannot be ruled out at the same time in any single study. Obviously, this limitation has been present in the current study. In this study, it was not possible to investigate the factors related to fathers' health, which may affect the development of their children. Due to the multiplicity of questionnaires, sometimes it was beyond the patience of mothers to complete them, so they were completed with the coordination of mothers in two sessions with a short interval.

5- CONCLUSION

Based on the results of the present study maternal spiritual and social health, both directly and indirectly, had an increasing and positive effect on the children's development. Maternal mental health had a direct and decreasing effect, and mother's self-efficacy had a direct and increasing effect on the children's development. Spiritual health had the greatest effect on the children's development. It appears necessary to screen for these factors for early diagnosis and intervention.

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7- CONFLICT OF INTEREST: None.

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