

The relationship between mental health and spiritual intelligence of parents of hospitalized premature neonates in the NICU

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Abstract

Objective: To study the relationship between mental health and spiritual intelligence of parents of the premature neonates that are hospitalized in the neonatal intensive care unit (NICU).

Materials and methods: This descriptive, cross-sectional study included 152 fathers and mothers of premature neonates. A questionnaire was delivered containing demographic data and Goldberg's Assessment of Mental Health. A score of 23 or higher suggested the presence of mental disorders and scores lower than 23 indicated mental health.

Results: There was a significant direct relationship between mothers' mental health and spiritual intelligence; that is, mothers with high spiritual intelligence had a higher level of mental health ($p = 0.020$, $r = 0.225$). The linear regression analysis of the mothers' mental health and spiritual intelligence was significant.

Conclusion: Mothers with higher spiritual intelligence had a higher level of mental health, while there was no significant direct correlation between spiritual intelligence and mental health of the fathers.

Keywords

Mental health, spiritual intelligence, parents, premature neonates, NICU.

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Introduction

Premature births can pose challenges that impact the mental health of the parents [1]. The parents of premature infants may experience high levels of stress and disappointment [2, 3], which can have significant effects on the mental health of mothers and their infants [4]. According to estimates by the World Health Organization as of 2015, an estimated 15 million babies are born preterm (before 37 completed weeks of gestation), and this number is rising [5]. The distribution of causes of deaths in premature neonates in Iran (Islamic Republic of) is the direct cause for 23% of neonatal deaths. Prevalence of preterm delivery in various cities of Iran (Islamic Republic of) is in a range of 5.6-39.4% [6]. The etiology of preterm birth is multifactorial and it is affected by social, psychological, biological and genetic factors. Premature neonates usually require immediate hospitalization after birth [7], which may sometimes include long-term stays in a neonatal intensive care unit (NICU). This situation can determine in parents a sense of loss following the birth of a premature infant, and can disturb the emotional relationship between the mother and infant [7].

Technological advancements have improved the likelihood of survival for premature infants [1], and the survival rate of very-low-birth-weight infants is currently 57-67% [8]. Their prematurity is likely to have a considerable effect on the parents' emotions and the family financial situation [1, 9]. Past studies have found that parents of premature neonates usually experience mental distress during the hospitalization of their infants in the NICU, which can encompass higher levels of depression and anxiety symptoms, and altered parenting pattern [3, 4, 10].

It has been reported that patients and families require health professionals to understand their spiritual needs [11]. Child disease is a major challenge to parents' spirituality [12]. Creating acute problems in neonates and child can break the personal identities of the parents, challenge their worldviews and disrupt their parental feelings. Parental relationships are a primary bond, the

defeat of which can alter the bereaved parent's self-concept. The loss of a neonate or a child is viewed by many as defying assumptions of an orderly world [13]. Different effects of stress on parental mental health include negative effects on parenting behaviors and tasks, and on the quality of relationship between the mother and infant. Parents do not usually have a good perception of their infant, and they may experience problems interacting with the infants during development [10]. This issue can affect both physical and emotional growth and development in the infants. The occurrence of problems such as depression, anxiety disorder, and disorder in parental behavior has been reported in such cases [14]. Emotional and mental stress among parents can cause a lack of adequate parental attachment to their infant at the time of the infant's hospital discharge and damages the infant-parent relationship [15]. Maternal depression and anxiety may have negative effects on the cognitive and behavioral growth of the infant [1].

Past studies show that families with neonates in the NICU feel dissatisfaction with their own performance after the infant is discharged from hospital. Indeed, the perception of integrity and unity in such families has been negative [4]. The relationship between maternal mental health and parenting behaviors is vitally important, as the available literature shows that for premature and low-birth-weight infants, the mental condition of the mother is related to the mental condition of the children [10, 16, 17].

When parents feel efficient and capable during times of tension, they can support their ill infant. In such cases, the infants will have positive interactions with the mother, and the mother can rely on her own knowledge and experiences to help the family overcome tensions and anxieties [18].

Due to technological advancements in neonatal care and their effects on quality of life, it is crucially important to study maternal mental health and its related factors to facilitate improved mental health support for parents of premature neonates, by reducing the effects of parental stressors. Spiritual intelligence is a set of spiritual abilities, capacities, and resources whose application in the ordinary life reinforces the adaptability of individuals. In the available literature, evidence supports the role of spiritual intelligence in finding solutions for existential problems, and finding meaning and goals in the activities and events of daily life [19]. Spiritual intelligence can support individuals

facing challenges and promote adaptation by allowing individuals to manage, change, or improve their situations [20]. In light of these features of spiritual intelligence and the needs of parents with hospitalized premature infants, our objective is to gain a deeper understanding of parents' spiritual needs during the hospitalization of their neonate. A deeper understanding of spiritual needs will increase health professionals' sensitivity to fathers and mothers and suggest ways in which they can better support parents faced with crisis. We studied the relationship between mental health and spiritual intelligence of parents of premature neonates hospitalized in the NICU.

Methods

This study used a descriptive-correlational design. After acquiring the necessary permission from the Ethics Committee and presenting introduction letters to the Qaem and Imam Reza hospitals in Mashhad, Iran, we enrolled parents of premature neonates and evaluated whether they met the research criteria. The questionnaires were presented to the parents along with the necessary explanations. The questionnaires were collected and analyzed. The sampling method of the research was a consensus of the mothers with premature infants who were invited to the research over the course of 8 months. The inclusion criteria for the parents required that they were literate, lacked any obvious severe mental illness, were not taking any psychiatric drugs, lacked family crises such as the death of a family member or terminal disease diagnoses in the past 6 months, and the common illnesses in infants, such as infection or respiratory distress. Criteria for exclusion were providing an incompleteness of the questionnaire, or conditions in the infant such as asphyxia, cardiac, respiratory, or renal failure.

The questionnaire contained three main parts: demographic data, Goldberg's Assessment of Mental Health, and King's Spiritual Intelligence Self-Report Inventory. The most well-known screening tool in psychiatry for assessing mental health is GHQ-28 [21], developed by Goldberg and Hiller. It covers four domains using seven Likert-type items to assess each domain. Several studies in Iran have reported the reliability of this questionnaire to be between 84-91%. A score of 23 or higher suggests the presence of mental disorders and scores lower than 23 indicate mental health. Scores of 6 or above in any given

domain (physical complaints, depression, anxiety, and social dysfunction) indicate the category of disorder. Goldberg et al. reported the validity of the questionnaire as equal to 85% [21], and the reliability coefficient of the questionnaire was reported as 0.91 by Palahang et al. [18].

The spiritual intelligence test used in this study was the King's Spiritual Intelligence Self-Report Inventory with a validity coefficient of 89%. This questionnaire is reliable and has been validated by Moallemi [22]. The questionnaire assesses two domains of the spiritual intelligence, which are "the understanding and connectedness to the root of existence," containing 12 items, and "spiritual life or relying on the internal core," containing 17 items. Each item is a five-point Likert-type response item, with numeric responses from 1, "completely disagree," to 5, "completely agree." Scores range between 29 and 145.

The data for the 152 questionnaires were analyzed using SPSS®. To analyze the data, inferential statistics, t-tests, and the Mann-Whitney test were used. To assess the relationship between mental health and spiritual intelligence, Pearson's correlation test was used. Moreover, to determine the normality of the variables we relied on common normality tests. The frequency distribution of spiritual intelligence, mental health and its dimensions were normal. In all tests, the confidence coefficient and significance level used were 95% and 5%, respectively.

Results

152 couples of parents of infants hospitalized in the NICU participated. The mean maternal age was 26.8 ± 5.7 years. The majority of the mothers (39.1%) had a high school educational level; the majority of them (84.5%) were housewives, and most (63.2%) had a cesarean delivery. The average age of the fathers was 31.7 ± 6.56 years. Most of the fathers (37.2%) had a secondary educational level and most of them were self-employed (82.1%). Most of the premature neonates (57.2%) were male. Most of the infants (56.1%) were the first child of the family, and most (77.6%) had been hospitalized for being premature (**Tab. 1**). Less than 5% questionnaires were excluded due to incompleteness.

Results indicated that 74 mothers (56.1%) showed mental health issues according to the GHQ-28. Mothers presented anxiety and sleep disorders (73.8%), social dysfunction (64.1%), physical symptoms (57.9%), and major depression (9.7%).

Table 1. Demographic data of the infants and parents who participated in the research.

		Variable	n (%)
Infants' profile	Cause of hospitalization	Respiratory problems	13 (8.8)
		Infection	10 (6.8)
		Prematurity	114 (77.6)
		Others	10 (6.8)
	Birth order of the infant	First	83 (56.1)
		Second	45 (30.4)
Third		20 (13.5)	
Mothers' profile	Age group	≤ 25 years old	35 (28.7)
		26-35 years old	74 (60.7)
		36-45 years old	13 (10.7)
	Educational level	Elementary	20 (13.2)
		Secondary	46 (30.3)
		High school	59 (39.1)
		College	9 (6.0)
		Bachelor	17 (11.3)
	Job	Housewife	125 (84.6)
		Employed	13 (8.8)
		Self-employed	10 (6.8)
	Delivery type	Normal	56 (36.8)
Cesarean		96 (63.2)	
Fathers' profile	Age group	≤ 25 years old	26 (17.8)
		26-35 years old	90 (60.7)
		36-45 years old	30 (20.5)
	Educational level	Elementary	20 (13.5)
		Secondary	55 (37.2)
		High school	47 (31.8)
		College	9 (6.1)
		Bachelor	17 (11.5)
	Job	Housewife	3 (2.0)
		Employed	24 (15.9)
		Self-employed	128 (82.1)

However, only 53 fathers (39.6%) reported mental health dysfunctions; these conditions included social dysfunction (70.5%), anxiety and sleep disorders (42.6%), physical symptoms (30.8%), and major depression (11.3%) (**Tab. 2**).

The spiritual intelligence of the parents with premature neonates hospitalized in the NICU of the educational hospitals of Mashhad showed that the mean “understanding and connectedness to the root of existence” in mothers and fathers was 17.01 ± 4.29 and 17.51 ± 5.54 , respectively, while the average of the scores in the “life expectancy or relying on the internal core” domain were 29.60 ± 8.20 and 29.60 ± 5.54 in mothers and fathers, respectively. The mean total scores for maternal and paternal spiritual intelligence were $46.68 \pm$

11.49 and 46.90 ± 16.09 , respectively. The results showed that the score of the spiritual intelligence of the parents with hospitalized infants was lower than the mean.

The relationship between the spiritual intelligence and mental health of the parents of premature neonates hospitalized in the NICU was assessed using Pearson's correlation test. The results of the test showed that there is a significant positive relationship between the spiritual intelligence and mental health of the mothers (**Tab. 3**), but that this relationship was not positive or significant for the fathers. The findings confirmed that mothers with higher spiritual intelligence have a higher level of mental health. Among mothers, all components of mental health (except physical performance and

anxiety and insomnia) were significantly related to the mothers' spiritual intelligence, while in the cases of fathers none of the components of mental health was significantly related to the spiritual intelligence. As shown in **Tab. 4**, the coefficient of the linear regression demonstrated that the linear combination of the variables of spiritual intelligence and the mental health of mothers is significant at $p = 0.02$. Moreover, it shows that the average ability of predicting mental health by their spiritual intelligence was equal to 0.236. Linear regression analysis of maternal spiritual intelligence and maternal mental health showed a significant relationship that had the following

equation: (maternal spiritual intelligence \times 0.236) + 16.93 = maternal mental health (**Tab. 4**).

Discussion

In this descriptive, cross-sectional study we studied 152 couples of parents of premature neonates. Using Goldberg's mental health assessment and King's spiritual intelligence inventory, the relationship between the constructs of mental health and spiritual intelligence of the parents of premature neonates hospitalized in the NICU was studied. The results of this study showed that the majority of the parents

Table 2. Mental health of the parents of premature neonates hospitalized in the NICU.

		Mental disorder		Mental health	
		n	%	n	%
Mother	Physical health	84	57.9	61	42.1
	Anxiety and insomnia	107	73.8	38	26.2
	Social dysfunction	91	64.1	51	35.9
	Major depression	14	9.7	131	90.3
	General mental health	74	56.1	58	43.9
Father	Physical health	44	30.8	99	69.2
	Anxiety and insomnia	61	42.6	79	56.4
	Social dysfunction	98	70.5	41	29.5
	Major depression	16	11.3	125	88.7
	General mental health	53	39.6	81	60.4

Table 3. Relationship between spiritual intelligence and mental health in parents of premature infants hospitalized in the NICU.

	Mental health in parents	Mean \pm std. deviation	R	p
Mother	Physical health	8.57 \pm 4.62	0.590	0.984
	Anxiety and insomnia	8.83 \pm 4.67	0.182	0.510
	Social dysfunction	8.51 \pm 2.28	0.348	0.000
	Major depression	2.62 \pm 3.38	0.251	0.006
	General mental health	27.68 \pm 12.52	0.225	0.020
Father	Physical health	4.75 \pm 3.90	0.75	0.432
	Anxiety and insomnia	6.61 \pm 5.51	0.059	0.538
	Social dysfunction	8.66 \pm 4.75	0.183	0.055
	Major depression	2.10 \pm 3.51	0.083	0.385
	General mental health	22.20 \pm 13.41	0.123	0.205

Table 4. Linear regression analysis of spiritual intelligence and mental health of mothers.

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	16.932	4.825		3.509	0.001
Mother's spiritual intelligence	0.236	0.099	0.225	2.372	0.020

of premature infants showed mental health deficiencies. Treyvoud et al. (2010) showed that most parents of premature neonates had mental disorders [19]. Singer et al. (1999) found that the mothers of very-low-birth-weight infants suffered from mental distress and health disorders [16]. These findings are consistent with the present research. Results showed that the most frequent disorder among mothers were anxiety and sleep disorders, social dysfunction, and physical symptoms. Depression had the lowest score in this category. In their study, Salehi et al. (2004) showed that the mean score of the mothers of infants with psychiatric disorder in the subscales of physical symptoms, anxiety symptoms, social function, and depression symptoms were higher than the mean scores of mothers of infants with no psychiatric problems [20]. This difference in anxiety symptoms is consistent with the present study. Parents of premature neonates may experience severe mental crisis due to the birth event. They experience a sense of incompetence, anxiety, and depression. The birth of a premature infant is an unpredictable accident [23], but it affects the quality of life of both the infant and the family, and in many cases it leads to psychological stress [24].

However, fathers reported fewer mental problems than mothers. In the field of mental health, the most common problem in fathers was social dysfunction. Anxiety and sleep disorder, physical symptoms, and major depression in fathers were less severe than for mothers. Because the mother is the first family member who has a direct contact with the infant, she may experience more anxiety than the father. The mother's concern for permanent disabilities and damages of premature birth reinforce the anxiety in such cases.

The birth of a premature infant imposes severe challenges on the mother and causes the mother to spend more energy in caring for her child. Available literature shows that the disturbance of emotions in parents affects the emotional growth of the infants. The findings emphasize the importance of identifying and supporting the parents of premature neonates. Preventive programs have to include a combination of mental screening and supportive services for the mothers with very-low-birth-weight infants immediately after birth [16].

Spiritual intelligence is a set of spiritual abilities, capacities, and resources whose application increases adaptability and therefore the promotion of the mental health [25, 26]. The findings in this

study confirmed the positive correlation between spiritual intelligence and mental health among the mothers. In fact, the increase in scores of spiritual intelligence inventory was paralleled by a decrease in mental health assessment scores of general health. Because higher scores in the mental health inventory denote mental disorders, the increase of the spiritual intelligence correlated with better mental health. Moreover, all subscales of the general health questionnaire showed negative correlation with the spiritual intelligence. Spiritual intelligence can help individuals solve the problem of existential worth and create meaning for our activities and lives at higher and stronger levels [27, 28]. Spiritual intelligence helps us use the spiritual information for solving our ordinary problems [29, 30] and consequently leads to higher level of adaptability and adjustment. Vaughan believed that spiritual intelligence unifies the internal/spiritual life and the external/workplace life. The findings of the present research confirm the relationship between the spiritual intelligence and the reduction of external and social problems, so that we can state that spiritual intelligence is a mechanism that improves quality of life. According to Vaughan, spiritual intelligence is necessary to identify the choices that play roles in psychological welfare and the healthy growth of all people [31]. The available literature explains this result. Spiritual intelligence is a way of processing personal vision and experiences [26]. Thus, spiritual intelligence can affect the processing of information and places it in specific schemas. The structure of these schemas is adjusted reality. Spiritual intelligence can shape and organize our perception of facts such as health or illness. It not only affects health but also affects difficult experiences of life such as sadness or loss and can affect individual welfare as well [31]. In their research, Dabiriyani et al. (2013) compared the spiritual intelligence and mental health of the mothers with normal, blind, and deaf children. Their study showed that there is a significant difference between spiritual intelligence and mental health between mothers with normal, blind and deaf children and that spiritual intelligence can predict the mental health of such mothers [32]. Additionally, Shabani et al. (2010) studied the moderating factor of age on the correlation between the spiritual intelligence and mental health in 247 high school students. They showed that there is a significant relationship between mental health and spiritual intelligence,

and this result is consistent with the present research [33]. Spiritual intelligence can solve the problems of meaning and values. It can enrich the life and make it meaningful. Spiritual intelligence can increase the application of rational and emotional intelligence. Moreover, spiritual intelligence is very effective on the adaptability and adjustment of individuals and the increase of their problem-solving skills and enables them to overcome problems in a better and easier way.

Anxiety and stress in mothers of premature infants regarding the survival and health of their infant can affect the fulfillment of their maternal role. Spiritual intelligence is effective in reducing anxiety and personal tensions, and can help mothers to be calm. Having a spiritual vision in life is effective when a mother is confronted with problems such as the birth of a premature infant. Thus, spiritual intelligence improves mental health of the mothers. Mothers with higher spiritual intelligence have a more positive attitude towards the world and they can refer to their spiritual experiences to find solutions for such problems and to adapt to their challenges.

Conclusion

The main objective of this research was to determine the relationship between mental health and spiritual intelligence of parents with premature neonates hospitalized in the NICU. Spiritual intelligence can be used as a tool to increase mental health of individuals [34]. Most mothers and fathers showed signs of mental health deficits. Consistent with the research hypothesis, the results of Pearson's correlation test showed that there was a significant direct relationship between spiritual intelligence and mental health among mothers, so that the mothers with higher levels of spiritual intelligence enjoyed higher levels of mental health. However, there was no significant direct relationship between spiritual intelligence and mental health for the fathers. These results suggest that caring for a premature infant is a considerable challenge for all family members, and that mental and spiritual support of the parents must be emphasized. Parents who face problem with a child typically struggle to revise their worldviews in ways that impose order on the experience and attribute meaning and purpose to their lives and the lives of their children. When parents face many problems, spirituality represents a means by which these parents may restore personal wholeness

and increased hope for the future, and construct a meaningful future.

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Declaration of interest

The Authors declare that there are no conflicts of interest.

Ethical statement

The Authors declare that all procedures followed were in accordance with the ethical standards. Informed consent was obtained from all patients included in the study.

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