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Supporting fathers of premature infants hospitalized in Neonatal Intensive Care Unit (NICU)

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ABSTRACT

Aims: Prematurely birth of the infant and his/her hospitalization in NICU is something really unexpected for the parents. In most of the cases fathers are the first visitors of the infant in NICU and they are counted as the key person in supporting mother and infant. Lack of supporting father and shortage of his awareness increase his stress in this crisis and have some inappropriate short-term and long-term outcomes. The aim of this study was "assessing the effect of a designed program about the intervention of family support on the stress of the fathers of premature infants hospitalized in NICU".

Methods: In a two-group semi-experimental study which was done in 2013, fathers of fifty premature infants hospitalized in NICU of Shahid Beheshti hospital in Isfahan were chosen through convenient sampling and were divided into two control and experimental group. Family supporting program was a two-phase program. The first phase included two informational and one observational sections and the second group included supporting section. Parental stress measurement questionnaire in both of the groups was completed by the infant's father in two before and after time of intervention. For analyzing information $SPSS_{18}$ software and descriptive and inferential tests were used.

Results: In the experimental group there was significant difference in the mean of scores before and after intervention in two subscales of "appearance and behavior of the infant and special treatments" and "the relationship of the parents with the infant and acceptance of parental roles" and the mean of total score, while this difference was not significant in control group in none of subscales of parental stress and total score. Before intervention, there was no significant difference between the two groups in terms of the mean score of parental stress in three subscales of parental stress and total score; but after intervention in experimental group, the difference of the mean of the parental stress scores in two subscales of infant's appearance and behavior and special treatments and the relationship of the parents with the infant and acceptance of parental roles and total score was significantly less than control group.

Conclusions: Emotional-informational support program could decrease stress level of the fathers of premature infants hospitalized in NICU, so appropriate effort and policies can be valuable in paying more attention to the father and his partnership.

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1. Introduction

Nowadays, science and technology development regarding treatment and taking care of the infants have increased survival of premature infants and outcomes due to hospitalization in NICU remarkably. Following these developments, also cares are changed from exclusive focus on the infants' physiological needs to more emphasis on emotional and developmental issues [1, 2]. Also the importance of parents' role in taking care of the infants is clearer [3]. Infant's birth and entrance of a new member to the family life can be both exciting and stressful for the parents [5-7]. In some cases, birth of a prematurely infant and his/her hospitalization in NICU encounters the parents with a strange and complicated situation [8].

This issue made transferring process to the parental roles more complicated [9] and often causes emergence of some emotions such as shock, anxiety and depression in them. Changing parental roles and sources of environmental stress in NICU made great stress in them [10,11] and increases parents' vulnerability in a way that Mazandarani et al. (2013) and Malakouti et al. (2013) quote from Abdolalian that lack of preparation for premature birth leads to morn and mental disorders during hospitalization and even after discharging [12,13].

Being a parent is an opportunity to earn a great adaptation, during that time parents beside some changes in the life experience living in a big and new world [14, 15]. Every parent in a different way shows reaction to the experience of infant's hospitalization in NICU, but totally Feely et al. (2013) states that anxiety level in the premature infants' parents is more than the expected level [16].

Focus of many studies is on the maternal emotions and it has been stated that mother experiences many negative feelings due to unexpected parental role and infant's health status [17-25].

But there are little studies about father's needs or experiences in NICU. It has been reported that immediately after the birth, most often fathers are the first visitors in NICU and they are counted as a key person in supporting mother and infant [7,25]. Concern regarding mother and infant's health and accepting parental roles and clinical status of the infant lead to stress in the father [26, 27].

Father may seek some information regarding mother and infant's conditions for better understanding and managing the situation [17, 28]. He feels that it is necessary to accept a new role as a supporter [28]. Clinical routine cares may not provide any opportunity for father's understanding and make it hard for the father to accept the infant and to maintain paternal roles [29.30]. Thus, because father has the feeling of lack of control, he focuses on a work or some other things out of the environment of NICU [17, 19, 28].

Malakouti et al. (2013) quoted from Landgoueest and Jakson (2003) that fathers experience several emotions during the infant's hospitalization in NICU [13]; also in comparing with the mothers, they are influenced by the infant's disease more, they are adopted with the infant later and they need more support during the first year of the infant's birth [14,15]. Being a father as a change and transfer is a big stress. Disregarding father's role and not paying attention to that in taking care of the infant exacerbate this situation [28].

There are a little studies about fathers' experiences, so there is little understanding of their needs and experiences in the initial periods after birth in their views and in scientific sources, there is less interventions that can support fathers and help them during this experience.

Also in Iran although fathers are most often the first visitors of the infants in NICU, they are less supported in terms of information and emotion. The aim of this study is assessing the effect of designed supportive intervention on the score mean of total stress and stress scores in three subscales of parental stressful factors in premature infants' fathers of experimental group in compare with control group.

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2. Methods

This is a semi-experimental study which was performed in two-group form with before and after measurement design in NICU of Shahid Beheshti hospital in Isfahan in 2013. Number of the samples in every group was considered 25 fathers who were selected through convenient sampling. Infants' fathers who were higher than 18 years old and had reading and writing literacy, were not among the health staff, visited the infant at least for one time and did not experience some stressful factors such as; divorce, separation from wife and losing job during the last year and their infants had the required characteristics participated in the study after achieving informed written consent. Infants' characteristics included; being from the first pregnancy, singleton pregnancy with the pregnancy age less than 35 weeks, fifth minute Apgar higher than five and not having severe disability situations including; grade three or four intra-ventricular hemorrhage or congenital defects.

Two or four days after infant's hospitalization, after being sure about that the father visited the infant in NICU and after collecting demographic information, initially information related to the stress level in fathers of control group and then experimental group were collected. Information related to the parents' stress in both groups before and after study was measured by the questionnaire of parental stressful factors scale: NICU.

Parents' supporting intervention which was a two-phase supportive program was performed for both of the fathers and mothers of premature infants in experimental group; the first phase which was done two to four days after premature infants' admission in ICU included information parts and visiting NICU that was performing by a fixed researcher.

Information part included one face to face 60 minutes educational session with the presence of the father and his wife that there were some information regarding family's understanding of the environment, equipment, health staff of NICU, care situations such as venipuncture, also some information about premature infant (infant's appearance and behavioral and physical signs) common medical terminology in the unit, emotions that the parents experience during infant's hospitalization, method of participating in the infant's care and protection were taught.

In the end of this session, two books with educational content for the families and also one educational booklet were given to the parents and the way of their using was explained to them. These books were provided by the researchers according to parents' needs and by using scientific sources.

Duration of this educational session based on the parents' wish and need was continuing to ninety minutes. Parents' educational booklet was made in six parts with different colors in pictorial form, the information in the first part was related to NICU, the second part was about premature infant's characteristics, the third part was about taking care of premature infant, the forth part was about self-care, the fifth part was about discharging preparation and the sixth part was about common terms and abbreviations in NICU. In part of visiting NICU which was performing immediately after information part, infants' parents visited the unit environment and some explanations regarding the environment and the equipment of the unit treatment and cares were given to the parents by the researcher.

The second phase (supporting part): it was performed two to four days after the first phase, in this part parents (both father and mother) participated in a two- hour group session which was held for providing educational-psychological interventions for them and also sharing their emotions and experiences with the parents of other premature infants.

In addition, the researcher was in the hospital from the morning to the evening in all the time of performing intervention and in addition to emphasizing on the parents' using the material in the training booklet and also parents' partnership in taking care of the infant, the researcher answered their questions too. Also at

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night, when the researchers were not in the unit, parents could receive the answer to their probable questions about infant's status through the phone number of one of the researchers.

Considering that based on the present rules in NICU of the research environment, fathers could visit the infant on even days and just for thirty minutes, in the present study through the arrangements made by the hospital authorities, infants' fathers could visit the infants without any time limitation. In addition, since the presence of wife can have a supportive role and help the father in achieving information and communication with the infant and the staff of the unit, the intervention was done with the presence of both mother and father of the infant. It was while the parents of the control group only achieved usual cares in NICU.

Data collection tool of this study included a form related to parent and infant's demographic information and "parental stressful factors: NICU" scale. Parent and infant's demographic information was completed by asking questions from the parents and by using infant's file. Measurement questionnaire of "parental stressful factors: NICU" (2011) is a tool that is designed for assessing stress level of parents of premature infants hospitalized in NICU. This questionnaire included 26 items and it includes three subscales (environment voices and lights: five items, infant's appearance and behavior: 14 items and parents' communication with the infant and providing parent's role: 7 items) and assesses stress in NICU from the parents' point of view [31]. Answers of the items were graded in Likert form. The item "I didn't face this case" is considered as a lost data and in the case of stress, classification of every item score rage is from zero to four.

Noticing that zero is for "there is no stress" item, by summing the scores multiplying four, the highest total score was achieved 104 and the least one was zero and also in every one of the subscales respectively the highest score of 20, 56, 28 and the least score of zero were achieved. For more obviousness and changing the above numbers to zero to one hundred, the summing of the achieved scores regarding total score was multiplied by four and divided by 104, the highest score of 100 and the least score of zero were achieved. In every one of the subscales, scores were multiplied by one hundred and divided by the maximum score of that subscale.

The mentioned questionnaire was translated by the researcher and content validity was used for validity determination; scientific reliability of the questionnaire after collecting data by Cronbach alpha α=0.87 for the entire questionnaire and in every one of the above subscales was confirmed 0.77, 0.77 and 0.86 respectively. Data analysis was done in SPSS18 software by using descriptive $\chi 2$ and Mann-Whitney tests) and inferential (paired t and independent t) statistical tests.

3. Results

Results achieved from data analysis showed that the mean age of the fathers in control group was (30.9±4.9) years old and in experimental group (29.6±2.7) years old. In control group 44% of the fathers were under diploma, 44% diploma and 12% had the university education and in experimental group the education level of 20% of the fathers were under diploma, 72% diploma and 8% had university educations. All the fathers in control and also experimental group were employed. Regarding demographic features of the infant, 36% of the infants in control group were born in natural way and 32% were born by cesarean section.

The mean of pregnancy age in control group was (31.3±2.7) weeks and in experimental group (31.4±1.8) weeks. In terms of gender, 68% of the infants in control group and 56% of the infants in experimental group were male. The mean of birth weight in control group was (1653.6±582.1) grams and in experimental group (1626.8±362.6) grams. Results showed that there is no significant difference regarding infant and parent's demographic features between the two control and experimental groups and both of the groups are statistically equal.

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Paired t-test showed that the mean of parental stress total score and also the scores mean of three subscales of parental stressful factors in control group are not different before and after the study, while in experimental group the mean of the scores before and after intervention showed significant difference in two subscales of infant's appearance and behavior and special treatments and communication of the parents with the infant and accepting parental roles and the mean of total score (table 1).

Independent t-test showed that there is no significant difference in the mean of parental stress scores in three subscales of parental stress and total score before intervention between the two groups, but after intervention the mean of parental stress scores in two subscales of infant's appearance and behavior and special treatments and the parents' communication with the infant and accepting parental roles and total score in the two experimental groups were significantly less than control group (table 2).

Table 1: Comparing mean and standard deviation of the scores of three subscales and total score of fathers' parental stress before and after intervention in experimental and control group

		Before intervention	After intervention	Results of paired t-test	
	Subscales and total score	Mean (standard deviation)	Mean (standard deviation)	t	p-Value
Control	NICU environment	35.8 (21.6)	32.1(20.8)	0.92	0.37
	Infant's behavior and appearance and special treatments	56.6(19.6)	56.5(19.9)	0.05	0.95
	Parents' communication with the infant and accepting parental role	51.2 (23.9)	53.6(21.1)	0.75	0.46
	Total score	51.1(18.5)	51.01(17.8)	0.59	0.95
Experimental	NICU unit	33.1(19.4)	22.8(20.1)	1.61	0.08
	Infant's behavior and appearance and special treatments	52.1(22.7)	35.4(22.05)	3.01	0.01*
	Parents' communication with the infant and accepting parental role	50.8(25.7)	38.25(25.1)	2.2	0.04*
	Total score	33.7(18.3)	48.1(18.5)	3.41	0.001*

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4. Discussion

Results showed that in control group, there is no significant difference in the mean of total stress and the mean of scores in three parental stress subscales in fathers before and after the study; while in experimental group the mean of parental stress total score and the mean of score in two subscales of infant's appearance and behavior and special treatments (p=0.01) and the relationship of the parents with the infant and accepting parental roles (p=0.04) were significantly decreased after intervention in compare with before that; but the difference of the score mean in the subscale of NICU environment (p=0.08) was not significant.

Results of the study of Ahen et al. (2007) indicated that educational support could decrease the mean of stress scores of the fathers of the infants hospitalized in NICU [32]; while the results of the studies by Melnik et al. (2006)

Table 2: Comparing the mean and standard deviation of the scores of three subscales and total score of fathers' parental stress between two experimental and control groups before and after intervention

		Control	Experimental	Results of independent t-test	
	Subscales and total score	Mean (standard deviation)	Mean (standard deviation)	t	p-Value
Before intervention	NICU environment	35.8(21.6)	33.1(19.4)	0.46	0.64
	Infant's behavior and appearance and special treatments	56.6(19.6)	52.1(22.7)	0.75	0.46
	Parents' communication with the infant and accepting parental role	51.2(23.9)	50.8(25.7)	0.05	0.95
	Total score	51.1(18.5)	48.1(18.5)	0.58	0.56
After intervention	NICU environment	32.1(20.8)	22.8(20.1)	1.61	0.11
	Infant's behavior and appearance and special treatments	56.5(19.9)	35.4(22.05)	3.55	0.001*
	Parents' communication with the infant and accepting parental role	53.6(21.1)	38.25(25.1)	2.34	0.02*
	Total score	51.01(17.8)	33.7(18.3)	3.38	0.001*

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regarding parents' empowerment and Touran et al. (2008) regarding nursing interventions for stress reduction showed that there is no significant difference in the mean of fathers' stress scores in experimental group in compare with control group in none of the subscales. Also there was no significant difference in the mean of fathers' stress total score [33, 34].

In comparing the results of the study of Melnik et al. (2006) [34], the mean of fathers' stress scores after intervention was less. May be it can be considered that the reason of this difference is providing access to information and its constantly repetition through booklet and the nurse who is working as a support. In the present study, during ten days of infant's hospitalization in NICU, in addition to educational session and giving booklet and book to the parents, the researcher was in communication with the parents both in presence and by phone. As Hian (2005) states that after premature infant's birth may be the parents are not able to process the information well and they need special support and care, so repeating information is important [36].

Continuous provision of the necessary information and clear answers to the parents about infant's condition and changing his/her status and providing an opportunity for discussion about infant's clinical situation may make it easier to have more exact understanding of the infant and decreases parents' stress level [35]. Lindenburg, Akselson and Oherling (2007) quote from Kalem (1999) that the amount of the information that premature infants' mothers can achieve is not clear and may be these results are also true about premature infants' fathers; in the study of Lindenburg, Akselson and Oherling (2007) also fathers emphasized on the importance of need to information and they wanted constant repetition and provision of the information in the right time [37].

Among the reasons of the difference in the results of this study with the study of Melnik et al. regarding the effect of intervention in fathers, it can be pointed that their empowerment program in the form of an educational-behavioral intervention in voice and written form was given to the parents, while in the present study in addition to information support parents received psychological support too.

This kind of educational-psychological interventions can be done and by noticing the present equipment, in addition to saving time and cost, it can help the parents in better management of the present situation. Performing group meetings is effective in making sympathy and empathy feeling of the parents. As in the qualitative study of Lindburg, Akselson and Orling (2007) stated about father's experiences regarding premature birth, fathers need to share their experiences and explain their emotions to the equal group and considered it necessary to talk to the NICU staff [37].

In the study of Touran and Bazbakal (2008), the intervention in the form of information support included a face to face educational session for thirty minutes with visiting the unit by the researcher [33]; but answering their next questions, unlike the present study was done by NICU care staff. May be one of the reasons of difference in their results with the present study is the method and the time of providing education, since shortage of staff does not make appropriate conditions of answering the questions.

Also in the study of Slown, Row and Jaunz (2008), although fathers stated health and care staff as the main source of information, only fifty percent of them were satisfied by receiving information from the staff [38].

In the present study, in addition to verbal information support meeting and visiting the unit, in all the time of performing intervention, the researcher had relationship with the parents, specially the father and answered their questions. Also group meeting was considered for explaining emotions and providing psychological support of the parents.

Therefore, it can be said that the reason of difference in the results of the present study

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with the study of Touran et al. is the difference in the way of doing intervention. Also along with the mentioned study in the present study, the mean of father's stress scores in environment subscale in fathers was not significant; may be its reason is the low frequency of the fathers' visiting in this study and despite the environmental assistance, they still had low visiting.

Although in the present study we did not investigate the hours of father's presence in the unit, in the study of Khaje et al. (2011), total mean of the time of father's presence was 3.2 (3.6) hours [39]. Also Karsen et. al. (2006) showed significant negative correlation between the meetings that the fathers participated in them and total stress scores in the twelve-month infants [40].

May be the reason of significant difference in the fathers' stress total score in the present study in compare with the study of Melnik et al. (2006) and Touran, Bazbakal and Azbek (2008) is the book that was given to the parents [33,34]; in addition 10 days constant relationship of the parents with the researcher as the nurse who is working as a supporter make this opportunity for them to achieve the information in the right time and to repeated them if it is required, as in the study of Lindenburg, Akselon and Oherling (2007) also fathers stated their need to education in the right time and repetition of the information, thus the possibility of accessing to a nurse who is working as a supporter for ten days and also telephone contact with him/her is effective in the results of the present study [27]. The results of the study of Li et al. (2012) also showed that a nurse who is working as a supporter is important in decreasing fathers' stress in experimental group in compare with control group ($p<0.001$) [4].

In the present study, it has been tried to start performing supporting intervention for the fathers in early admission of the infant in NICU, also Karsen et al. (2006) showed in their study that early interventions are important in decreasing stress of the parents of premature infants hospitalized in NICU [40]. The results of the study of Li et al. (2012) indicate that early intervention is effective in decreasing stress of the fathers of premature infants hospitalized in NICU ($p<0.001$) [4].

The difference in the environment can be another reason for the difference in the results of the present study with other studies as Traumbini et al. (2008) showed that difference in the research environment can be effective in the parents' stress level [35]. Also among other reasons of the difference of the present study with other studies, it can be pointed to the different religions and believes; as Ikas et al. (2009) states spiritual attitudes as a factor for more certainty and decrease of psychological suffering [41].

5. Conclusions

Results showed that emotional-informational supporting program could decrease the level of stress of the fathers of premature infants hospitalized in NICU. Since in the present study, the researchers for attracting fathers' partnership in the study had lots of problems because of some issues such as fathers' job, not being able to use postpartum leave, having the responsibility of providing mother and infant's hospitalization cost. In the eastern culture and in the Asian countries, father does not have the main role in taking care of the infant. Considering that fathers can have an important role in supporting mother and infant in NICU, effort and appropriate policies for more attention to the father and his partnership can be valuable.

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