

Investigating the Effect of Implementing a Web-Based Educational Program on Fathers' Involvement in Infant Care 0 to 6 Months

Abstract

Background: Fathers need education to understand their role in infant care and its implications regarding the child's health. Virtual education has been able to compensate for the shortcomings of traditional training and education, and with respect to this, the present study was conducted to determine the effect of virtual education on fathers about infant care and their involvement in infant care. **Materials and Methods:** The quasi-experimental study was performed on 83 participants in healthcare centers affiliated with North Khorasan University of Medical Sciences. The involvement of fathers in infant care was assessed with a questionnaire of the father's involvement in the care of the infant (mother-reported) in 4-time points: 3-5 days, and 2, 4, and 6 months after birth. Educational materials based on the child's growth and needs and as well as the latest references and national guidelines were prepared, and as the infant grew, were taught step by step to fathers using Soroush's messenger while their questions were answered. **Results:** The mean score of total father involvement in infant care at two, four, and six months after childbirth was significantly higher in the intervention group than in the control group ($p < 0.001$). **Conclusions:** With regard to the lack of access to fathers during their working hours, virtual education can be used to increase their involvement in infant care.

Keywords: Distance education, father, infant care, participation

Introduction

The involvement of the father in infant care includes three dimensions: direct interaction between the child and the father (playing and caring for the child), accessibility (the accessibility to the father when the child needs him), responsibility, and providing the necessary support for the child (arranging medical visits, family and child financial support).^[1,2] The effect of the Father's involvement is independent of the mothers, and the value of the father's love and affection regarding the child's health is as great as the mother's love.^[3,4] There is also growing evidence emphasizing that a father's involvement in care affects the child's development and growth in the cognitive and emotional-social domains.^[5,6]

The results of studies on the effects of father absence in childhood indicate that the development and growth of such children are suboptimal, and they show more behavioral and educational issues in the context of social interactions at

school.^[7,8] As research literature indicates, lower than half of the fathers engage in the care of their children. The poor involvement of fathers in infant care has been reported for varied reasons in different cultures.^[9] For example, fathers often do not talk to their children.^[10] For these reasons, they need education and related services to get aware of their role in reproductive health, especially for children, and the impact of their role in this field. A study by Tafazoli (2013)^[11] and Rollè *et al.* (2019),^[12] showed fathers' education had a positive effect on the degree of fathers' involvement in infant care.

Infancy is one of the most sensitive stages of life that requires proper knowledge and proper care. Given the breadth of needed information for couples seems inevitable. Virtual education or e-learning has created a new paradigm in the field of education and learning, including medical sciences training. It has revolutionized education by eliminating the requirement for physical presence.^[13] Therefore, to explain the role

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of the father in caring for the infant and its importance regarding the health of the child and the foundation of the family, fathers need education, but due to the lack of access to fathers during their working hours on one hand and feminine environment of healthcare centers, where the presence of fathers is not suitable for face-to-face training on the other hand, and with respect to evolution of training methods from traditional to virtual in the age of information and technology, the present study was conducted to determine the effect of virtual infant care education for fathers on their involvement in infant care.

Materials and Methods

The present study Extracted from a research project (The Effect of Virtual Education of Infant Care to Fathers on their Participation in Infant Care in the educational clinics of Bojnurd in 2018) The present study was conducted as quasi-experimental with the participation of 83 cluster subjects in healthcare centers affiliated to North Khorasan University of Medical Sciences, Iran In 26 Jan 2019 until 22 July 2020. In the course of this study, after proposal approval, and obtaining necessary permits, two healthcare centers (Horr and Niroogah) were selected randomly from a pool of seven healthcare centers in Bojnourd, Iran. Then, participants were randomly distributed in the education group as the intervention group and control group. The sampling process was conducted by referring to the selected centers, where the author, according to the research inclusion criteria, sampled the primiparous and multiparous families who were referred for neonatal hypothyroidism screening in the third to fifth days after delivery and were willing to participate in the study. The instruments used in this study included a questionnaire for selecting the research unit (mother and father), a questionnaire for exclusion during the research, questionnaire No. 1 (demographic characteristics of the mother, father, and pregnancy-related information), questionnaire No. 2 (information about childbirth, postpartum and infant), and a mother-reported questionnaire for the level of fathers' involvement in infant care. Father's involvement in infant care in this study was evaluated in 4-time periods at the end of day 3 to 5 after birth, 2, 4, and 6 months after birth, using the questionnaire of father's involvement in infant care (reported by the mother). It was prepared by Bagheri *et al.*^[14] and designed in 2015 based on the lamb model. Its validity content was confirmed by the validity method and its reliability was also confirmed by internal consistency using Cronbach's alpha ($\alpha = 0.89$) and ($\alpha = 0.86$). The questionnaire consisted of three parts on a 5-point scale from always to not at all: The first part included 14 questions about the father's measures in the daily care of the infant, which evaluated the dimension of direct interaction between the child and the father. The second part included 5 questions about the father's actions in special circumstances, which examined the dimension of accessibility, and the third part,

with 3 questions, evaluated the father's involvement in caring for the infant in terms of responsibility and financial support.

In the course of the study, after the introduction and obtaining written informed consent from subjects and assuring them about the confidentiality of the data, the researcher explained the objectives, steps, and methodology of the study. In the intervention group, after selecting the family and completing the research unit selection questionnaire as well as the demographics and father involvement questionnaire, the phone numbers of mothers and fathers were registered, and educational materials were prepared based on the child's age and need according to the latest references and national guidelines were taught to the fathers step by step with respect to the infant growth using Soroush mobile messenger and the questions of the father were also answered. Mothers who were referred to healthcare centers for child services and vaccination were then asked to complete a questionnaire regarding the fathers' involvement in infant care in the second, fourth and sixth months after birth. The questionnaire regarding the father's involvement in infant care from the third to fifth days of birth as well as the second, fourth, and sixth months after birth was also filled out by mothers in the control group. To ensure the participation of subjects, the researcher contacted them one day before determining time points in two, four, and six months after childbirth. The collected data were analyzed in the next stage. Descriptive and analytical statistics were used and data were analyzed using SPSS software, version 21. $p < 0.05$ was considered statistically significant

Ethical considerations

At the beginning of the study, the patients were given explanations about the purpose and research method And they were satisfied to participate in the research, They were also informed about their right to either participate in or withdraw from the study at any (IR.NKUMS.REC.1397.066)

Results

The primary sampling produced 100 samples and with the withdrawal of 8 subjects in the control group and 9 subjects in the intervention group, the final analysis was performed on 41 participants in the intervention group and 42 participants in the control group.

The mean (standard deviation) age of fathers in the intervention and control groups were 32.70 (5.51) and 33.45 (6.73), respectively. The results of the independent t-test demonstrated the homogeneity of this variable in both groups ($p = 0.583$). The high school diploma was the most frequent education degree for fathers in both interventions (51.20%) and in control groups (38.10%). Most fathers in both groups were freelancers, and 97.50% of fathers in the intervention group and 85.7% of fathers

in the control group were satisfied with marriage and relationships with their spouses. The two groups were homogeneous in terms of these variables. Table 1 presents other variables.

The results of the study showed that the two groups were not significantly different in terms of pre-intervention involvement score at birth and the two groups were homogeneous, but the mean scores of total involvement

of fathers at two, four, and six months after birth was significantly higher in the intervention group than the control group ($p < 0.001$) [Table 2].

Repeated Measures ANOVA was performed for both groups, after confirming the assumptions, and the results for both groups showed an increase in the participation of fathers over time ($p < 0.001$). There was a significant difference in the intervention group from birth to six months ($p < 0.001$)

Table 1: Relative and absolute frequency of social and economic characteristics of fathers in intervention and control groups

Variable	Intervention group <i>n</i> (%)	Control group <i>n</i> (%)	<i>p</i> *
Education			
Primary	3 (7.31)	2 (4.76)	0.208
Guidance school	6 (14.64)	4 (9.53)	
Diploma	21 (51.21)	16 (38.09)	
University	11 (26.84)	20 (47.63)	
Total	41 (100)	42 (100)	
Job			
Employee	8 (19.52)	14 (33.33)	0.265
manual worker	7 (17.07)	3 (7.15)	
Farmer	1 (2.44)	0 (0)	
Student	0 (0)	(2.38)	
Freelancer	21 (51.21)	23 (54.76)	
Unemployed	2 (4.88)	0 (0)	
Others	2 (4.88)	(2.38)	
Total	41 (100)	42 (100)	
Satisfaction with marriage and relationship with the spouse			
Satisfied	39 (95.12)	36 (85.72)	0.154
Fairly satisfied	2 (4.88)	5 (11.90)	
Unsatisfied	0 (0)	1 (2.38)	
Total	41 (100)	42 (100)	
Familiarity with neonatal care through reputable sources			
High	9 (21.96)	8 (19.05)	0.231
Medium	15 (36.58)	23 (54.76)	
Low	7 (17.07)	6 (14.29)	
Not at all	10 (24.39)	5 (11.90)	
Total	41 (100)	42 (100)	
Involvement of men in the male family			
High	11 (26.84)	9 (21.43)	0.296
Medium	16 (39.02)	17 (40.49)	
Low	9 (21.95)	8 (19.04)	
Not at all	5 (12.19)	8 (19.04)	
Total	41 (100)	42 (100)	
Housing			
Personal	21 (51.21)	20 (50.00)	0.519
Rent	17 (41.48)	20 (50.00)	
Other cases	3 (7.31)	0 (0)	
Total	41 (100)	42 (100)	
Income			
Less than enough	16 (39.02)	12 (28.57)	0.162
Enough	25 (60.98)	27 (64.28)	
More than enough	0 (0)	3 (7.15)	
Total	41 (100)	42 (100)	

*Chi-Square Test

but in the control group, the participation of fathers from birth to four months ($p = 0.18$) and from birth to six months ($p = 0.12$) was significant [Figure 1].

Discussion

The main purpose of the present quasi-experimental which was conducted on 83 participants from clients of healthcare centers affiliated with North Khorasan University of Medical Sciences was to evaluate the effect of virtual training of fathers regarding infant care on their involvement in these cases. The results of the study indicate that the levels of father involvement in infant care in the second, fourth and sixth months after birth in the intervention group were higher than in the control group. These findings are consistent with results from a study by Tafazoli *et al.*^[11] titled “Comparison of the effect of infant care education for fathers and couples before birth on the engagement of fathers in infant care”; their study was conducted in person and with face-to-face education. Also, the fathers who had received online and offline intervention programs in a study by Park *et al.* (2022)^[15] on how to teach their father-infant interactions, at 2-6 months after birth showed a significant difference in the change in father-infant interaction scores of the experimental group, especially in the caregiver aspect compared to the control group. In the study by

Rollè *et al.* (2019),^[12] fathers’ education had a positive effect on the degree of fathers’ involvement in infant care. Vismara *et al.* (2013)^[16] in a study entitled “Investigating the effect of education via telephone on parents of autistic patients” concluded that online education can provide a high level of education and deep learning in practice. In this study, the level of father involvement in infant care increased over time in both study groups, it was consistent with a study by Bagheri *et al.* (2015)^[14] entitled “The effect of educational program on the dimensions of contribution of Iranian fathers.” The results of this study showed that the total contribution of fathers was 55.77 and 62.64 in 4 and 8 weeks after birth. In our study, lower than half of the fathers in the control group contributed to infant care at birth. The report results of a study by Bagheri *et al.* (2015)^[14] also stated that the average rate of total father participation in infant care in the control group of the study, i.e., those who did not receive education were 42.92 and 54.66 in 4 and 8 weeks after the childbirth. In other words, more than half of fathers were not involved in the care of their infants,^[15] the results of a study by Shobeiri *et al.* (2015)^[17] entitled “The evaluation of fathers’ participation in home activities and child care in the first 8 weeks after birth” showed that more than half of fathers participated in both activities. One of the limitations of this study was the inevitability of the influence of some factors such as miscellaneous education of the mother during pregnancy and after childbirth in healthcare centers, the influence of other’s opinions and cultural differences which were minimized by using suitable questionnaire items and selecting research population from centers with the same cultural and social levels. In addition, we attempted to encourage fathers to read more by summarizing and making the subject interesting using short educational videos instead of merely readable content to reduce the possibility of fathers’ boredom regarding the educational content in the messenger app.

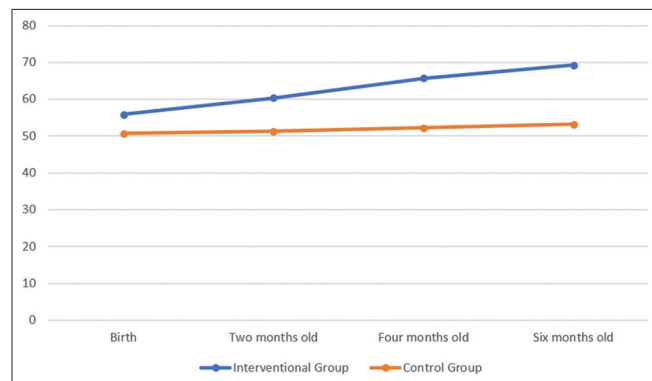


Figure 1: Changes in the scores of total involvements of fathers in intervention and control groups

Table 2: The average of total father involvement in infant care at birth, two months, four months and six months after birth in intervention and control groups

Variable	Mean (SD)		p*
	Intervention group	Control group	
Total participation at birth	55.91 (16.61)	50.69 (17.02)	0.056
Total participation at 2 months	60.41 (14.50)	51.28 (15.75)	0.007
Total participation at 4 months	65.70 (13.97)	52.26 (16.52)	p<0.001
Total participation at 6 months	69.26 (13.26)	53.71 (16.85)	p<0.001
P**	0.000	0.006	

*Independent *t*-test. **Repeated Measures ANOVA

Conclusion

With respect to the results of the present study and considering the place of social media in people’s lives in the 21st century, it seems that fathers’ virtual education can be used to increase their involvement in infant care. Therefore, it is suggested to study the effect of virtual education on men to increase their participation in other areas of reproductive health.

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Conflicts of interest

Nothing to declare.

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