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Original Article (Pages: 1809-1817)

The Effect of Family Presence during Pediatric Intensive Care Unit Bedside on Family General Health: a Clinical Trial Study

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Abstract

Background
A child's hospitalization in intensive care units causes stress and worry in other family members. This study aimed to determine the effect of family presence during pediatric ICU bedside on family general health.

Materials and Methods
In this clinical trial study, 46 family members of the pediatrics hospitalized in the ICU in Teaching hospital affiliated with the Lorestan University of Medical Sciences in Khorramabad in April to November 2014 were divided into two groups using the stratified block randomization. Family members of the intervention group were present at the bedside of their patients two hours a day for six days, but family members of the control group did not visit their patients during six day. The general health status of the family members in the two groups was evaluated immediately before and after the visit on the first, sixth and twelfth visit, by using the General Health Questionnaire (GHQ). The data was analyzed using the repeated measure tests and independent t-tests.

Results
Results showed there was a significant difference between the groups in terms of the means of the GHQ scores of the family members before and after the intervention ($P<0.05$).

Conclusion
The presence of family members at pediatrics' bedside and their cooperation in care can improve their general health.

Key Words: ICU, Family, General health, Pediatrics.

*Please cite this article as: Adineh M , Toulabi T, Pournia Y, Baraz Sh. The Effect of Family Presence during Pediatric Intensive Care Unit Bedside on Family General Health: a Clinical Trial Study. Int J Pediatr 2016; 4(5): 1809-17.

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Received date Feb 23, 2016; Accepted date: Mar 22, 2016

1- INTRODUCTION

Communication and subsequently sensory stimulation affect patients' therapeutic outcomes and families (1-3). The results of various researches have shown the positive effect of sensory stimulations by family members on pediatrics in the intensive care unit (ICU). Therefore, ensuring a high level of family communications is a priority for nurses, physicians, professional communities, and legal organizations (4-6). Hospitalization of a family member, especially pediatrics, in the ICU can pose remarkable psychological stress on the family (7). Current communications in the ICU are often inconsistent and inadequate, and lack quality (8). Family members are of the opinion that if they receive understandable and clear information daily, it can be extremely useful. However, families rarely receive adequate and effective information(9). Therefore, pediatrics specific values and priorities may not be regarded and respected (10, 11). The problem sometimes shows itself as aggression towards hospital staff, and complaints to superior authorities. All these factors can endanger family general health (12). However; family and family life are essential parts of an individual's health (13-15). For some reasons, the continuity of family participation is not always possible and the family is moved away from the patient. One of these occasions is the hospitalization in the ICU, where family members' presence is banned and their visits are extremely limited due to the philosophy and structure of this ward (16, 17).

Considering the urgent need to improve communications with families, researchers have tested a variety of novel approaches in this regard. For example, the results of study by Scheunemann et al. (2011) showed that, in the majority of conducted clinical trials, using targeted print data, having ethical consultation, holding conferences by the ICU staff with the presence of pediatrics' family membership to inform them of diagnostic and therapeutic methods, therapeutic purposes, and patients' values, and assessing family members' understanding can decrease stress in families, hospitalization duration, and usage of specific therapies. However, definite evidence has not been found to show that these interventions reduce the overall cost of treatment(18).

Family members need to ensure that their pediatric are provided with the best care. There is increasing evidence that supports the presence of family members during cardiopulmonary resuscitations and during surgical procedures. Although this issue is controversial, family members feel relaxation and gratitude when they are besides their relatives (19).

The majority of the pediatrics in the ICU in teaching hospital affiliated with the Lorestan University of Medical Sciences in Khorramabad, come from the surrounding villages and tribes, and there are deeper emotional communications between these pediatrics and their families. From religious and humanistic perspectives, visiting a pediatric is considered as a humanistic duty with spiritual rewards. The policy of family member visiting with patients in the ICU has already had numerous restrictions:

1. Increased risk of infection, **2**. The involvement of family members in the work of nurses, and 3. Lack of appropriate physical space (20), and due to these limitations, daily verbal and physical confrontations are observed between the staff and patients 'relatives. So, this study was conducted to determine the effect of Family Presence during Pediatric ICU Bedside on Family Health Care.

2- MATERIALS AND METHODS

2.1. Study Design and Participants

This clinical trial study was conducted on 46 family members of the pediatrics hospitalized in the ICU in teaching hospital affiliated with the Lorestan University of Medical Sciences in Khorramabad in April to November 2014. The family members were randomly divided into two groups of intervention and control.

2-2. Inclusion and exclusion criteria

The inclusion criteria for this study included:

- Family members' willingness to participate in the study,
- Admission of their pediatric in the ICU, and
- The visiting person being one of the immediate family members (parents, spouses, children, and siblings) and
- Being over the age of 18 and
- Children under 10 years of age.

The exclusion criteria included:

- Family members' unwillingness to continue participating in the study,
- Patients' death, and
- Patients' referral to other centers.

The flow diagram had shown this study briefly (**Figure.1**).

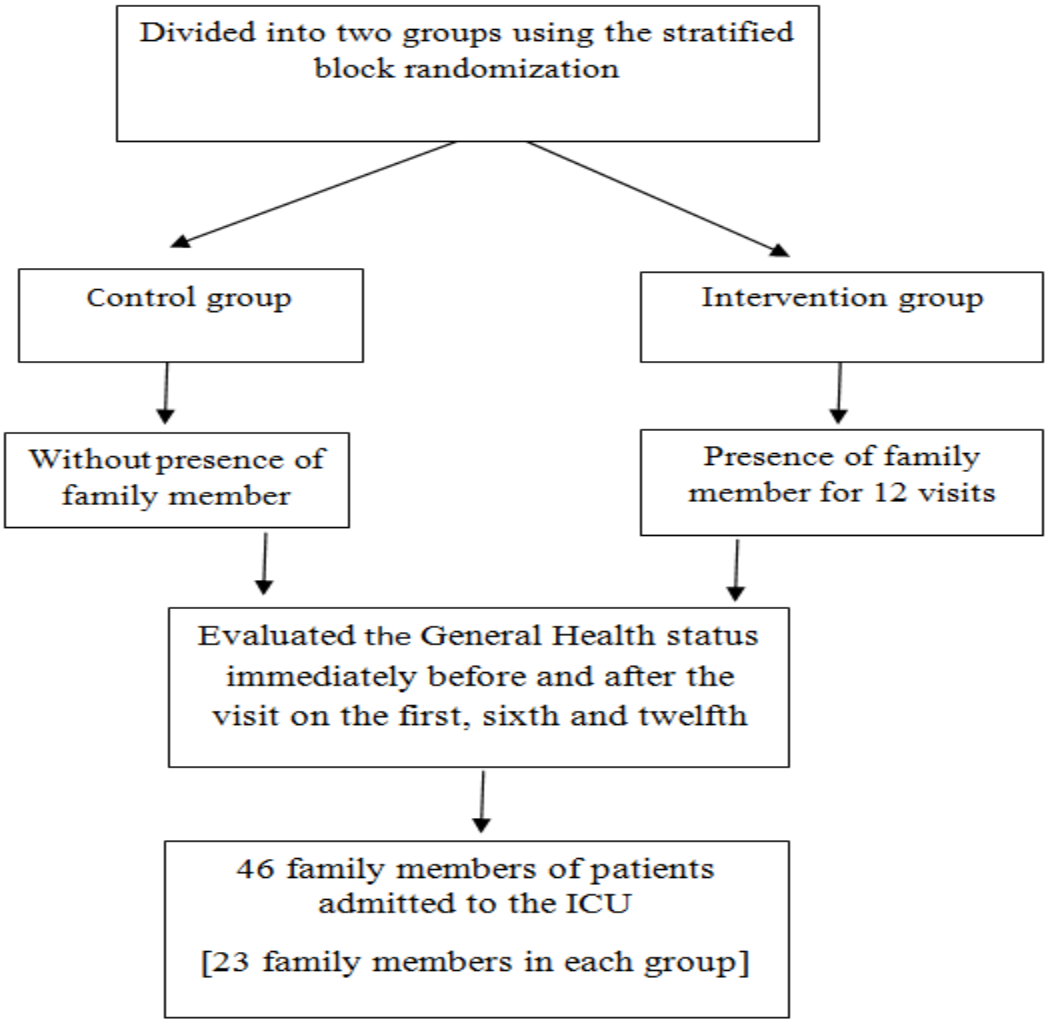

Fig.1: Consort diagram

2-3. Clinical Interventions

The family members in the intervention group were present at the bedside of their patients two hours a day from 4:00 p.m. to 5:00 p.m. in the afternoon and from 8:00 to 9:00 in the evening with an interval of three hours for 6 days. The family member who was chosen to perform the interventions for 6 days was the same. The family members were told should not interfere in medical team's works and if they have any suggestion or animadversion tell it to the researcher. During the meeting the researcher and doctor attempt to answer all of family members' questions about the patient. Moreover some education pamphlets about the disease and it is treatment were given to family members with the permission of doctor.

2-4. Instruments

The study instruments consisted of two parts including a demographic questionnaire and General Health Questionnaire (GHQ) .The general health status of the family members in the intervention and control groups was evaluated immediately before and after the visit on the first, sixth and twelfth visit via interviewing using the General Health Questionnaire. The pilot results had shown that a large number of the visitors were illiterate or fairly literate and could not complete the questionnaire personally. Therefore, the questionnaire was completed via interviewing.

The GHQ includes twenty-eight 4-item multiple choice questions with a total of 84 points, which evaluate the three criteria of anxiety, depression, and stress. Every seven questions evaluate one domain so that the first seven questions evaluate psychosomatic diseases, the second seven questions the intensity of anxiety, the third ones interpersonal relationships, and the fourth ones the intensity of depression. The scores of 0-21 show that the person is in optimal health condition. The scores of 22-42 indicate that the person's general health has been threatened and damaged in some areas. The scores of 43-63 show that the person's general health has been threatened and damaged in some areas, and they have to consider improvements in their life conditions and psychological health. The scores of 64-84 are indicative of an acute condition in the person's general health, and visiting a relevant specialist is strongly recommended (21). GHQ questionnaire is a standard tool that has been used at numerous research in Iran and the world (21). In this study, the reliability of GHQ with a correlation coefficient of 82.0 was confirmed.

2.5. Ethical Considerations

This study was approved by the Ethics Committee of Lorestan University of Medical Sciences (ID number: N. 20066375), and registered in the Iranian Clinical Trial Website with the IRCT201204149469N1 code. The objectives of the study were explained to all participants and all of them signed a written informed consent and were assured of the confidentiality of their individual information as well as the voluntary nature of participating in the study. In all stages the researchers were committed to observe the ethical issues in accordance to the Helsinki ethical declaration. After the informed consents were obtained and the safety of the interventions was confirmed

2.6. Statistical Analysis

Data were analyzed using SPSS 18.0 software (SPSS Inc, Chicago, Illinois, USA). Descriptive and analytical statistics were used to analyze the data. Mean and standard deviation (SD) were calculated for quantitative variables. The repeated measures test was applied to compare the means of the GHQ scores of the family members in each group before and after the interventions, and the independent t-test to compare the means of the GHQ scores of the family members in the two

groups. P-value less than 0.05 were considered.

3. RESULTS

The results showed that 50%, 30.4%, 10.9%, and 8.7% of the family members in the intervention and control groups, whose GHQ scores had been measured, were the patients' brothers, parents, spouses, and sister respectively. The results of the independent t-tests showed that the two groups were homogeneous and did not have a statistically significant difference in terms of type of relation with the patients.

The results of the independent t-tests indicated that the means of the GHQ scores in the intervention and control groups were significantly different after the twelfth intervention (P=0.045). The mean in the intervention group (19.65±9.16) was lower than that in the control group (29.47±11.72). The differences were not significant in other cases (**Table.1**).

The results of the independent t-tests showed that the means of the decrease in the GHQ scores of the family members in the intervention and control groups were significantly different before and after the first (P=0.05), sixth (P=0.033) and twelfth (P=0.045) interventions. The mean of the decrease in the GHQ scores of the family members before and after the first intervention in the intervention group (-4.13±8.5) was higher than that in the control group.

This difference between the intervention and control groups was negative, and in the direction of the decrease in the GHQ scores.The mean of the decrease in the GHQ scores of the family members before and after the sixth intervention in the intervention group (-3.86±4.89) was higher than that in the control group. This difference between the intervention and control groups was negative, and in the direction of the decrease in the GHQ scores. The mean of the decrease in the GHQ scores of the family members before and after the twelfth intervention in the intervention group (-5.21±5.69) was higher than that in the control group. This difference between the intervention and control groups was negative and in the direction of the decrease in the GHQ scores (**Table.1**).

The results of the repeated measures tests did not show significant differences among the means of the reductions in the GHQ scores of the family members on different days. In other words, the effect of the interventions on different days on the GHQ scores of the subjects was equal. Moreover, the results did not show interaction effects between the means of the reductions in the GHQ scores of the subjects before and after the intervention and type of group. In other words, the effect of the interventions on different days was the same in the two groups (**Table.2**).

The details of this interaction effect are presented in (**Figure.2**). According to the figure, a considerable difference was observed in the GHQ scores in the intervention group from the third day on wards compared to the other days. However, this difference was not statistically significant. Based on the independent t-test results, there was a significant difference between the groups in terms of the means of the GHQ scores of the family members before and after the intervention (P=0.003) (**Table.3**).

Paired comparisons via the Turkey's test showed significant differences between the studied groups in terms of the patients' GHQ scores before and after the intervention. In other words, the intervention group alone was the best therapeutic group, followed by the control group.

Table 1: A comparison between the intervention and control groups in terms of the means of the GHQ scores before and after the intervention

Intervention number		Intervention group	Control group	P-value
		Mean(SD)	Mean(SD)	
First	Before	38.6957(12.37091)	40.2609(9.63053)	0.424
	After	34.5652(11.22022)	38.7391(9.28448)	0.245
	Subtraction	-4.1304(8.81365)	-1.5217(4.38872)	0.05
Sixth	Before	32.1739(9.78242)	34.0870(8.51156)	0.032
	After	28.3043(9.67863)	33.3913(9.16386)	0.588
	Subtraction	-3.8696(4.89252)	-0.6957(3.86634)	0.032
Twelfth	Before	24.8696(10.0139)	30.7826(10.44012)	0.226
	After	19.6522(9.16321)	29.4783(11.72360)	0.045
	Subtraction	-5.2174(5.69654)	-1.3043(4.22584)	0.033

Table 2: Analysis of variance within the group average dimensions of the GHQ of the intervention group

Variables	DF	F	P-value
Overall effect of intervention time	2	1.122	0.322
Interaction effect between intervention time and group	2	0.391	0.635
Interaction effect between intervention time and patient's age	2	1.861	0.170

Df= Degrees_of_freedom; F= F statistics.

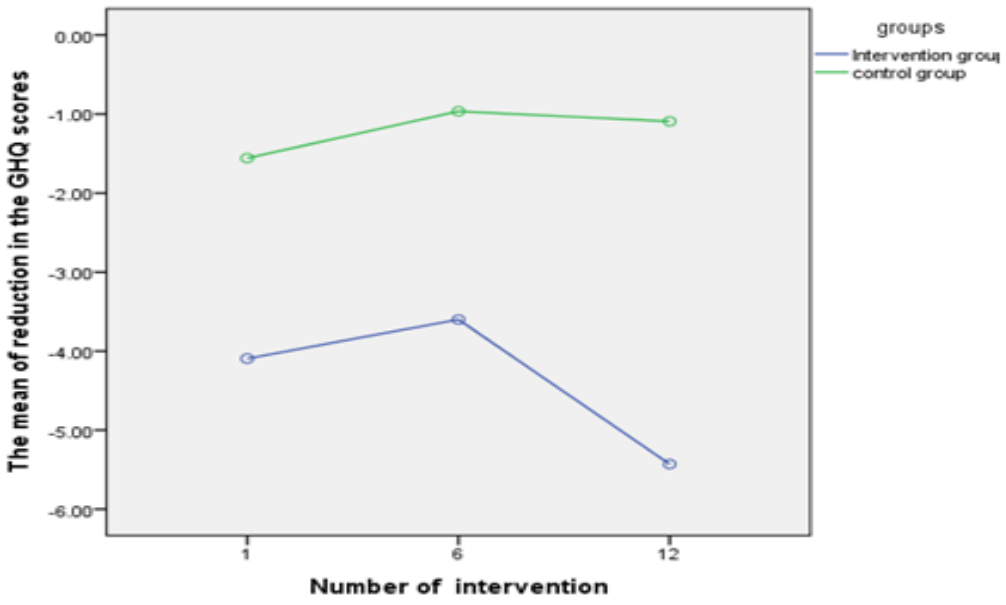

Fig.2: The mean of reduction in GHQ scores in terms of groups

Table 3: Comparison the categorical pain intensity during the intervention in control and interventional groups by fisher test

Variable	DF	F	P-value
Overall effect of intervention group	1	10.107	0.003

4- DISCUSSION

The results of this study indicated a significant difference between the two groups in terms of the mean GHQ scores on the sixth day after the intervention. Moreover, the results also showed that the means of the GHQ scores of the subjects in the two groups showed considerable reductions on the sixth day compared to the first day. However, the reduction in the GHQ scores in the intervention group was much more than that in the control group. Being consistent with our results, the results of a study by Laureate et al. (2007) in a 22-center randomized clinical trial in France showed that organizing conferences for the family members of the patients in the ICU, providing them with brochures on the patients' condition, and their presence at the patients' bedside decreased their anxiety and stress greatly. The depression rate in the intervention group decreased compared to that in the control group (22).

However, the results of Medland et al.'s study (1998) showed that nursing interventions including one-session meetings with the family members on admission, provision of an ICU booklet for the family members, and family members' limited visiting with the patients did not affect the family members' general satisfaction (23). The participation of only thirty subjects may have limited the power of this study. Being consistent with the results of our study, the results of a study by Mack Cromic et al. (2010) revealed that satisfying the material and spiritual needs of the ICU patients' families can solve interfamilial conflicts, and can increase family awareness on the usefulness of communicating with or touching a beloved person, and the way of nurses ling anxiety and aggression symptoms (24). Therefore, based on these results, it can be concluded that family members are more stressed, anxious, and depressed on the admission of their pediatrics in the ICU. The most important reason is probably the sudden and unexpected encounters with the happened incidents since most of the patients in our study were hospitalized in the ICU due to accidents or other unexpected incidents, and the worry over losing them caused for the family members was more than any other time. However, the reductions in the GHQ scores over time showed that the family members' reactions to the hospitalization of a member in the ICU followed the process of reactions to other unpleasant incidents. The mean of the GHQ scores in the intervention group was lower than the control group. Therefore, it can be stated that the presence of the family members at the pediatrics' bedside helped them greatly in getting quick compatibility with the happened incident and the feeling of relaxation since family general health can be endangered by the worry over the pediatrics condition, feeling of incompetence to save the pediatrics life, and doubting the existence of proper and appropriate care by the staff. These problems sometimes show themselves as aggression, objections to staff, and complaints to superior authorities (7).

On the contrary, presence at the bedside can largely overcome these concerns and causes relaxation in individuals. Furthermore, the presence of family members can be helpful for patients. For instance, the results of the present study showed that the means of the number of hospitalization days in the ICU were

significantly different in the two groups. The mean in the intervention group was lower than the control group. The findings of a study by Shadfar et al., which was conducted on the effect of sensory stimulations on the changes in the consciousness level of the head trauma comatose patients revealed significant differences in the comatose patients who received sensory stimulations in the family and nurses groups in the first week and the first two weeks in total. The hospitalization duration was shorter in the head trauma comatose patients who received sensory stimulations (25). Mackay et al. (1992) in their study concluded that the patients who received sensory stimulations on the first admission days needed long rehabilitation programs twice less than those who did not receive sensory stimulations, and the duration of hospitalization was twice shorter than that in the other group (26). Morgan et al. (1998) showed that the start of rehabilitative measures before the seventh day of rehabilitation resulted in shortening the duration of hospitalization and improving kinesthetic abilities in the patients. Moreover, Karter in a study indicated that the application of diverse sensory stimulation programs on head-injured comatose patients resulted in decreasing coma duration and improving the Glasgow score more quickly in the family group than in the nurses group (27).

5- CONCLUSION

The results indicated the positive effect of the family members' presence at the bedside of the pediatrics ICU that are hospitalized in the on their general health status. Accordingly, it is recommended that, through training family members in the ICU, they should be provided with the opportunity to visit their patients in a limited way. Moreover, prospective studies should be conducted to investigate a complete range of results related to family-based patient care.

6- CONFLICT OF INTEREST

The authors had not any financial or personal relationships with other people or organizations during the study. So there was no conflict of interests in this article.

7-ACKNOWLEDGMENTS

We appreciate all family members and nursing staff for participation in this study and also appreciate Deputy of Research and Technology of Lorestan University of Medical Sciences. This study was approved and supported by the also appreciate Deputy of Research and Technology of Lorestan University of Medical Sciences.

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