

Comparison of the Effect of Distraction with Play Dough and Bubble Making on Children's Parents Satisfaction during Venipuncture

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Received: July 22, 2015

Accepted: November 2, 2015

ABSTRACT

Introduction: Venipuncture is of the most common invasive procedures in hospital, That in case of uncontrolled pain, it can lead to the child's parents **discontent**. Play dough and bubble making are among the distraction methods that can show the nurse's concern to provide game conditions for the child. This study was designed to compare the effect of distraction by play dough and bubble making methods on parental satisfaction for children under venipuncture.

Method: This clinical trial was performed by involving 90 parents **whose** children are randomly assigned to the groups of 30 subjects including play dough, bubble making and control. The intervention consisted of playing with dough and bubble making among children in intervention groups performed 5 minutes before venipuncture. After the intervention the satisfaction of children's parents was measured by parental satisfaction questionnaire the validity and reliability of which had been approved. The data were analyzed using Kolmogorov-Smirnov test, Chi-square, Fisher exact, ANOVA and Spearman correlation coefficient.

Results: The mean and standard deviation of parental satisfaction for play dough, bubble making and control groups after the intervention were 79.0 ± 8.9 , 70.3 ± 8.6 and 51.5 ± 9.4 respectively. According to one-way ANOVA there were significant differences between the mean score of children's parents in three groups, ($p < 0/001$). Tukey test (HSD) result for pair-wise comparison of the groups showed that the difference between the average satisfaction scores of children's parent after the interventions was statistically significant between play dough and control ($p < 0/001$), bubble making and control group ($p < 0/001$) and bubble making and play dough groups ($p < 0/001$).

Conclusion: According the higher satisfaction of play dough group parents the reason of which might be the higher reduced pain of this group, variety and attraction, it can be considered as an effective and cost - effective method for pain control during venipuncture in children. However, more research is needed in this field.

KEY WORDS: Distraction, Play dough, Bubble making, Parent, Satisfaction,

INTRODUCTION

Nowadays with the development of health and treatment systems great attention is paid to the quality of providing services (1). Customers (patients, relatives of patients) are the main sources of life and the sustainability of any organization (hospital). Hence the importance of ensuring the satisfaction and continuous improvement of quality of service has been always focused by senior managers (2). Paying attention to the quality of care services according to the patients is an important aspect in the development and improvement of health services and that is why the satisfaction of patients and his relatives is considered as a base index measure of service quality and evaluate and plan these services (3). Patient satisfaction is the sense of satisfaction and happiness not only about the treatment and care but also about the conditions and the services provided by the staff so that they would refer to that center again in case of need and recommend it to other people (4). Therefore in order to achieve this goal measuring satisfaction is one of the most effective tools (5). The fundamental factors affecting customer satisfaction include the amount of awareness and education of the patients, the patients and caregivers interaction and the

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waiting time of patients to receive services (6). Moreover, the satisfaction level of people depends on their level of knowledge and culture and the least expectation of the provided services (5). The results of the studies show that parents satisfaction measurement may be very useful and valuable because some realities such as adequate attention to the needs of the patient, participation in the decision making, relationship with the clients and the kind of provided services will be accessible(6,5). One of the criteria to increase the quality of nursing services is to pay attention to the preferences of the patient and parents (7). Children with parents who participate in all aspects of treatment and have collaboration with the medical team are less upset than the children of the parent who do not help with taking care of their children, therefore without the interference and satisfaction of the patients and parents it is not possible to achieve high levels of health services (8).

Most parents while hospitalizing the children because of having the responsibility of caring for children have a sense of concern, incompetence and guilt and require guidance with sympathetic understanding of the caregiver. Parents and children require nurses who are the source of comfort, strength and knowledge. Nonetheless the influence of parents on children is so important that the nurse cannot provide high-quality alone (9). Accordingly the features of a good care according to the modern children are having a good relationship and paying attention to their demands (7, 8).

Parents and families of a child who is in pain often have sense of distrust and anger against the treatment systems and also have a sense of depression and guilt due to their inability to reduce pain and the fact that they cannot do anything (10). Thus the nursing interventions for child care should be designed in such a way that they control the pain or reduce it and in most cases the nurses require to apply non-medical tools for the effective treatment of the patient and increase the satisfaction of their parents (11).

Although a significant progress has been made in the field of childcare but most of measures in the field of care and increasing life longevity are traumatic, painful, sad and non-acceptable on the part of the patient. With knowledge of the patient and family stressors and the interventions to reduce these stressors, the nurses should do their best to provide the childcare services that minimize physical and psychological stresses experienced by the child and family (10,11).

Therefore the nurses should consider this point and try to reduce mental and physical stresses by reducing pain because pain relief is the right of the child and one of the duties of nurses (12,13). There are different medical and non-medical methods to relieve pain by venipuncture in children but due to the variety of these methods the selected method should be proportional to child age in terms of evolution. Non-medical treatments allow the child to play an active role during the treatment and overcome the sense of being a victim and he has a sense of control of the situation. One of the non-medical techniques is distraction and play dough and bubble making is considered by the researchers (12).

Bubble making is an effective technique to create distraction and relaxation in toddlers and older children this method increases the pain tolerance during painful procedures and thus reduces the mental stress due to the pain. Bubble making is a combination of regular breathing and visual distraction by watching the bubbles. In bubble making children are focused on making bubbles and on the other hand this method reduces muscle stiffness by relaxation, relaxes pleura and the child feels freedom and lightness with deep breathing (19). Also different puppet playing and dough play techniques are among the distraction methods that allows children to play with the nurse as a friend through puppet playing and dough play and express feelings and fear of unknown (14, 15). According to children's interest in dough play and creation of new forms and colorful dough as well as the simulated thinking and creativity of children, distraction with dough play is a simple, mental and behavioral intervention that distracts children from stressful simulator and makes him focus on an attractive process (16). When children play with clay or play dough their fingers are in direct contact with the material and some of the different moods (for example, violence) of the children are transferred to the material. On the other hand children present their dreams and desires through play dough. Developing ingenuity and creativity, imagination and thinking, confidence and self-esteem, problem-solving skills, controlling stressful and violent behavior and creating peace and security are the benefits of playing with the dough and clay (17, 18). However, due to the sensitivity of children to infection, special attention should be paid to the possibility of transmission through play dough.

Due to the extensive review of the literature and the research team experience in the field of children based on the need for safe, inexpensive and economical, scientific, practical, available and simple ways and also the need to collect parental satisfaction through interactive games with children during invasive and painful procedures, so far no study had been published on the effect of play dough and the comparison of play dough and bubble making on children's parent satisfaction, however studies have been conducted on the effect of bubble making on different domains including venipuncture, therefore the present study was developed to compare the effect of distraction methods of play dough and bubble making on children's parent satisfaction under the IV venipuncture.

METHODS

This randomized clinical trial was performed by three groups of play dough, bubble making and control after intervention. The population consists of parents of children referring to the pediatric emergency department of Imam Reza (AS), Dr. Sheikh and Qaem (AS) hospitals in Mashhad. The sample consisted of 90 parents of children who were randomly assigned to one of three groups of play dough, bubble making and control. Inclusion criteria were willingness of parents to participate, 3-6-year-old children, the lack of acute pain, lack of consumption of narcotic drugs, tranquilizers and non-steroidal anti-inflammatory in the past 24 hours according to documents and the lack of experience of the previous venipuncture and the most important exclusion criteria for parents was the unwillingness of parents or children at any time or the lack of success of the first attempt for venipuncture. After receiving permission from the ethics committee of Mashhad University of Medical Sciences and obtaining the informed written satisfaction from parents sampling was done. All children attending the first, second and third day were grouped in dough play, bubble making and control groups respectively and this continued until the completion of the sample size and each group included 30 children and their parents.

Intervention included choosing children's venipuncture room in the part of the pediatric emergency with less traffic and noise and proper light and ventilation under the same condition for all children. Position for all children was the routine supine mode and the same disinfectant was used and the cephalic vein or the basilica's arm or back of the hand with similar brand and size IVCannulas (number 22) were used for venipuncture. In order to control the impact of the nursing skills on pediatric pain, only two skilled and experienced nurses performed venipuncture (those who have enough experience in this field, and are more likely to be successful at the first attempt) who have been working in emergency departments and had greater collaboration with the research team, were used. The research tools included the demographic information and the satisfaction form of parents prepared by the researchers. Demographic questionnaire consisted of 7 questions about age, gender, place of birth, father's education, father's occupation, education level of the mother and the mother's job. The researcher made satisfaction form of parents included 22 questions ranging from 0 to 4 scores related to none to very high options respectively. Scores range from zero to 88 that is presented in terms of percentage to facilitate understanding. The content validity of both questionnaires was confirmed by 10 members of the Board of School of Nursing and Midwifery of University of Mashhad. The reliability of the tool was evaluated using internal consistency. That is, in a pilot study, the satisfaction of parents of 10 children were measured under the venipuncture and then the reliability was measured by Cronbach's alpha coefficient which was 0.77.

In play dough group, 5 minutes before venipuncture the child was encouraged to build figures with dough group and to communicate with the child he was helped in the process. At this point, making figures was arbitrary and according to the child's interest and the purpose was to absorb his cooperation and trust. Then as the child was held by the parent he was led to the venipuncture room and laid on the bed. The researchers were in a position to see child reactions completely. The researcher while continuing relationship with the child from the beginning since the entrance of IV formed 5 figures with the child. For example the first figure was a pink flower. The second figure was a yellow chick, the third one was a green frog, the fourth one was a red lollipop and the fifth figure was a simple person which continued from the beginning to the end of venipuncture. The intervention was designed such that the figure and the required time were the same for all children. Also when the figures finished the researchers asked questions about the forms such as: "What is this?", "Have you seen it already?" "look, can you make it again later?" Nurses and parents encouraged children to participate with encouraging expressions such as "Can you do it again?" or "what does it do?" or physical gestures. In the bubble making group the child was trained how to make bubbles before venipuncture and 5 minutes before venipuncture the child was encouraged to make bubble and continued until the end of venipuncture. Parents and researchers encouraged children to continue playing. In control group venipuncture the process was performed regularly without any additional intervention. Parental satisfaction of all three groups after venipuncture was measured using a parental satisfaction questionnaire.

The collected data were coded and entered into computer after ensuring the accuracy of data entry statistical software, SPSS 16 and descriptive statistics Kolmogorov-Smirnov, chi-square, ANOVA, Kruskal-Wallis and Fisher's tests were used to summarize the results and their analysis.

RESULTS

The results showed that the mean and standard deviation of the age of the children in all groups was 4.3 ± 1.0 . Kruskal-Wallis test result showed that there is no statistically significant difference between dough play, bubble making and control groups in terms of this variable ($p = 0.601$) therefore the groups are homogeneous in terms of this variable. Other demographic characteristics of children and their parents and therefore the homogeneity of the

measured variables in the three groups using chi-square and Fisher's exact test was analyzed the results of which are presented in Table 1.

Table 1: Children's distribution in dough play, bubble making and control groups in terms of demographic characteristics

Variable		play dough		Bubble making		Control		Test result
		Number	Percent	Number	Percent	Number	Percent	
Gender	Boy	20	66.7	17	56.7	15	0.50	Chi square = 1.73 df = 2 p = 0.42
	Girl	10	33.3	13	43.3	15	0.50	
	Total	30	0.100	30	0.100	30	0.100	
Rating birth	One	13	48.1	10	33.3	13	43.3	Exact $\chi^2 = 3.29$ df = 6 p = 0.77
	Two	12	44.4	15	0.50	14	46.7	
	Three	2	7.4	4	13.3	3	10.0	
	Four	0	0.0	1	3.3	0	0.0	
	Total	27	100.0	30	100.0	30	100.0	
Education level of father	Primary	4	14.3	5	16.7	3	10.0	Chi square = 7.53 df = 6 p = 0.48
	Middle school	7	25.0	4	13.3	3	10.0	
	High school	11	39.3	12	40.0	17	56.7	
	Collegiate	6	21.4	9	30.0	7	23.3	
	Total	28	100.0	30	100.0	30	100.0	
Father's job	Worker	2	7.1	2	7.1	5	16.7	Chi square = 6.59 df = 4 p = 0.16
	Employee	9	32.1	7	25.0	14	46.7	
	Free	17	60.7	19	67.9	11	36.7	
	Total	28	100.0	28	100.0	30	100.0	
Education level of mother	illiterate	0	0.0	0	0.0	2	6.7	Chi square = 9.53 df = 8 p = 0.30
	Primary	3	10.3	7	24.1	5	16.7	
	Middle school	12	41.4	8	27.6	9	30.0	
	High school	10	34.5	6	20.7	6	20.0	
	Collegiate	4	13.8	8	27.6	8	26.7	
	Total	29	100.0	29	100.0	30	100.0	
Occupation mother	Employee	6	20.7	9	31.0	10	33.3	Chi square = 3.78 df = 4 p = 0.70
	Free	2	6.9	1	3.4	1	3.3	
	housewife	21	72.4	19	65.5	19	63.3	
	Total	29	100.0	29	100.0	30	100.0	

After the intervention, the mean and standard deviation of parental satisfaction of play dough, bubble making and control groups were 79 ± 8.9 , 70.3 ± 8.6 and 51.5 ± 9.4 respectively. According to one-way ANOVA there was a significant difference between the average satisfaction score of parents in dough play, bubble making and control groups ($p < 0.001$). Tukey test (HSD) result for the pair wise comparison indicated that the satisfaction score of parents after the intervention was significant between dough play and control ($p < 0.001$), bubble making and control ($p < 0.001$) and dough play and bubble making ($p < 0.001$) (Table 2).

Table two: The mean and standard deviation of parents' satisfaction in dough play, bubble making and control groups

Parental satisfaction	Play dough	Bubble making	Control	ANOVA Test result
	Mean \pm SD	Mean \pm SD	Mean \pm SD	
After intervention	79.0 ± 8.9	70.3 ± 8.6	51.5 ± 9.4	F = 49.45, df = 2, p < 0.0001

Also Spearman correlation coefficient showed that there is a direct linear relationship between the father's job and parental satisfaction ($p = 0.021$ and $r = 0.262$). There was no significant relationship between individual variables of the parents and parental satisfaction.

DISCUSSION

According to the results there was a significant difference between the mean parental satisfaction score in dough play, bubble making and control groups after the intervention. Also the pair wise comparison of the showed significant difference between the parental satisfaction after the intervention between dough play and control, bubble making and control and dough play and bubble making groups. Given that no similar study was found in case of the second purpose, in order to compare and discuss the results the closest studies are referred to. The result of Tavasoli and Alhani (2011) with the purpose of "determining the parental satisfaction level of nursing care of children with thalassemia" in which 60 parents of children with thalassemia in three hospitals of Guilan were randomly selected and the data collection tool was satisfaction of health care questionnaire in six areas of family participation, communication, clinical skills, emotional needs and overall satisfaction, showed that the parental satisfaction from the clinical skills was 24.4%. The highest satisfaction rate was in the area of clinical skills was (relevant to the question: How much effort do the nurses make to cause the least pain to your children?) and their lowest level of satisfaction was in the area of communications (relevant to the question: How much time the nurses allocate to explain the condition of your children in a way that you could understand?) (20). The results of this study are somehow consistent with the present study because the purpose of designing the interventions (methods of distraction such as dough play and bubble making) in the present study is to reduce pain in children and increase parental satisfaction and in the study conducted by Tavasoli the highest satisfaction was related to the effort of the nurses to cause the highest comfort and the least pain in children. Also the as the satisfaction of the parents in dough play group was significantly higher than the bubble making group the reason of which might be the higher pain reduction in dough play group.

The results of Spark et al. (2007) which were conducted to compare the presence of parents during venipuncture on children's distress and their parents' satisfaction showed no significant difference between the two groups in terms of satisfaction (21). The results of this study are somewhat inconsistent with the present study because in both studies parents were present during venipuncture, but given that in the present study in addition to the presence of the parents the distraction techniques are also used to reduce the pain of children that due to the reduced pain parental satisfaction is enhanced further, so the significant difference in parental satisfaction is not unexpected but in the study conducted by Spark parents were present during venipuncture and no other interventions was performed to reduce pain in children. Poormovahed et al (2007) conducted a study to "determine the satisfaction level of medical care in Shahid Sadooghi- Yazd Hospital" in 2007. The most important factors evaluated by the study as poor were in welfare services and providing perfect atmosphere to play in the department (56.5%) (22). The results showed that despite relatively good quality of medical and nursing services, in case of lack of facilities to play games for children the dissatisfaction of parents would be inevitable. The results of the study conducted by Hosseinian et al. (2011) aimed at "determining maternal satisfaction of hospital care in the pediatric ward of Shahid Beheshti Kashan Hospital" in 2010 confirmed the results of Poormovahed and 71.4% of surveyed mothers were dissatisfied with space and facilities suitable for children to play in the sector (23).

Aslanabadi and Shahbazi (2013) also conducted a study titled "maternal satisfaction with nursing care at Children's Hospital". In this cross-sectional study 168 mothers of the children admitted to Tabriz children hospital were enrolled by convenient sampling. The data were collected by satisfaction with nursing care scale. The results showed that the components of the lowest levels of satisfaction were related to the factor "the level of nurses' contribution to calm and reassure the child, the family and relatives of patients" (24) the reason of which might be due to lack of time due to excessive workload, lack of adequate facilities and age-appropriate facilities to entertain them. Also a possible reason might be the lack of parental awareness about pain management techniques. For example, in this context, Amuzeshi et al (2012) conducted a study titled "The knowledge of mothers about pain management in hospitalized children in the pediatric ward of Vali-e-Asr Hospital" in 2011. In this descriptive cross-sectional study the mothers of hospitalized children in Vali Asr Birjand Hospital were selected based on convenient sampling method and after their satisfaction a questionnaire was completed by interview. The questionnaire consisted of 10 demographic questions and 49 questions about awareness of the nature, symptoms, complications and treatment of pain in children. Results showed that the mean knowledge score of mothers of children's pain management was 19.5 ± 4.3 (of 49 points) such that the majority of them had low knowledge about pain management in children (25). Therefore the nurses in addition to performing interventions for reducing pain in children, had to train parents about these methods and other pain-relief methods.

Conclusion

The results showed that using play dough can increase the satisfaction of parents of children under venipuncture significantly. However the parents' satisfaction in bubble making method was significantly higher than

the control group parents. So taking measures to use distraction methods such as bubble making and play dough can be associated with increased parental satisfaction because these methods can reduce children's pain and also reflect the attention of nurses and officials of the department to provide opportunities to play and avoid any disruption in the process of children's growth and development, so it can attract parental satisfaction. Also according to the satisfaction of parents of the play dough group which might be due to higher pain reduction, variety and attraction of this method, it can be considered as an effective and cost effective method for venipuncture in children, however, more and deeper research is needed in this area.

Acknowledgement

This study is extracted from the master's degree thesis and the project approved by Mashhad University of Medical Sciences code 930949. It is also registered in clinical trial center (Code: IRCT2015030621349N1). Hereby the financial support of the research department of the university is appreciated. Also the supports and contributions of all professors of Mashhad University of Medical Sciences and, the authorities of Qaem(aj), Imam(AS) Reza and Dr. Sheikh hospitals of Mashhad and the parents who helped us in conducting this study are appreciated.

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