

The effect of nutritional behavior training of mothers on eating habits of toddlers in Gonbad kindergardens in 2019

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Keypoints

The results of this study showed that providing nutritional behavior training to mothers is effective in toddlers' eating habits. Education is a useful way to increase mothers' knowledge.

Abstract

Introduction

Children with the age of 12 to 36 months are in a critical period in terms of nutritional behavior development. The aim of this study was to determine the effect of nutritional behaviour training of mothers on the eating habits of their toddler children in Gonbad kindergartens.

Material and Methods

This experimental study with pre-test and post-test with two intervention and control groups was performed on 90 mothers of 12 to 36month-old kindergartens in Gonbad city in Golestan province using simple random sampling method. In the intervention group, nutritional behavior training was conducted during eight sessions 60minute. The research tool was demographic questionnaire and feeding problem questionnaire. Data were analyzed with SPSS version 25 by running the chi-square test, fisher test, independent t-test, and covariance analysis at the significant level of 0.05.

Results

The mean of eating habits before intervention was 15.93 ± 7.35 in intervention group and 17.76 ± 8.20 in

control group. The mean of eating habits after intervention was 8.42 ± 4.64 in the intervention group and 14.71 ± 7.37 in the control group. Comparing the eating habits of children before the intervention showed no significant difference between the two groups ($P=0.32$). However, comparison of eating habits after the intervention showed a significant difference between the two groups ($P<0.001$).

Conclusion

As mothers become more aware of the toddler's nutritional behaviors, their behaviors in regard to the toddlers' nutrition improved during feeding time. Also, conflicts between mothers and toddlers reduced during this period. Thus, we can reduce toddlers' nutritional problems by educating their mothers.

Keywords

Nutritional behaviour, Eating habits, Toddlers

Introduction

The optimal growth and development of children in the first years of life has a major impact on their behaviors, IQs, abilities and adaptabilities throughout their life (1). Among the age groups, toddler age is important because

it is the period when children seek independence. Lack of parental control over children and start of independent eating are among the new behaviors in the life of toddlers (2). Childhood is also important for health and development in later life, so neglecting this period will have irreversible consequences (3).

Given that distinct nutritional changes occur during infancy and childhood alongside digestive development, adequate food intake during this critical period is a key determinant of child's health(4). Since eating habits develop in early childhood (5). promoting healthy diet, behavior and eating habits is essential during infancy and has a key role in promoting healthy eating habits (6). In fact, parents, especially mothers, play an important role in the development of nutritional behaviors such as eating habits of children (7). Thus mothers, who feed their children without any rule, force feed their toddlers and leave their toddlers to feed themselves while they have not yet developed such skills, facilitate the development of nutritional problems in their children (8).

Avoiding meal, stubbornness during eating, eating slowly, getting angry and screaming while eating can cause nutritional problems in children (9). Many eating problems among infants and healthy children are caused by inappropriate nutritional patterns such as use of food for rewards and distraction, talking and playing while eating, trying to control the child, conflict and lack of maternal control (10). As a result, awareness about eating habits during childhood is essential for improving children's current and future nutritional patterns and health (4).

On the other hand, teaching nutritional behaviors to mothers is influenced by factors such as mothers' education level, their economic, social, and occupational status and their level of knowledge (11). Nutritional behavior is considered a pattern that is designed to provide information and appropriate behavioral interventions to mothers in order to prevent undesirable behaviors during feeding of their children (2). Witt et al (2017) showed that promoting mothers' nutritional knowledge along with

their beliefs and behaviors can guarantee their children's short- and long-term health (12).

The nutritional quality of children has a direct relationship with mother's knowledge on methods of creating proper nutritional behaviors. Therefore, one of the strategies used in recent years to prevent diseases and improve the health of children is to increase mothers' knowledge (13). A study by Anjomshowa et al (2019) showed that application of Bandura's cognitive-social theory of maternal nutrition for 6 to 24 month-old infants, causes significant changes in nutritional performance and has a significant impact on changing nutritional behaviors (14). Accordingly, the purpose of this study was to investigate the effect of nutritional behavior training of mothers on the eating habits of toddlers in Gonbad kindergardens. This study would help to identify mothers' problem in regard to nutritional behaviors and by resolving them, we can ensure the correct nutritional behaviors of toddlers through education.

Material and Methods

This classical Experimental study with two intervention and control groups that was performed in 2019 on toddlers attending kindergardens of Gonbad with the participation of their mothers, which is situated in the province of Golestan, Northern Iran. Sample size in this study was calculated to be 84 individuals, determined based on the following sample size with using the G-Power software based on the study of Moradi et al (2014) with the effect size of 0.79 and test power of 95% at the significant level of 0.05(15). To increase generalizability of the findings and prevent sample drop, the researcher selected 90 individuals (n=45 in each group). From 20 kindergartens in Gonbad, 6 kindergartens were selected by multi-stage sampling. Then 90 mothers of toddlers were selected by simple random sampling. Inclusion criteria were; children age 12-36 month, mothers of toddlers children, having minimum level of literacy reading and writing for mothers, Mothers' willingness to cooperate and participate in the study, no mental psychological disease for mothers, and having physical health for toddlers.

Exclusion criteria included; absent from training session, withdrawal of mothers from continuing the study, and Mother and child relocation from kindergarten was examined. In conducting this study the researcher after approving the plan and receiving the code of ethics from Islamic Azad University of Chalus Branch, After receiving a letter from Golestan province welfare center and Gonbad city ,Before starting the research, in coordination with the kindergartens studied and the Cooperation of the trainers, they held a meeting with the mothers and the goals of the study were explained to the mothers and trainers. Written informed consent was obtained from mothers .Mothers were assured that the research was safe and confidentiality of information and could opt out if they did not want to. Using simple random sampling, 45 mothers in the intervention group and 45 in the control group. demographic and eating questionnaires were given to both groups to be completed by the mothers. mothers in the intervention group were divided into groups of 10-12. The educational content of sessions was approved by a nutrition consultant, a nutritionist pediatric and the supervisor. Then, the intervention was carried out for mothers in the intervention group in 8 sessions (60 minutes per session) for eight weeks using white board, pamphlet, question & answer session, group discussion and educational booklet. The description of training sessions is shown in table 1. Data collection tools included demographic questionnaire (Mother's age, child's age, child's sex, mother's education, mother's job, father's job, number of children, economic status) and feeding problem questionnaire. The standard feeding problem questionnaire examines the eating problems and habits of 6-36 months old children, which in this study was completed by the mother. This questionnaire was developed by Lewinson (2005)(16). The Persian version of this questionnaire contains 59 two-option (yes or no) questions in five domains of maternal satisfaction with the eating of toddler (15 questions), diversity in eating (13 questions), behaviors while eating (11 questions), tension and stress while eating (13 questions), and

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physical symptoms related to eating (7 questions). In most questions, the answer yes = scores 1 and the answer no = scores 0. 12 of the questions are scored reversely. Scores in this questionnaire range from 0 to 59. Thus, the questionnaire provides an overall score from all questions on eating problems and five scores from the subscales. The higher score reflects more problems with the eating. in the study of Salawati et al (2015) with the Cronbach's alpha of 0.83 for the whole questionnaire and 0.87, 0.85, 0.79, 0.84 and 0.85 for each subscale respectively, which indicated appropriate internal consistency of the questionnaire (2).Reliability of feeding problem questionnaire was approved in this study with the Cronbach's alpha of 0.83 .The face and content validities of these two questionnaires were approved by ten faculty members of nursing and clinical education of Islamic Azad University of Aliabad Katoul. Two months after the intervention, the standard feeding problems questionnaire was completed by mothers in the intervention and control groups as post-test. Data were analyzed with SPSS version 25 by running the chi-square test, fisher test, independent t-test, and covariance analysis at the significant level of 0.05.

Table 1. Description of training session

Session	Educational content
Session 1	Introduction to the work process and goals of the group. Getting acquaintance with the participating mothers and establish a relationship and mutual trust between the researcher and mothers in the <u>kindergartens</u> . The questionnaires are divided between the two groups of intervention and control, and the parents get to know each other in addition to answering the questions. They are given the opportunity to talk about the importance of their problems and to exchange experiences and information. Allocation of intervention and control groups by the researcher
Session 2	Getting familiar with the behavioral characteristics of toddlers; mood, curiosity, stubbornness, negativity, and sense of independence
Session 3	Getting familiar with the natural physiological changes of toddlers; sensory changes, development of different body systems and psychosocial development
Session 4	Getting familiar with the toddlers' development and growth cards; height growth, weight at different months. Describing the growth curve cards in relation to height and weight
Session 5	The number of meals, how to treat the toddler while eating, the type and amount of food served to the toddler, the way the child is treated when he/she is eating stubbornly.
Session 6	Toddler's favorite foods, color of foods served, type and color of dishes used to feed the child, feeding time
Session 7	Getting familiar with the common issues and barriers in toddler nutrition and creating proper nutritional behaviors. At the end of session 7, an educational package containing educational booklet and CD will be given to mothers to study.
Session 8	Summarizing the topics and providing guidelines for following up on what has been learned. Completing the intervention questionnaires by two groups of intervention and control

Results

The mean (standard deviation) age of mothers in control group was 30.88±5.8 and the intervention group was

33.15±4.88 years, the highest percentage of research mothers is 65% (n = 59) bachelor degree and the lowest percentage of 6% (n = 5) had a under diploma. In terms of mother's occupation, the highest percentage of research units was 70% (n = 63) employed and the lowest percentage was 30% (n = 27) housewives. The mean (standard deviation) age of toddlers in control group was 24.48±6.49 and the intervention group was 24.48±6.49 months. In terms of gender toddlers, 52% (n = 47) were male and 48% (n = 43) were female. There was no significant difference between the intervention and control groups in terms of maternal age (P = 0.25) and child age (P = 0.4). There was no significant difference between the two groups in terms of maternal occupation (P = 0.81) and child sex (p=0.83). There was no significant difference between the two groups in terms of maternal education (P = 0.34), (Table 2).

Table 2. Comparison of demographic characteristics in two groups

Group	Intervention	Control	P-Value
Demographic characteristics			
Mother's age (To the year)	33.15±4.88	30.88±5.8	P=0.25
Child's age (To the month)	23.71±6.32	24.48±6.49	P=0.4
Mother's education	Under diploma	3(7%)	2(4%)
	Diploma	2(4%)	6(13%)
	Associate degree	3(7%)	3(7%)
	Bachelor degree	29(64%)	30(67%)
	Master's degree	8(18%)	4(9%)
Mother's occupation	Housewife	13(29%)	14(31%)
	Employed	32 (71%)	31(69%)
Child's sex	Boy	24(53%)	23(51%)
	Girl	21(47%)	22(49%)

The results did not show a significant difference between the two groups in terms of eating habits of children before the intervention. However, there was a significant difference between the two groups in terms of diversity in eating before the intervention (P = 0.006). The results of independent t-test showed a significant difference between the two groups after the intervention (p<0.01) in terms of

maternal satisfaction with eating, diversity in eating, behavior while eating, and tension while eating. However, no significant difference in physical symptoms was found between the two groups. Comparing the eating habits of children before the intervention showed no significant difference between the two groups (P=0.32). However, comparison of eating habits after the intervention showed a significant difference between the two groups (P<0.001), (Table 3).

Table 3. Comparison of the domains of toddlers' eating habits in the intervention and control groups before and after the intervention

Variable	group	Before	After	P-value Paired Test(T or Wilcoxon)	Diff Mean
		Mean±SD	Mean±SD		
Maternal satisfaction with eating	Case	4.18 ±3.47	1.60±2.43	P<0.001	2.58±2.69
	Control	4.18±3.05	3.16±2.84		
P-value Independent Test (T or Mann-Whitney U)		P=0.76	P<0.001		
Diversity in eating	Case	1.58±1.69	0.89±1.37	P<0.001	0.69±1.10
	Control	2.56±1.97	1.84±1.89		
P-value Independent Test (T or Mann-Whitney U)		P=0.006	P=0.003		
Behaviors while eating	Case	4.58±2.28	2.33±1.64	P<0.001	2.24±1.67
	Control	5.29±2.56	4.58±2.33		
P-value Independent Test (T or Mann-Whitney U)		P=0.17	P<0.001		
Tension and stress while eating	Case	4.18±1.81	2.58±1.27	P<0.001	1.60±1.44
	Control	4.44±1.97	3.91±1.65		
P-value Independent Test (T or Mann-Whitney U)		P=0.51	P<0.001		
Physical symptoms of eating	Case	1.42±0.99	1.02±0.81	P=0.006	0.40±0.86
	Control	1.29±0.82	1.22±0.97		
P-value Independent Test (T or Mann-Whitney U)		P=0.59	P=0.33		
Total score	Case	15.93±7.35	8.42±4.64	P<0.001	7.51±5.38
	Control	17.76±8.20	14.71±7.37		
P-value Independent Test (T or Mann-Whitney U)		P=0.32	P<0.001		

Discussion

The purpose of this study was to investigate the effect of nutritional behavior training of mothers on the eating habits of toddlers in Gonbad kindergardens. The findings showed that teaching nutritional behaviors to mothers reduced eating problems of toddlers and improved mothers' performance. In fact, education can be an important step towards increasing the performance of mothers in preventing malnutrition of children and promoting their health. Consistent with these results, the study of Kulwa et al (2014) showed that in-person and distance training of mothers is effective in increasing knowledge and health-promoting behaviors of mothers and preventing malnutrition and anthropic changes of children (17). A study by Salavati et al (2015) showed that nutritional behavior training of mothers improves the eating habits of

toddlers and has a positive effect on their weight gain(2). The results of a study by Hodder et al (2018) showed that mothers' education promotes their knowledge, performance and attitude towards children's nutrition (18). Also, a study by Daelmans et al (2009) revealed that increasing the knowledge and skills of illiterate mothers about the nutritional principles of under 2-year old children is the most important approach to deal with the height and weight disorders of these children (19). The results of present study, in line with the findings of Loren et al (2015) study, showed that behavioral training of mothers reduces symptoms of disobedience disorder and aggressive behaviors in children with coping disorder, prevents the occurrence of inappropriate behaviors in the family environment, and promotes desirable behaviors(20). In the present study, the effect of nutritional behavior training on all domains of eating disorders including; tension during eating, maternal satisfaction with the child's eating, diversity of child's nutrition, physical symptoms, and child's behaviors during eating, except for physical symptoms, showed a significant difference between the two groups.

Various factors can contribute to the tension during toddler's eating, including how the mother and child interact during feeding time. The child's desire for independence during eating is another cause of tension between mother and toddler that, if not properly managed, can lead to problems such as child's refusal to eat, stubbornness during eating, anorexia, etc (2). Therefore, teaching a proper nutritional pattern based on the needs and characteristics of a young toddler can reduce the tension between mother and child during feeding time. The study of Arnavati and colleagues showed that toddlers' eating behaviors are often not healthy, and are the cause of tension and stress between child and caregiver during feeding time (21).

Maternal satisfaction with child's eating is an important factor in feeding a toddler. Mothers' lack of knowledge on the natural changes in toddlers' appetite and eating habits leads to a conflict between mother and child and maternal dissatisfaction with the child's eating(22). In the

present study, two months after the training, the mother's satisfaction with the child's eating improved in the intervention group compared to the pre-intervention time and the control group. Therefore, education by improving nutritional behaviors of mothers reduces maternal dissatisfaction with eating and food choice of toddlers. Fisher et al (2019) found that increasing the knowledge of mothers causes them to show better responses to developmental behaviors of their children during feeding time and thus, have more satisfaction towards their children's nutrition than before (22).

Diversity of child's nutrition involves the use of all food groups including vegetables, fruits, cereals, dairy and meat (23). Toddlers' eating behaviors also include throwing the food, spitting out the food deliberately, choosing a limited variety of foods, avoiding food, negativity and stubbornness while eating, slow eating, shouting and getting angry (16). The results of present study showed that training nutritional patterns to mothers increased the consumption of diverse food intake by toddlers, and adjusted their eating behaviors compared to pre-education time and control group. A study by Imdad et al (2011) showed that toddlers often do not consume adequate and diverse foods and families do not perform well in relation to their children's food choices and diversity(24). A study by Scaglioni et al (2018) showed that mothers' education on eating disorders had a positive effect on eating problems and reduced mother and child tension during feeding time (25).

The results of this study, in line with the findings of Pavitra et al (2019), showed that community-based intervention for mothers on nutritional education increases their knowledge in all aspects of child nutrition and growth(26). The intervention in this study led to a relative increase in the calorie intake and weight gain of children in the intervention group. The results of a study by Rudd et al (2019) showed that teaching mothers about toddler's healthy diet through a designed educational website increases their knowledge on the toddler's nutrition and eating habits (27).

The results of present study in regard to the effect of nutritional behavior training of mothers on the eating habits of toddlers showed no significant difference in any demographic characteristics. Studies of Imdad et al (2011) showed that, there is no significant relationship between maternal occupation and changes in healthy eating index (24). In the study of Chorububa et al (2009), there was no significant relationship between the children's weight and their scores in primary school (28). Study of Imdad et al (2011) also showed no significant relationship between maternal education and changes in healthy eating index (24). In Dennis and Faran (2018) study, children of mothers with high school diploma or lower were consuming more meat and fatty foods like full fat milk, etc (31%)(29). In the study of Choruba et al (2009), there was no significant relationship between maternal education and children's healthy eating index (28).

In the study of Choi et al (2011), which aimed to determine the effect of training program on mothers' knowledge about the Iron deficiency and anemia, there was a significant relationship between mothers' education and the efficiency of training. There was also an inverse relationship between the number of children and the effect of education, so that the higher the number of children and level of mothers' education were, the higher the effect of training program was. A significant relationship was also observed between the mothers' age and occupation, age and occupations of fathers, children's educational level, and the effect of education(30). In the study of Salavati Qasemi et al (2015), there was no significant difference between the two intervention and control groups in terms of toddlers' age and gender. Also, no significant difference was found between the mean weights of children in the two groups before the intervention, and between the parents in the two groups in terms of age, education and occupation (2).

Limitations

One of the limitations of this study was the absence of children's caregiver, which suggests that education should also be given to the children's caregivers in

addition to mothers (the father, the grandmother, and any person taking care of the child in the absence of mother) so that, their knowledge could also be increased.

Conclusion

The results of this study showed that providing nutritional behavior training to mothers is effective in toddlers' eating habits. Education is a useful way to increase mothers' knowledge. It can also reduce tensions between the mother and her child while eating. Teaching mothers helps children to grow and develop naturally. So educating mothers can be used as a way to improve toddlers' eating habits in all places (kindergardens, hospitals, health centers, etc.).

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