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The Effect of Training Nutritional Behavior to Mothers on the Growth of Toddlers in Gonbad Kindergartens in 2019

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Abstract

Introduction: Toddler age is a critical stage for the development and health of children. In this period, the eating behaviors and tendency to food are acquired, which is directly affected by the family and child interaction with their living environment and family. This study aimed to determine the effect of training nutritional behavior on the mothers on the growth of Toddlers in Gonbad kindergartens.

Materials and methods: This experimental study was performed based on pretest and posttest with test and control groups on 90 mothers of 12-36 months old children of Gonbad City kindergartens, Golestan province, using simple random sampling in 2019. In the test group, training nutritional behaviors were performed during eight 60-min sessions. Before intervention and two months after, the information was collected using a demographic questionnaire from both groups. The height and weight of children during this period were measured using standard instruments of "digital balance and meter" and recorded. Next, the information was introduced into SPSS 25 and analyzed at the significance level of 0.05.

Results: The weight before intervention in the test and control groups was 11.69±2.27 and 12.08±2.09, respectively. The weight before the intervention did not show any significant events between the two groups (p=0.4). The weight after the intervention in the test and control groups was 12.43±2.32 and 12.54±2.5, respectively, which again did not show any significant difference (p=0.9). ANCOVA test by eliminating the effect of pretest showed a significant difference. The height before the intervention in the test and control groups was 85.42±8.5 and 85.22±7.47 respectively. The height before the intervention did not show any significant difference between the two groups (p=0.86). The height after the intervention in the test and control groups was 87.88±8.8 and 87.95±7.46, respectively, which again showed no significant difference (p=0.95). ANCOVA test by removing the pretest effect did not show any significant difference either. In other words, the training did not affect the height of children.

Conclusion: With an increase in the awareness of mothers about the nutritional behaviors of Toddlers, the way mothers treat children during eating has improved. Further, it results in proper nutrition and the desired growth of the child. Thus, through training mothers, the nutritional behaviors and growth of Toddlers improve.

Keywords: Training nutritional behaviors; Growth; Toddlers

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Introduction

The desired growth of children during the early years of life has a significant impact on the behavior, intelligence quotient, capabilities, and adaptability throughout their lifetime [1]. Childhood is of great significance to achieve proper development and provide health for the subsequent periods of life, whose negligence will result in irrecoverable damages. Toddler age is a vital step in the development and health of children. Proper nutrition during this period is very important for the child [2]. During infancy and childhood, distinctive changes occur in the diet of children alongside the development of their digestive capacity [3]. Hence, children should receive sufficient supplementary, nutritional, and healthy food to support their growth and health, where the amount and types of food should increase in line with age [4]. Successful nutrition of children requires nutritional knowledge by parents or caregivers so that they know proper nutritional methods, foods, quality of foods, as well as the calorie intake [5]. Many eating problems among healthy infants and children result from improper nutritional methods such as foods for rewards, negligence, talking and playing during eating, attempts for controlling the child, disputes, and lack of maternal control [6]. Pressuring the child for eating is associated with food avoidance and less consumption of major foods [7]. The dietary preferences developed early on indicate the nutritional methods of parents such as the type and diversity of the food presented within the first two years of the child's life. Whether dietary preferences are established healthily or unhealthily depends on how and when the child

is fed [8]. An unhealthy diet is one of the most important risk factors for overweight, obesity, and other associated non-communicable diseases [9]. Indeed, parents play a significant role in the development of nutritional behaviors and dietary preferences of children. In particular, mothers are role models for their children in eating behaviors [10]. Through establishing healthy nutritional behaviors, malnutrition, developmental retardation, acute nutritional problems, and chronic diseases can be prevented in children. Meanwhile, training nutritional behaviors the mother is affected by factors such as their level of education, economic status, social status, age, occupation, and level of awareness [11]. Proper nutritional behaviors are a model developed to present proper information and behavioral interventions to prevent unconsidered and undesired behaviors of mothers during the child's eating [12]. White JM, et al. (2017) indicated that promotion of nutritional knowledge of mothers alongside their beliefs and behaviors can guarantee both short-term and long-term health of the children [13]. Accordingly, the aim of the present research is to train nutritional behaviors to mothers on the growth of Toddlers in Gonbad kindergartens. In this way, the problems of mothers regarding the child nutrition would be diagnosed, and desired development of infants would be fulfilled through the training given to mothers in this regard.

Method

This classic experimental study was performed using test and control groups, on infants referring to Gonbad kindergartens in 2019 with the participation of their mothers in Golestan province. The sample size of the research using the sample size formula of $n = \frac{z^2_{(1-\frac{\alpha}{2})} P(1-P)}{d^2}$ and GPower software according to the study by Babazade R, et al. (2014) with the impact size of 0.79, test power of 95%, and significance level of 0.05 was chosen as 84. For greater generalizability and to prevent sample attrition, the researcher considered 90 samples, 45 in each group. Out of 20 active kindergartens in Gonbad Town, six were chosen through multistage sampling method. Next, 90 mothers of infants were chosen through simple random method [14]. The inclusion criteria were: child age range of 12-36 months, mothers of Toddlers, level of education at least reading and writing for mothers, willingness of mothers to cooperate and participate in the study, psychological health of mothers, and physical health of Toddlers. On the other hand, the exclusion criteria were: absence in the training sessions, mothers' denial to continue this study, as well as displacement of the mother and child from the studied kindergarten. In implementing this study, the researcher after approving the proposal and receiving the ethics code from Islamic Azad University, Chalus branch, and after receiving the introduction letter from the welfare center of Golestan province and Gonbad town, before initiating the research, in coordination with the studied kindergartens and cooperation of trainers, organized a session with the mothers and trainers of kindergartens and explained the research objectives to mothers and trainers of the kindergartens. Written inform consent form was taken from mothers. Also, necessary assurance was given regarding the risk-free nature of the research and confidentiality of information, and in case of unwillingness, they could quit the study. Through simple random method, 45 mothers were assigned in the test group and 45 in the control group.

The data collection instrument in this research consisted of demographic information questionnaire (parent age, child age, child gender, the child order of birth, number of children, mother's level of education, mothers occupation, father's occupation, economic status), along with standard instruments for measuring the height (meter) and weight (digital balance). The demographic information questionnaires were provided to both groups, which were completed by the mothers. The height and weight of the children were measured using standard instruments of "digital balance and meter" and recorded through two researcher assistants who were public health experts and had already been trained by the researcher. The mothers in the test group were divided into 10-12 subject groups. The executive protocol of the sessions was confirmed by a nutrition supervisor and one pediatric nutrition specialist. The educational content was confirmed by 5 consultants of nutrition in kindergartens as well as the supervisor. Next, in the test group, eight 60 min sessions were organized for the mothers for eight weeks alongside educational materials such as whiteboard, pamphlet, and educational methods of question and answer in the sessions, group discussions, and presentation of the educational pamphlet of the intervention.

The face and content validity of the demographic information questionnaire were confirmed by 10 academic and clinical faculty members of nursing at Islamic Azad University. Two months after the intervention, the height and weight of the children in both test and control groups were measured through the standard instruments. The collected information was introduced into SPSS 25 and then analyzed through descriptive statistics as well as independent t-test and covariance analysis at the significance level of 0.05.

Results

The mean (standard deviation) of the mothers' age in the control and test groups was 30.88±5.8 and 33.15±4.88 respectively. The maximum percentage of the research units, i.e. 65% (n=59) had bachelor's and the minimum, 6% (n=5) had sub-diploma. Regarding mothers' occupation, the maximum percentage of research units, 70% (n=63) were employed and the minimum, 30% (n=27) were housewives. The mean (standard deviation) of the age of infants in the control and test groups was 24.84±6.49 and 23.71±6.32 months, respectively. Regarding gender, 52 (n=47) were boys and 48% (n=43) were girls.

Independent t-test between the test and control groups regarding mothers' age (p=0.25), child's age (p=0.4), and chi-square test did not show any significant difference between mothers' age (p=0.81) and the child's gender (p=0.83). Fisher test between the two groups did not show any significant difference either in terms of mothers' education (p=0.34) (Table 1).

The study results on the comparison of children's weight using independent t-test did not show any significant difference at baseline (p=0.4). Comparison of the children's weight using independent t-test after the intervention did not show any significant difference

Table 1: Comparison of the test and control groups in terms of demographic characteristics.

Group Demographics		Test	Control	P value
Mother's Age		33/15 ± 4/88	30/88 ± 5/8	P=0/25
Age of the infant		23/71± 6/32	24/84 ± 6/49	P=0/4
Mother's Education	Sub-Diploma	3(7%)	2(4%)	P=0/34
	Diploma	2(4%)	6(13%)	–
	Associate Degree	3(7%)	3(7%)	–
	Bachelor's	29 (64%)	30(67%)	–
	Master's	8(18%)	4(9%)	–
Mother's Occupation	Employed	32 (71%)	31(69%)	P=0/81
	Housewife	13(29%)	14(31%)	–
Child's Gender	Girl	24(53%)	23(51%)	–
	boy	21(47%)	22(49%)	P=0/83

Table 2: Comparison of the test and control groups in terms of weight before and after the intervention.

Group/Time	Test	Control	P value
Weight before the intervention	11/69 ± 2/27	12/08 ± 2/09	P=0/4
Weight after the intervention	12/43 ± 2/32	12/54 ± 2/5	P=0/9
Height before the intervention	85/42 ± 8/5	85/22 ± 7/47	P=0/86
Height after the intervention	87/88 ± 8/8	87/95 ± 7/46	P=0/95

Table 3: The effect of training nutritional behaviors to mothers on the weight of children in Gonbad kindergartens in 2019.

Source of Variance	Sum of Squares	Degree of Freedom	Mean of Squares	F value	Significance Level	ETA
Modified Model	558/430	2	27/215	58/1674	P=0/01	0/97
Posttest Separator	0/87	1	6/78	6/74	P<0/01	0/07
Group	1/84	1	1/84	33/14	P<0/01	0/14
Error	11/18	87	12/0			
Sum	14484.25	90				
Total	743/441	89				

Table 4: The effect of training nutritional behaviors to mothers on the height of children in kindergartens of Gonbad City in 2019.

Source of Variance	Sum of Squares	Degree of Freedom	Mean of Squares	F value	Significance Level	ETA
Modified Model	5189/128	2	2594/56	1569/44	01/0>P	97/0
Posttest Separator	71/9	1	71/9	5/87	01/0=P	06/0
Group	4/84	1	4/81	2/9	91/0=P	09/0
Error	143/82	87	1/56			
Sum	5/701061	90				
Total	95/5332	89				

either (p=0.9) (Table 2). The study results in comparing the height of children using independent t-test before the intervention did not show any significant difference (p=0.86), nor did it after the intervention (p=0.95) (Table 2).

ANCOVA test by removing the pre-test effect showed a significant difference; 0.14 changes in the dependent variable regarding training can affect the weight gain of children (Table 3).

ANCOVA test by removing the pretest effect did not show any significant difference. In other words, the training had no effect on the height of children (Table 4).

Discussion

The present research was performed with the aim of investigating the effect of training nutritional behaviors to mothers on the growth of Toddlers in Gonbad kindergartens. The findings indicated that training nutritional behaviors to mothers leads to diminished nutritional problems of infants and improved awareness of mothers as well as desired weight gain of children. Indeed, training can be an important step to promote awareness and performance of mothers for preventing malnutrition and enhancing the health of children. In line with this, van der Veek S et al. (2019) indicated that nutritional advice to mothers led to consumption of vegetables by the children and improved the development of children and the behaviors associated with the mothers' nutrition [15].

In the study by Ghasemi S, et al. (2015), it was observed that training nutritional behaviors to mothers resulted in improved dietary habits of Toddlers, and had a positive impact on weight gain of children [12]. The results by Babazade R, et al. (2014) showed that training mothers leads to enhanced awareness, attitude, and performance of mothers with regards to children nutrition. In further study it was found that increasing awareness and empowerment of low literacy mothers regarding the proper principles and nutritional skills of children younger than two are the most important approaches to tackle height and weight developmental disorders of the children [16]. Also, a study by Daelmans B, et al. (2009) showed that increase in the knowledge and skills of illiterate mothers about nutritional principles of younger than two children is the most important method to tackle weight and height disorders of these children [17].

Also, the results of this study, in line with the study by Loren RE, et al. (2015), indicated that behavioral training to mothers reduced symptoms of disobedient disorders and violent behaviors in children with Oppositional defiant disorder and prevented incidence of undesired behaviors across the family, while also increasing their favorable behaviors [18].

Proper physical development is one of the very reliable criteria to assess the health status of children especially within the first two years of life. Regular follow-up of children and using their height and weight for examining development, can be a proper instrument for all health services of children worldwide [19]. In the results of the present study, training nutritional behavior to mothers had an effect on the weight of children and showed a significant difference. In the results of the present study, training nutritional behavior to mothers had no effect on the height of children and did not show any significant difference. The children whose height is between the 10th and 50th development percentile should be investigated; height reduction indicates malnutrition especially during childhood. In the study by Saha et al. (2005) in the US, it was found that the development curve had a significant difference between white and black races [20]. This difference indicates improper nutritional status of families across the studied population.

The results of this study, in line with the research by Pavithra G, et al. (2019) showed that community-based intervention for training nutrition among mothers resulted in enhanced awareness of mothers across all areas of nutritional status of children and development of children. It also led to relative increase in the calorie consumption and weight of children in the intervention group [21]. Also, in line with

these results, Nowicka P, et al. (2014) showed that responsive parenting style and more limited nutritional methods are associated with proper weight gain in children. The dietary patterns of children affect the status of weight gain, nutritional behaviors, and food absorption [22]. The study by Wolfenden L, et al. (2012) indicated that poor diets including low-nutritional as well as fatty and unwanted foods may result in overweight [23]. Also, the incongruent findings of Steenweg-de Graaff J, et al. (2014) showed that the prevalence of low stature is more among boys than girls; the children in families with more children are shorter; and very young mothers have shorter children [24]. The reason of this discrepancy is most probably difference in the studied populations, differences in the sampling method, as well as geographical and sociocultural characteristics affecting the method of care for children, plus awareness of mothers and physical development of children. However, it did not have any effect on the height of children and the findings did not show any significant difference.

The results of the present study with regards to the effect of training nutritional behavior to mothers on the growth of Toddlers had no significant difference with any of the demographic characteristics.

The limitations of this research were absence of the child's care provider. It is suggested that in subsequent studies, in addition to the mother, training is also given to the child care provider (father, kindergarten trainer, grandmother, and any one taking care of the child during absence of mother) so that they could also acquire the necessary awareness.

Conclusion

The results of this study indicate the effectiveness of training nutritional behaviors to mothers on the growth of Toddlers. Since education is a useful method for enhancing the awareness and knowledge of mothers, it can reduce the tensions between mothers and children during eating, while also lowering the time and cost the mother spends for feeding the child. Training mothers also leads to desired growth of the child. Thus, training methods can be used as a method for improving the growth of Toddlers across all places (kindergartens, hospitals, healthcare centers, etc.).

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