

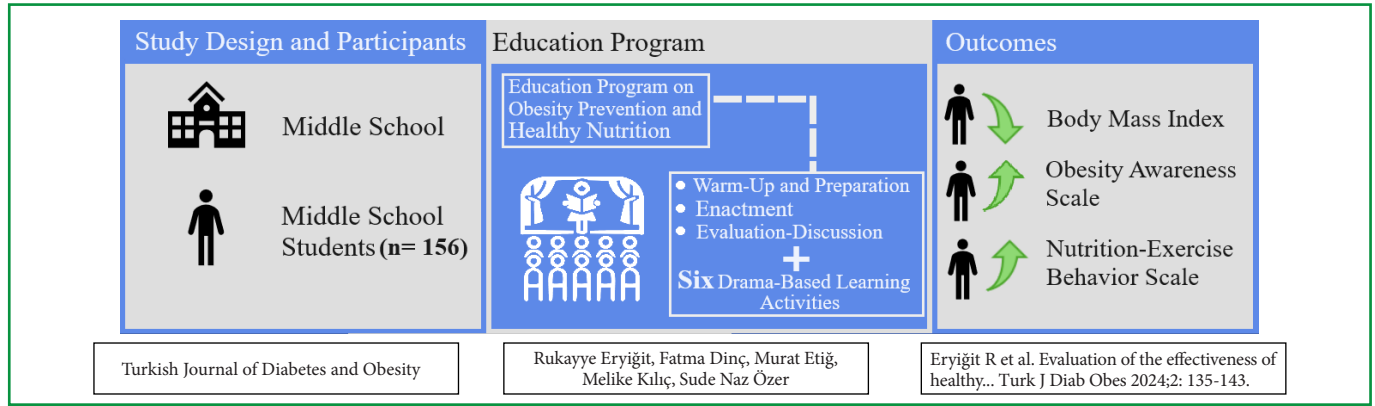
Evaluation of the Effectiveness of Healthy Nutrition and Obesity Awareness Education for Middle School Students Using Drama-Based Learning Activities

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GRAPHICAL ABSTRACT



ABSTRACT

Aim: The prevalence of childhood obesity is rapidly increasing, making it one of the most common nutritional problems globally. In this study, it was aimed to investigate the effectiveness of healthy nutrition and obesity awareness education for middle school students using drama-based learning activities.

Material and Methods: This study was conducted as a one-group pretest-posttest quasi-experimental study. The study was conducted between October 2023 and January 2024 with 156 middle school students selected by simple random sampling method in a public middle school in a province in the Western Black Sea Region. A six-session face-to-face education program on obesity prevention and healthy nutrition was implemented. Data collection tools included a Demographic Information Form, an Obesity Awareness Scale, and a Nutrition-Exercise Behavior Scale. Data collection tools were administered to students before and one month after the education. Descriptive statistics and dependent sample t test were used to evaluate the data.

Results: The mean age of the participating students was 12.33 ± 0.92 . Following drama-based learning activities that focused on healthy nutrition-exercise behaviour and obesity awareness education middle school students experienced a decrease in body mass index values. Additionally, a significant increase in obesity awareness and nutrition-exercise behaviour total mean scores was observed after the education ($p < 0.001$).

Conclusion: Awareness education on healthy nutrition and obesity, in which students participated interactively and learned by doing and experiencing, was effective in increasing students' obesity awareness and healthy nutrition-exercise behaviours.

Keywords: Child, Creative drama, Health education, Obesity awareness, Nutrition

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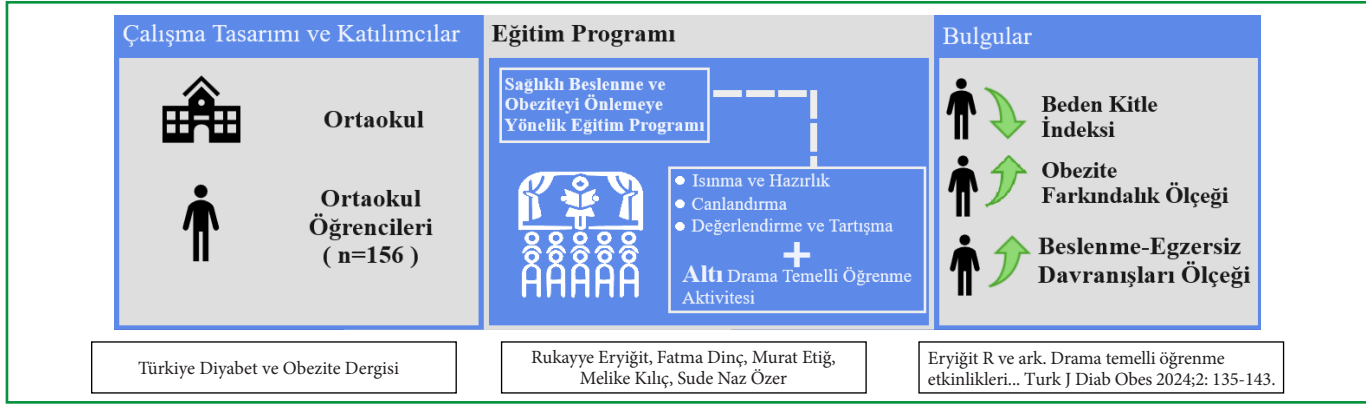
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Drama Temelli Öğrenme Etkinlikleri Kullanılarak Ortaokul Öğrencilerine Yönelik Sağlıklı Beslenme ve Obezite Farkındalığı Eğitiminin Etkinliğinin Değerlendirilmesi

GRAFİKSEL ÖZET



ÖZ

Amaç: Çocukluk çağı obezitesi prevalansı hızla artmakta, dünyada ele alınması gereken en yaygın beslenme sorunlarından birisi hâline gelmiştir. Bu çalışmada drama temelli öğrenme etkinlikleri kullanılarak ortaokul öğrencilerine yönelik sağlıklı beslenme ve obezite farkındalığı eğitiminin etkinliğinin araştırılması amaçlanmıştır.

Gereç ve Yöntemler: Bu çalışma tek gruplu ön test-son test yarı deneysel olarak yapılmıştır. Çalışma Ekim 2023-Ocak 2024 tarihleri arasında Batı Karadeniz Bölgesi'ndeki bir ildeki devlet ortaokulunda basit rastgele örneklem yöntemiyle seçilen 156 ortaokul öğrencisiyle gerçekleştirilmiştir. Obeziteden korunma-sağlıklı beslenmeye yönelik eğitim programı, altı oturum şeklinde yüz yüze uygulanmıştır. Veri toplama araçları olarak Tanıtıcı Bilgi Formu, Obezite Farkındalık Ölçeği ve Beslenme-Egzersiz Davranışları Ölçeği kullanılmıştır. Öğrencilere veri toplama araçları eğitimden önce ve eğitimden bir ay sonra uygulanmıştır. Verileri değerlendirmek için tanımlayıcı istatistikler ve bağımlı örneklem t testi kullanılmıştır.

Bulgular: Çalışmaya katılan öğrencilerin yaş ortalaması $12,33 \pm 0,92$ 'dir. Drama temelli öğrenme etkinlikleri kullanılarak ortaokul öğrencilerine yönelik sağlıklı beslenme-egzersiz davranışı ve obezite farkındalığı eğitimi sonrasında beden kütle indeksi değerleri azalmış, obezite farkındalıkları ve beslenme-egzersiz davranışları toplam puan ortalamalarında ise eğitim sonrasında anlamlı artış görülmüştür ($p < 0,001$).

Sonuç: Öğrencilerin interaktif katılımlı, yaparak-yaşarak öğrenme sağladıkları, sağlıklı beslenme ve obeziteye yönelik farkındalık eğitimi, öğrencilerin obezite farkındalıklarını, sağlıklı beslenme-egzersiz davranışlarını artırmada etkiliydi.

Anahtar Sözcükler: Çocuk, Yaratıcı drama, Sağlık eğitimi, Obezite farkındalığı, Beslenme

INTRODUCTION

According to the World Health Organization (WHO), obesity is defined as a condition characterized by abnormal excessive accumulation of fat that poses a health risk (1). The prevalence of childhood obesity is rapidly increasing, becoming one of the most prevalent nutritional issues globally (2). According to WHO data, worldwide, 340 million adolescents and 39 million children are obese (1, 3). Obesity can lead to chronic diseases such as Type 2 diabetes, cardiovascular disease, hypertension, various types of cancer, and non-communicable mental health issues, affecting body systems and causing long-term detrimental consequences.

Given the potential health consequences of childhood obesity and its likelihood to persist into adulthood, it is crucial for children to gain awareness and develop behaviors toward healthy nutrition and obesity prevention during the time they spend in school.

For school-age children, physical activity, lifestyle choices, and nutrition habits are crucial factors influencing obesity. Children in this age group are influenced by advertising through media communication tools and an obesogenic environment containing visual elements in their food choices. They also tend to lead more sedentary lifestyles with online games and services (3,4). The imbalance between energy in-

take and expenditure from insufficient exercise and sedentary living can lead to excessive weight gain and obesity in school-age children (5). The school environment provides a suitable setting for interventions aimed at preventing obesity and fostering lifestyle changes. Innovative school-based education programs focusing on healthy nutrition during childhood should be adopted to ensure that the lessons learned become lifelong dietary habits in adulthood (6, 7). Previous studies have implemented school-based interventions to influence behaviors related to obesity in school-age children (8-11). Teaching methods that include interactive sessions and opportunities for active peer participation are essential for school-age children to acquire healthy behaviors (6). Nurse-led interventions can serve as encouraging approaches for preventing obesity and promoting healthy nutrition and lifestyles in children (12, 13).

Drama is an activity in which students identify their strengths and weaknesses and associate them with real life situations and play themselves or act according to another character (14). In the historical process of creative drama, the “do, play, believe” practices of a village teacher named Finlay-Johnson in 1911 are examples of the first studies in this field. Creative drama was introduced in the 1960s by Dorothy Heathcote, a British drama teacher and academic who combined play, children and life for the same purpose. Heathcote defined creative drama as a way for children to feel comfortable (15). Dorothy Heathcote discussed drama from different perspectives and stated that its theoretical foundations are compatible with “student-centred” education (16). In 1967, Brien-Way, one of the pioneers of creative drama, showed that creative drama is a technique that supports children’s emotional skills (17).

Creative drama is an educational method based on improvisation that allows exploration, deepening, and creative thinking about ideas and emotions (18). A meta-analysis found that drama-based learning activities (originally called drama-based pedagogy) have a significant positive effect on students’ creative thinking (19). Research indicates that drama-based learning activities are an important component of social learning in students’ education (20). Drama-based learning activities integrate verbal and non-verbal communication and performance in a fictional context. They provide an entertaining opportunity to improve students’ language skills, problem-solving abilities, and motivation. The literature shows that drama-based learning activities are effective in achieving these goals (18, 19).

While studies on creative drama related to obesity in school-age children are limited in the literature, it has been

observed that using creative drama helps these children better understand problems, leading to positive changes in knowledge, attitudes, and behaviors through hands-on activities and play (21, 22). Creative drama, which activates cognitive and emotional learning, enables school-age children to participate in the learning process actively, and the use of experiential and interactive methods can enhance the sustainability of learning (22). Therefore, this study aimed to investigate the effectiveness of healthy nutrition-exercise behavior and obesity awareness education for middle school students using drama-based learning activities. The research hypotheses are as follows, in line with the general objective:

H1: After healthy nutrition-exercise behaviour and obesity awareness education for middle school students using drama-based learning activities, students’ body mass index values will decrease.

H2: After healthy nutrition-exercise behaviour and obesity awareness education for middle school students using drama-based learning activities, students’ healthy nutrition-exercise behaviour scores will increase.

H3: After healthy nutrition-exercise behaviour and obesity awareness education for middle school students using drama-based learning activities, students’ awareness scores for obesity prevention will increase.

MATERIALS and METHODS

Study Design

This study was designed as a single-group pre-test-post-test quasi-experimental research. The effect of the independent variable (healthy nutrition-exercise behaviour and obesity awareness education for middle school students using drama-based learning activities) on the dependent variables (obesity awareness levels, nutrition-exercise behaviours, body mass index) was examined. Permission was initially obtained from the scale owners via email for the scales used in the study. Ethical approval was obtained from Bartın University Social and Human Ethics Committee. (Decision date: 29.03.2023, Decision no: 07), and institutional permission was obtained from Bartın Provincial Directorate of National Education (Number: E-64441482-605.01-80957138, Date: 07.08.2023, Number of Documents: 2300078680). Before starting data collection and the education program, children and parents were informed about the purpose of the study. It was emphasized that their identity information would be kept confidential, written consent was obtained from parents, and they were informed that they could leave the study at any time.

Study Population and Location

The research was conducted in a state middle school determined by a lottery method in a Western Black Sea Region province. Simple random sampling method was used to determine the classes and branches of middle school students to be included in the study. The study was conducted with 5th, 6th, and 7th-grade students between October 2023 and January 2024. The sample size required for the study was determined as 126 children in G-Power statistical analysis software, taking into account Type I error 0.05, Type II error 0.20, 80% power and obesity prevalence rates in school children in Turkey (between 9% and 27%). This sample was increased by 20% considering the missing data and was determined as 156 middle school students. Inclusion criteria for the research were students attending 5th, 6th, or 7th grade and obtaining written consent from their parents. Exclusion criteria included students who did not want to participate in the research and those with chronic illnesses. All middle school students included in the study received information from the lessons on healthy nutrition and obesity according to their grade levels within the curriculum of the Ministry of National Education.

Education Program

An education program on obesity prevention and healthy nutrition was developed for children (3-6, 9, 13-15, 22). Following a literature review, the education program's content was created based on input from five experts in pediatric nursing, child development, and nutrition and dietetics. To enhance the content validity of the education programme, it underwent a content validity test by five experts. The test questionnaire comprised 16 items that evaluated the programme's structure, effectiveness, content, and applicability.

The items were rated on a 4-point Likert-type scale (1 = not very valid, 4 = very valid). The results indicated that all items received a minimum of three points. The education programme on obesity prevention and healthy nutrition was implemented in six sessions using drama-based learning activities (Table 1). Healthy nutrition and obesity awareness training was given to the middle school students in the study together with nursing undergraduate students (R.E., M.E., M.K., S.N.Ö.) under the supervision of a faculty member of child health and diseases nursing (F.D.). F.D., who is a faculty member among the researchers in the study, has many articles and projects in the field of Child Health and Diseases. The other undergraduate nursing students (R.E., M.E., M.K., S.N.Ö) who are the researchers are final year students who have successfully completed the undergraduate courses "Nutrition" and "Child Health and Diseases Nursing". In addition, the researchers completed 120 hours of Creative Drama Training before the training and received the "Creative Drama Training Certificate". The school where the study was conducted did not have a school health nurse. Materials such as notebooks, colouring pencils, small envelopes, photocopied papers and cardboard were used for students' interactive participation in drama-based learning activities. All education sessions were conducted for 40+40 minutes. The educational sessions, designed according to the creative drama method for middle school students, were implemented with groups of 12-13 students. Each session of the education program consisted of three stages.

1. Warm-up and Preparation

In this stage, the middle school students were introduced, group dynamics were enhanced, and activities were conducted to prepare for the next stage.

Table 1: Education sessions and content.

Topics	Content
Adequate and Balanced Nutrition	<ul style="list-style-type: none"> • Definition of adequate and balanced nutrition • Basic food groups and their characteristics
Overweight and Obesity in School Age and Adolescence I	<ul style="list-style-type: none"> • Definition of obesity and overweight • Health problems caused by obesity • Characteristics of school age and adolescence
Overweight and Obesity in School Age and Adolescence II	<ul style="list-style-type: none"> • Ways to prevent obesity • Types of exercises
Overweight and Obesity in School Age and Adolescence III	<ul style="list-style-type: none"> • Addictive foods and beverages • Consumption of sugar, salt, and fat • Definition of glycemic index
Hunger, appetite, and satiety	<ul style="list-style-type: none"> • Definition of hunger, appetite, and satiety • Relationship between physical hunger, emotional hunger, and eating
Obesity-Sleep and Stress	<ul style="list-style-type: none"> • The impact of stress and sleep deprivation on obesity

2. Enactment

This stage involved the use of frozen images, improvisation, and role-playing techniques. For example, in the frozen image technique, middle school students were gathered in the middle of the class, and based on the number of students, the class was divided into several groups. Each group was assigned a leader, and music was played. Students were asked to think about the problems an imaginary person with obesity might face in their imagination. They were then asked to envision a scene in their minds, and when the music stopped, they were instructed to freeze according to the scene in their minds. The leader would then go to the frozen students, unfreeze one of them, have them play out the imaginary scene in their mind, freeze them again, and pass it on to another student. In the improvisation technique, a group of students who were very happy when eating was selected. They were asked to create a small story among themselves. For instance, they were tasked with imagining a situation, such as a student who got low grades on their exams coming home and feeling happy when they saw their favorite meal. After a brief improvisation, discussions were held about what could happen if they dedicated themselves to eating whenever they felt unhappy. Volunteers from the group were then asked to reenact the first story, but this time, they were encouraged to demonstrate alternative activities instead of eating. This way, both emotional hunger and the risks of emotional hunger for obesity were explained and illustrated.

3. Evaluation-Discussion

In the final stage, emotions were shared, and evaluations and discussions were conducted collectively after the outputs.

Data Collection

Implementing the education program and completing data collection tools were carried out at times that would not affect the middle school students' curricula. Prior to the education program, students were informed about the study, and informed consent was obtained from the guidance teacher and parents. In the first week, height and weight measurements of children were taken, and the Introductory Information Form, Obesity Awareness Scale, and Nutrition-Exercise Behavior Scale were administered. Researchers conducted weight measurements using a scale sensitive to up to 100 grams, with students wearing their school uniforms. A portable stadiometer was used for height measurements. The education program on creative drama was conducted by researchers who had received education in crea-

tive drama. The education programme on obesity prevention and healthy nutrition for middle school students using drama-based learning activities was planned as follows:

1st week: Height and weight measurements of students were taken before the education.

2nd week: Session on adequate and balanced nutrition with creative drama was conducted.

3rd week: Session on overweight and obesity in school age and adolescent I was conducted.

4th week: Session on overweight and obesity in school age and adolescence II was conducted.

5th week: Session on overweight and obesity in school age and adolescence III was conducted.

6th week: Session on hunger, appetite, and satiety was conducted.

7th week: Session on obesity-sleep and stress was conducted.

One month later, the Obesity Awareness Scale and Nutrition-Exercise Behavior Scale were administered. All students who participated in the study completed the education programme.

Data Collection Tools

Introductory Information Form

This form consisted of 5-questions filled out by the children, including the child's age, gender, grade, income status, participation in the course on obesity and healthy nutrition.

Obesity Awareness Scale (OAS)

Developed by Allen in 2011 to determine awareness of obesity, dietary habits, thoughts on physical activity, and the impact of obesity education on individuals (23). The Cronbach's alpha coefficient of the original scale is 0.80. The Turkish adaptation was done by Kafkas and Özen in 2014 (24). The Turkish validity and reliability study of the scale included three subdimensions: obesity awareness, nutrition, and physical activity, consistent with the original scale. The sample of the study consisted of students aged 10-14 years. The scale consists of 23 items, encompassing three sub-dimensions: obesity awareness, nutrition, and physical activity. The scale is in a 4-point Likert structure, and both the scale and sub-dimensions are evaluated as "0-1 low," "1.1-2.0" average, "2.1-3.0" good, and "3.1-4.0" high levels of positive awareness. The overall Cronbach's alpha coefficient for the scale is 0.87. In this study, the scale's Cronbach's alpha coefficient is 0.77.

Nutrition-Exercise Behavior Scale (NEBS)

The scale was developed by Yurt and Yıldız for adolescents aged 12-14 years in order to determine students' behaviours related to nutrition (11). This scale comprises 45 items and four sub-dimensions: meal order (ranging from 6 to 30 points, 6 items), healthy Nutrition-Exercise Behavior (ranging from 14 to 70 points, 14 items), Unhealthy Nutrition-Exercise Behavior (ranging from 14 to 70 points, 14 items), and Psychological-Dependent Eating Behavior (ranging from 11 to 55 points, 11 items). The scale has a 5-point Likert structure, and the Cronbach's alpha coefficient for the scale is 0.85. In this study, the scale's Cronbach's alpha coefficient is 0.75.

Statistical Analysis

The data were transferred to IBM SPSS Statistics 23 for analysis. Descriptive statistics were used to present students' demographic characteristics, including percentages, numbers, means, and standard deviations. The normality of the data was checked using the Kolmogorov-Smirnov test. Due to the normal distribution of the data, the dependent sample t-test was used to examine the difference between before and after drama-based learning activities for middle school students. The results of this study were evaluated at 95% confidence interval and $p < 0.05$ significance level.

RESULTS

The average age of the participating students was 12.33 ± 0.92 . Half of the students (50.0%) were female, and 34.6% were in the 5th grade. In the study, 80.8% of the students had equal income expense. In addition, 3.8% of the students had previously attended a course on obesity and healthy nutrition (Table 2).

Table 3 shows the differences in body mass index, obesity awareness and nutrition-exercise behaviours of the students before and after the education. Following drama-based learning activities that focused on healthy nutrition-exercise behaviour and obesity awareness education middle school students experienced a decrease in body mass index values

($p < 0.001$). The mean posttest score for the students' level of obesity awareness (3.54 ± 0.20) was significantly higher than the mean pretest score (2.99 ± 0.17) ($p < 0.001$) (Figure 1). Similarly, the mean posttest score for the students' nutrition and exercise behaviour (165.10 ± 11.57) was significantly higher than the mean pretest score (153.76 ± 13.07) ($p < 0.001$) (Figure 2).

DISCUSSION

Given the serious global health issue of childhood obesity, this study aimed to investigate the effectiveness of healthy nutrition-exercise behavior and obesity awareness education for middle school students using drama-based learning activities. Following the intervention, a decrease in BMI values and an increase in obesity awareness and healthy eating and exercise behaviors were observed among middle school students. Although there are studies in the literature on obesity and healthy eating that include different methods, the results are similar to the findings of this study (2, 3, 5, 25, 26).

In this study, a decrease in the BMI values of the students

Table 2: Demographic of the included students in the study.

Characteristics	Findings (n=156)	
Age, Years \pm SD (Min.-Max)	12.3 \pm 0.9	(11.0-15.0)
Gender, n (%)	Female	78 (50.0)
	Male	78 (50.0)
Grade, n (%)	5th	54 (34.6)
	6th	51 (32.7)
	7th	51 (32.7)
Income Status, n (%)	Higher than expense	14 (9.0)
	Equal to expense	126 (80.8)
	Lower than expense	16 (10.3)
Participation in the course on obesity and healthy nutrition, n (%)	Yes	6 (3.8)
	No	150 (96.2)

Table 3: Differences in body mass index, obesity awareness and nutrition-exercise behavior of students before and after education.

Parameters*	Findings (n=156)		t	p
BMI (Pretest)*	19.82 \pm 3.48	(10.85-33.86)	2.390	<0.001
BMI (Posttest)*	19.66 \pm 3.49	(10.85-33.86)		
Obesity Awareness Scale (Pretest)*	2.99 \pm 0.17	(2.5-3.35)	-24.119	<0.001
Obesity Awareness Scale (Posttest)*	3.54 \pm 0.20	(3.0-3.9)		
Nutrition-exercise behavior scale (Pretest)*	153.76 \pm 13.07	(123-181)	-7.875	<0.001
Nutrition-exercise behavior scale (Posttest)*	165.1 \pm 11.57	(144-196)		

t: Dependent sample t-test. *Data are shown as Mean \pm SD with Minimum-Maximum.

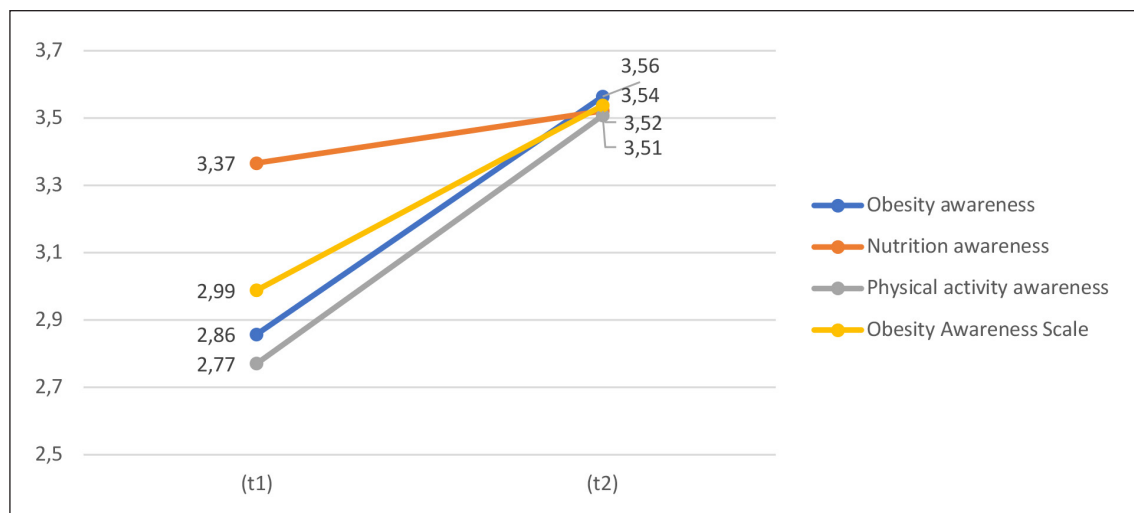


Figure 1: Comparison of students' obesity awareness scale mean scores before and after the education.

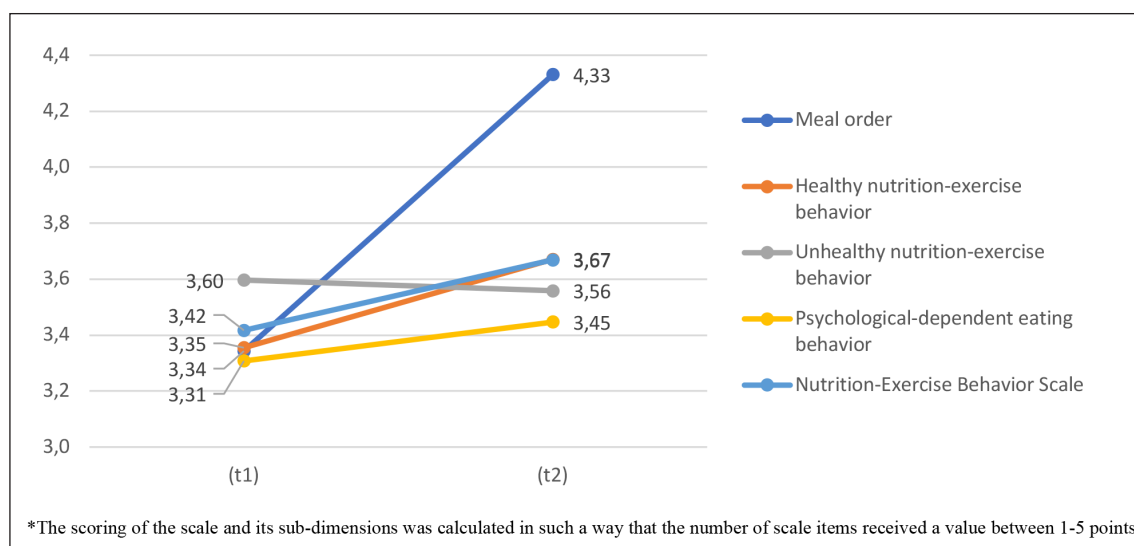


Figure 2: Comparison of students' nutrition-exercise behavior scale mean scores before and after the education.

was found after the training, which supported H1 of the study. Nowadays, the frequency of physical activity of school-age children is decreasing due to increased use of smartphones, internet and video games. In order to prevent obesity, innovative learning activities are important for students to gain regular exercise and healthy lifestyle behaviour skills (13). In a study conducted in the literature, a decrease in BMI values was observed after education, similar to our findings (25). In this study, there was a decrease in body mass index. However, the small decrease is not surprising and may be due to the short duration of the education and education programmes requiring long-term follow-up may be recommended.

In addition, this study revealed that there was an increase in students' nutrition-exercise behaviours after the education,

which supported H2 of the study. Education has a critical role in the prevention of childhood obesity and the promotion of lifelong healthy nutrition and physical activity for children's health (3). Studies in the literature have similarly found that students' participation in healthy nutrition and physical activities increased after education (21, 27). This study's hands-on and experiential learning environment may have facilitated more effective nutrition-exercise behaviour learning.

In this study, obesity awareness of the students increased after the education, which supported H3 of the study. Drama-based learning activities can increase interest in the subject among children (2). A meta-analysis has shown that school-based interventions are effective in increasing childhood obesity awareness, which is consistent with the

findings of this study (6). Similarly, in another study, an increase in obesity awareness of students was found after the training (28). The active participation of middle school students in creative drama-based learning activities and encouraging students to imagine and think during the application activity may have increased obesity awareness.

In this study, self-report scales were used to investigate the effect of healthy nutritious and obesity awareness education for middle school students using drama-based learning activities. The Cronbach's alpha values of the highly reliable scales used as data collection tools in this study were also found to be highly reliable (29). This may be due to the fact that the scales in this study were used with a similar sample, and the researchers were attentive and active in the data collection process by going to the institution.

However, there are some limitations to this study. Firstly, due to the high workload of 8th-grade students during exam years, they were not included in the sample. Secondly, the study only involved students. Future research could develop an education program involving both children and parents. Thirdly, the research was conducted in a public middle school in a single province in the Western Black Sea Region, which limits the generalisation of the findings. In order to increase the representativeness of the sample, it may be considered to select students from different provinces in future studies. Fourthly, this research design utilised a single-group pre-test-post-test quasi-experimental approach. Participants were pre-selected and pre-tested, then exposed to an educational intervention before a post-test was administered. Quasi-experimental designs are used to evaluate interventions for time and ease of implementation, but do not use randomisation. The aim of quasi-experimental designs is to demonstrate causality between an intervention and an outcome. One limitation of this design is that internal and external validity are lower than in experimental studies with control groups, due to the absence of a control or comparison group (30). It is recommended to include a control or comparison group in future studies. Despite these limitations, the study has several strengths. All students who participated in the study completed the education programme. The main strength of the study was that it included simple, easily applicable, accessible, fun and actively participatory activities to increase student interest and motivation.

Our findings demonstrated that interactive, engaging interventions that promote experiential learning effectively increased students' obesity awareness, healthy nutrition-exercise behaviors, and decreased BMI values. To increase children's awareness of obesity and encourage healthy nutrition-exercise, innovative educational methods are nec-

essary. In future studies, it can be evaluated by comparing drama-based learning activities and different learning activities related to healthy nutrition practices in middle school children.

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Author Contributions

Conceptualization: **Fatma Dinç**. All authors contributed to the article and approved the submitted version. Healthy nutrition and obesity awareness training was given to the middle school students in the study together with **Rukayye Eryiğit**, **Murat Etiğ**, **Melike Kılıç**, **Suda Naz Özer** under the supervision of **Fatma Dinç**, a faculty member in child health and diseases nursing, one of the researchers.

Conflict of Interest

The authors report no conflicts of interest.

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Ethical Approval

Ethical approval was obtained from Bartın University Social and Human Ethics Committee (Decision date: 29.03.2023, Decision no: 07), and institutional permission was obtained from Bartın Provincial Directorate of National Education (Number: E-64441482-605.01-80957138, Date: 07.08.2023, Number of Documents: 2300078680).

Peer Review Process

Extremely and externally peer-reviewed.

REFERENCES

1. World Health Organization. Obesity: Preventing and managing the global epidemic. Geneva, 2000. Accessed address: http://www.who.int/nutrition/publications/obesity/WHO_TRS_894/en/. Access date:10/02/2024.
2. Xu S, Xue Y. Pediatric obesity: Causes, symptoms, prevention and treatment. *Exp Ther Med*. 2016;11(1):15-20.
3. Nga VT, Dung VNT, Chu DT, Tien NLB, Van Thanh V, Ngoc VTN, Hoan LN, Phuong NT, Pham VH, Tao Y, Linh NP, Show PL, Do DL. School education and childhood obesity: A systemic review. *Diabetes Metab Syndr*. 2019;13(4):2495-2501.
4. World Health Organization. World Obesity Day 2022-Accelerating action to stop obesity. Geneva, 2022. Accessed address: <https://www.who.int/news/item/04-03-2022-world-obesity-day-2022-accelerating%20action-to-stop-obesity>. Access date:15/02/2024.

5. Demir D, Bektas M. The effect of an obesity prevention program on children's eating behaviors, food addiction, physical activity, and obesity status. *J Pediatr Nurs*. 2021;61:355-363.
6. Medeiros GCBSd, Azevedo KPMd, Garcia D, Oliveira Segundo, VH, Mata ÁNdS, Fernandes AKP, Santos RPd, Trindade DDBdB, Moreno IM, Guillén Martínez D, et al. Effect of school-based food and nutrition education interventions on the food consumption of adolescents: a systematic review and meta-analysis. *Int J Environ Res Public Health*. 2022;19:10522.
7. Özdemir Ö, Bıkmaz Z, Akgün G. Health perceptions and obesity awareness of nursing students. *J Prof Nurs*. 2022;42:162-167.
8. Wang Y, Cai L, Wu Y, Wilson RF, Weston C, Fawleo O, Bleich SN, Cheskin LJ, Showell NN, Lau BC, Chin DR, Zhang A, Segal J. What childhood obesity prevention programmes work? A systematic review and meta-analysis. *Obes Rev*. 2015;16(7):547-565.
9. Min HY, Kim SJ, Cho H. Effects of an adolescent obesity management educational program on middle and high school teachers in south korea. *Asian Nurs Res (Korean Soc Nurs Sci)*. 2017;11(2):84-91.
10. Kubik MY, Fulkerson JA, Sirard JR, Garwick A, Temple J, Gurvich O, Lee J, Dudovitz B. School-based secondary prevention of overweight and obesity among 8 to 12 year old children: Design and sample characteristics of the SNAPSHOT trial. *Contemp Clin Trials*. 2018;75:9-18.
11. Yurt S, Yıldız A. The impact of the motivation interview with the overweight adolescents on eating habits, behaviours and weight. *Turkiye Klinikleri J Public Health Nurs Special Topics* 2016;2:7-13.
12. Cheng H, George C, Dunham M, Whitehead L, Denney-Wilson E. Nurse-led interventions in the prevention and treatment of overweight and obesity in infants, children and adolescents: A scoping review. *Int J Nurs Stud*. 2021;121:104008.
13. Güler R, Kublay G, Fırat Kılıç H. The effectiveness of a nurse-led health development programme on fourth-grade school-age children in North Cyprus: A randomised- controlled trial *Health Educ J*. 2023;82(2):169-183.
14. Adıgüzel O. Concept, components and stages of creative drama. *Creative Drama Journal*. 2006;1(1):17-30.
15. Adıgüzel HÖ, Timuçin, E. The effect of creative drama on student achievement in the instruction of some development and learning theories. *Procedia Soc Behav Sci*. 2010;9:1741-1746.
16. Heathcote, D. Learning, knowing, and languaging in drama: An interview with Dorothy Heathcote. *Language Arts*. 1983;60(6):695-701.
17. Batdı V, Batdı, H. Effect of creative drama on academic achievement: A meta-analytic and thematic analysis. *Educational Sciences: Theory&Practice*. 2015;15(6):1459-1470.
18. Celume MP, Besançon M, Zenasni F. Fostering children and adolescents' creative thinking in education. theoretical model of drama pedagogy training. *Front Psychol*. 2019;7:9:2611.
19. Lee B, Patall E, Cawthon S, Steingut R. The effect of drama-based pedagogy on prek-16 outcomes: a meta-analysis of research from 1985 to 2012. *Rev Educ Res*. 2015;85(1):3-49.
20. Wyatt KM, Lloyd JJ, Abraham C, Creanor S, Dean S, Densham E, Daurge W, Green C, Hillsdon M, Pearson V, Taylor RS, Tomlinson R, Logan S. The Healthy Lifestyles Programme (HeLP), a novel school-based intervention to prevent obesity in school children: study protocol for a randomised controlled trial. *Trials*. 2013;14:95.
21. Demir Acar M, Bayat M. The effect of diet-exercise trainings provided to overweight and obese teenagers through creative drama on their knowledge, attitude, and behaviors. *Child Obes*. 2019;15(2):93-104.
22. Ütkür-Güllühan N, Bekiroğlu D, Emral T. The effect of on-line creative drama method on primary school students' levels of happiness and fun in school: Solomon four-group design, Innovation The European Journal of Social Science Research. 2023;36(4):1-20.
23. Allen A. Effects of educational intervention on children's knowledge of obesity risk factors. Phd Thesis. 2011. Carroll College <https://www.carroll.edu/nursing/student-successes>.
24. Kafkas ME, Özen G. Obezite farkındalık ölçeğinin Türkiye uyarlanması: Bir geçerlik ve güvenilirlik çalışması. *İnönü Üniversitesi Beden Eğitimi ve Spor Bilimleri Dergisi*, 2014;1(2):1-15.
25. Altay N, Toruner EK, Akgun-Citak E. Determine the BMI levels, self-concept and healthy life behaviours of children during a school based obesity training programme. *AIMS Public Health*. 2020;7(3):535-547.
26. Tucker S, Lanningham-Foster LM. Nurse-led school-based child obesity prevention. *J Sch Nurs*. 2015;31(6):450-466.
27. Jester A, Kreider KE, Ochberg R, Meek J. Effectiveness of implementing initial education strategies to promote awareness and healthy habits in childhood obesity: a quality improvement project. *J Pediatr Health Care*. 2018;32(2):157-162.
28. Aktaş, E., Çövener Özçelik, Ç. Obesity awareness among elementary school students: a controlled before after study. *Clinical and Experimental Health Sciences*. 2023;13(4):725-731.
29. Tavşancıl E. Measurement of Attitudes and Data Analysis with SPS. 6th Edition Ankara, Nobel Yayın Dağıtım, 2019.
30. Marsden E, Torgerson CJ. Single group, pre-and post-test research designs: Some methodological concerns, *Oxford Review of Education*. 2012;38(5):583-616.