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# The Effect of Planetary Health Diet Program Given with Different Teaching Techniques on Sustainable and Healthy Nutrition Behavior of Students: A RCT

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**ABSTRACT**

**Objective:** This study aimed to assess how a planetary health diet programme delivered through different instructional techniques influenced students' sustainable and healthy eating behaviours. **Materials and Methods:** A randomized controlled trial was applied. The study consists of three groups based on different instructional approaches: the creative drama group, the asynchronous learning group, and the traditional teaching group. The group assignments for the students were determined online using the www.random.org website. The study was conducted in Türkiye. The study population comprised 88 midwifery students and 118 nursing students. Data were obtained with a Personal Information Form and the Sustainable and Healthy Nutrition Behavior Scale. The data were evaluated using descriptive statistics, including means and standard deviations, together with one-way ANOVA and Pearson's chi-square or Fisher's exact test, as appropriate. **Results:** After the intervention, students in the creative drama arm demonstrated higher sustainable and healthy eating behaviour scores than those receiving asynchronous or conventional instruction ($p<0.05$). In all three groups, scores increased significantly from baseline to the immediate post-intervention assessment ($p<0.05$). In the creative drama arm, the improvement remained significant at follow-up when compared with baseline ($p<0.05$), while the difference between the immediate post-intervention and follow-up assessments was not statistically significant ($p>0.05$). **Conclusion:** The planetary health diet program education utilizing creative drama has a positive impact on midwifery and nursing students' sustainable and healthy nutrition behaviors**.**

**Keywords:** Planetary Health Diet Program, Sustainable and Healthy Nutrition Behavior, Midwifery, Nursing, Drama Education.

# Farklı Öğretim Teknikleriyle Verilen Gezegen Sağlığı Diyeti Programının Öğrencilerin Sürdürülebilir ve Sağlıklı Beslenme Davranışları Üzerindeki Etkisi: RKÇ

**ÖZ**

**Amaç:** Bu çalışma, farklı öğretim teknikleriyle sunulan gezegen sağlığı diyeti programının öğrencilerin sürdürülebilir ve sağlıklı beslenme davranışları üzerindeki etkisini değerlendirmeyi amaçlamaktadır. **Gereç ve Yöntemler:** Randomize kontrollü bir tasarım uygulanmıştır. Araştırma, farklı öğretim yaklaşımlarına dayalı olarak oluşturulan yaratıcı drama grubu, asenkron öğrenme grubu ve geleneksel öğretim grubu olmak üzere üç gruptan oluşmaktadır. Öğrencilerin grup atamaları www.random.org web sitesi aracılığıyla çevrimiçi olarak belirlenmiştir. Çalışma Türkiye'de yürütülmüş olup çalışma evrenini 88 ebelik öğrencisi ve 118 hemşirelik öğrencisi oluşturmuştur. Veriler Kişisel Bilgi Formu ve Sürdürülebilir ve Sağlıklı Beslenme Davranışı Ölçeği aracılığıyla elde edilmiştir. Veriler; ortalama ve standart sapmalar dahil tanımlayıcı istatistikler ile uygun olduğu durumlarda tek yönlü ANOVA ve Pearson ki-kare veya Fisher'ın kesin testi kullanılarak değerlendirilmiştir. **Bulgular:** Müdahale sonrasında, yaratıcı drama grubundaki öğrenciler, eş zamansız veya geleneksel öğretim alan öğrencilere kıyasla daha yüksek sürdürülebilir ve sağlıklı beslenme davranışı puanları sergilemiştir ($p<0.05$). Her üç grupta da başlangıçtan müdahale sonrası anlık değerlendirmeye kadar puanlarda anlamlı düzeyde artış gözlemlenmiştir ($p<0.05$). Yaratıcı drama grubunda, başlangıçla karşılaştırıldığında takip değerlendirmesinde iyileşme istatistiksel olarak anlamlılığını korurken ($p<0.05$), müdahale sonrası anlık değerlendirme ile takip değerlendirmesi arasındaki fark istatistiksel açıdan anlamlı bulunmamıştır ($p>0.05$). **Sonuç:** Yaratıcı drama yöntemiyle sunulan gezegen sağlığı diyeti programı eğitiminin, ebelik ve hemşirelik öğrencilerinin sürdürülebilir ve sağlıklı beslenme davranışları üzerinde olumlu bir etkiye sahip olduğu saptanmıştır.

**Anahtar Kelimeler:** Gezegen Sağlığı Diyeti Programı, Sürdürülebilir ve Sağlıklı Beslenme Davranışı, Ebelik, Hemşirelik, Drama Eğitimi.

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## INTRODUCTION

Planetary health can be understood as an interdisciplinary and action-oriented field that examines the consequences of human-driven changes in the Earth's natural systems for human health and the wider living world (UN, 2023; IPCC, 2022). As human wellbeing depends closely on the stability of planetary systems, nurses and midwives need to approach climate change as an urgent health priority. Climate change is now widely regarded as one of the major public health challenges of the twenty-first century (Campbell-Lendrum et al., 2023). It has been associated with a substantial share of heat-related mortality, altered patterns of infectious disease transmission, and an increasing burden of non-communicable and mental health conditions (Vicedo-Cabrera, 2021). Developmental and economic decisions also shape the climate crisis and, consequently, influence population health. For instance, urbanization may influence both environmental conditions and lifestyle patterns, with potential consequences for health. For these reasons, planetary health should be integrated into nursing and midwifery education, research and professional practice (Ho et al., 2024).

Nurses and midwives are essential actors in global preventive healthcare. Their responsibilities place them in a position to reduce the environmental burden of healthcare delivery while also responding to health demands associated with climate-related disruptions, such as extreme weather events, altered disease-vector patterns, pollution, changes in food systems, and population displacement. Their roles are not limited to clinical care; they also include participation in climate adaptation and mitigation efforts through more sustainable healthcare practices. Such changes in healthcare behavior and service organization may reduce pollution and greenhouse gas emissions, thereby supporting international efforts to keep the global temperature rise below 1.5°C (Bonnamy et al., 2024). Because planetary resources are finite, their careful and efficient use is necessary to maintain livable conditions for both present and future generations. This issue is particularly important in the field of nutrition, since food is a basic human need and a major determinant of health (Jones et al., 2016). In this context, the planetary health diet offers a useful framework for connecting dietary practices with both human health and environmental sustainability. This dietary approach is intended to support health outcomes while remaining adaptable to different cultural, regional, and population-specific conditions (Rockström et al., 2025). By promoting food choices that are beneficial for health, the planetary health diet may help lower the risk of non-communicable chronic diseases. At the same time, it may contribute to environmental protection by reducing diet-related greenhouse gas emissions and the pressure placed on land resources through food production and consumption (Şavlı & Tuncer, 2024). For this reason, nutrition is now evaluated not only in terms of its effects on health but also in relation to its environmental consequences. Building a livable future requires greater attention to individuals' sustainable and healthy eating behaviors, as well as efforts to improve awareness of these behaviors (Yolcuoğlu & Kızıltan, 2022). In this regard, midwives and nurses play a pivotal role in sustainably transforming nutritional habits and protecting public health by increasing society's adherence to healthy, sustainable diets. Addressing human needs with an awareness of environmental protection, selecting midwifery and nursing students as the target audience in this study was a key and deliberate decision.

Various teaching techniques are currently employed in education and training processes. The teaching methods to be utilized in this study include creative drama, online asynchronous learning models, and traditional methods. The integration of diverse learning approaches in educational planning will enhance the quality of education. The significance of this research lies in evaluating existing teaching methods currently applied across various fields in the context of Planetary Health Diet education aimed at developing sustainable and healthy nutrition behaviors and identifying the most effective method. The quality of the service that midwifery and nursing students, who will become future life science professionals, provide regarding sustainable health behaviors aimed at preventing the global climate crisis and protecting planetary health will depend on the education they receive. Against this background, the present study seeks to identify the most effective teaching method for helping students adopt sustainable and healthy nutritional behaviors, transform the planetary health diet program into actionable behavior, and raise awareness among these students about the global climate crisis.

The hypotheses of the study were formulated in relation to students' scores on the Sustainable and Healthy Nutrition Behavior Scale:

H0a: The Creative Drama Planetary Health Diet Program Workshop has no effect on students' scale scores.

H0: There is no significant difference among creative drama, asynchronous learning, and traditional teaching methods in terms of sustainable and healthy eating behaviors.

H1: At least one of the teaching methods shows a significantly different effect compared to the others.

## MATERIALS AND METHODS

### Type of the study

This research was designed as a randomized controlled trial to evaluate the effect of the Planetary Health Diet Program — delivered through three teaching methods (creative drama, asynchronous learning, and the traditional method) — on sustainable and healthy nutrition behaviors among nursing and midwifery students.

**Location of the study**

The research was carried out among students enrolled in the Nursing and Midwifery Departments of the Faculty of Health Sciences at Tokat Gaziosmanpaşa University. The creative drama sessions were held in the university's drama hall.

**Study population and sample size**

The research was conducted during the 2024–2025 academic year with students enrolled in the Nursing and Midwifery Departments of the Faculty of Health Sciences at Tokat Gaziosmanpaşa University. The target population included 88 midwifery students and 118 nursing students who were in their fourth year during the same academic year. Based on the power analysis, the required sample size was calculated as 30 students per group. To account for possible data loss, the sample size was increased by 10%, resulting in 36 students in the Creative Drama group, 34 students in the Asynchronous Technique group, and 34 students in the Traditional Model group, with a total of 104 students.

**Randomization**

Students who met the inclusion criteria were first assigned a serial number. Then, the students were randomly assigned to 3 groups using the online randomization program at www.random.org.

***Inclusion criteria:*** The inclusion criteria for this research were a 4th-year nursing or midwifery student registered in the 2024-2025 academic year, being a volunteer, having the ability to regulate their diet and having suitable accommodation, not having previously received creative drama training, being able to read and understand Turkish, not smoking, and not consuming alcohol. Students with systemic disorders, those with nutrition-related problems (such as food allergies, gastrointestinal issues, etc.), those who became ill during the research process and received medical treatment, and those who did not regularly attend the drama workshops were excluded from the sample.

**Measures**

The Personal Information Form and the Sustainable and Healthy Nutrition Behavior Scale were used to collect the data.

Personal information form: This form includes six questions on students' demographic characteristics, such as age and marital status, and eight questions on their views on climate change, planetary health, and sustainable health. After reviewing relevant literature, the researchers developed a fourteen-item form (Koşan et al., 2023; Selek, 2023; Ay & Erik, 2020; Küçük Biçer & Acar Vaizoğlu, 2015).

Sustainable and healthy nutrition behavior scale: The original Sustainable and Healthy Eating Scale was developed by Żakowska-Biemans et al. (2019) and included 34 items under eight factors. Köksal et al. later conducted the Turkish adaptation and validation study, naming the adapted instrument the Sustainable and Healthy Nutrition Behavior Scale. The Turkish version consists of 32 items grouped into seven factors. These factors assess quality indicators such as local and organic food, seasonal food consumption, avoidance of food waste, animal health, reduced meat consumption, healthy and balanced eating, local food preferences, and low-fat choices. The scale is rated on a six-point Likert-type format, and scores are calculated for each factor as well as for the overall scale (1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = very often, 6 = always). Higher total scores indicate more favorable nutrition behaviors with respect to health and sustainability (Köksal et al., 2023). The Turkish version showed high internal consistency, with a Cronbach's alpha coefficient of 0.91. In the present study, the Cronbach's alpha coefficient for the total scale was 0.96.

**Implementation of the study**

The planetary health diet program was delivered through three instructional approaches: creative drama, asynchronous learning, and traditional instruction. Each group received the program over four sessions, held once a week. The content of the Planetary Health Diet Program was developed in consultation with three experts from the Department of Nutrition and Dietetics. For the drama-based component, three leaders in the field were also consulted regarding the design of the planetary health workshops. These sessions took place in the drama hall of the School of Health Services, which is located in the same building as the Faculty of Health Sciences and offered a suitable and safe setting for the activities. The researcher who designed and facilitated the workshops had completed five stages of creative drama leadership training, corresponding to a total of 228 hours.

***Application of creative drama sessions***

This instructional approach relies on participatory techniques such as role play, improvisation, games, and collaborative group activities to support changes in attitudes and behaviors.

A 4-week planetary health diet workshop consisting of 4 sessions in total was applied to the study group, one day and one session per week. During the application, students' creative drama products (letter, picture, diary, evaluation note, story, slogan, newspaper article, and concept lists) were obtained from the students' answers to the open-ended and fill-in-the-blank questions during the sessions.

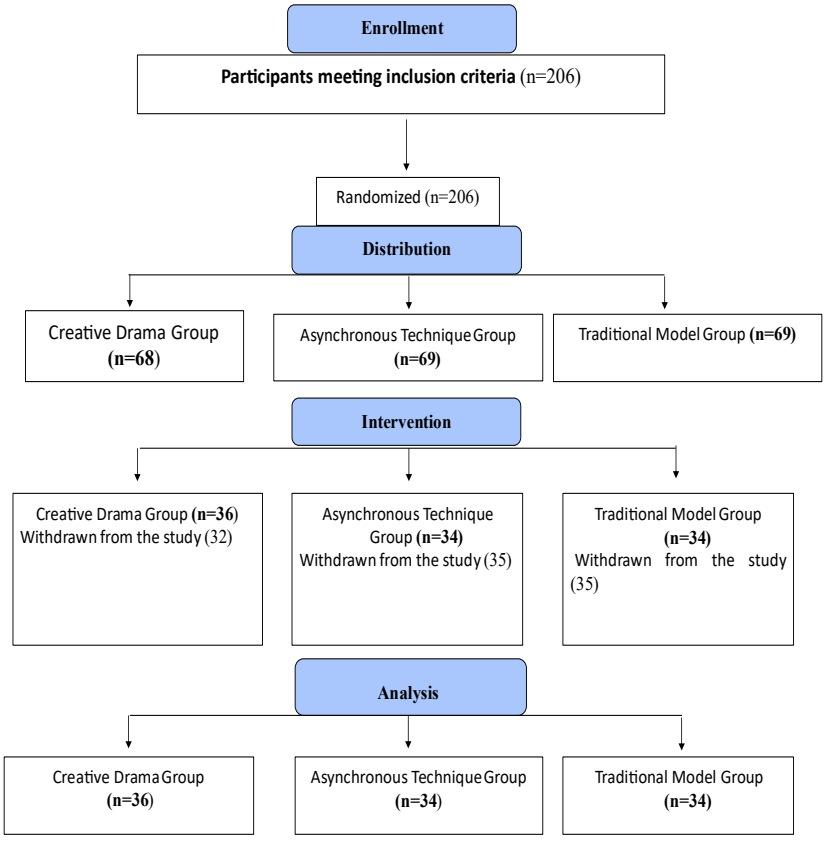



**Figure 1. Flow diagram based on the Consolidated Standards of Reporting Trials (Schulz et. al., 2010)**

***Application of asynchronous learning technique***

In implementing the asynchronous learning technique, the Planetary Health Diet Program, prepared in line with expert opinions, was sent to students' mobile devices as a video recording. The videos were shot by the researcher who provided the drama training. The videos were sent to the students online simultaneously with the topics and dates of the creative drama sessions. Students were able to watch the videos repeatedly at their convenience.

***Application of traditional model learning technique***

In the traditional learning model, the Planetary Health Diet Program, prepared in line with three expert opinions, was presented to the students as slide presentations by the same educator. Slide presentations and the topics and dates of creative drama and video sessions were simultaneously transferred to students

**Ethical considerations**

Ethical approval was granted by the Social and Human Sciences Research Ethics Committee Gaziosmanpaşa University on September 10, 2024, with registration number 01-17. Institutional approval was obtained on September 20, 2024 with the reference number 461867. All participants were informed about the study's aim and procedures, after which written and verbal consent was obtained. The research process complied with the principles of informed consent, confidentiality, anonymity, data protection, respect for autonomy, and the Declaration of Helsinki**.**

**Statistical analysis**

Statistical analyses were performed using IBM SPSS Statistics version 25. Descriptive data were summarized as frequencies, percentages, means, standard deviations, medians, minimum values, and maximum values. The distribution of numerical variables was examined with the Shapiro–Wilk test. As the normality assumption was met, parametric tests were used. One-way ANOVA was conducted to compare numerical descriptive variables across the groups, while Pearson's chi-square test and Fisher's exact test were used for categorical variables. Changes in mean scores over the three measurement points were evaluated using repeated-measures ANOVA. Bonferroni correction was applied for between-group comparisons. Statistical significance was set at $p<0.05$.

**RESULTS**

The students' descriptive characteristics are presented in Table 1. A significant difference was observed among the groups in terms of income status ($p < 0.05$), whereas no significant differences were identified for the other variables ($p>0.05$).

Of the students included in the study, 51.9% were enrolled in the midwifery department, 80.8% had graduated from Super/Anatolian/Science high schools, 78.8% lived in dormitories, 57.7% reported that their income was equal to their expenses, and 80.8% had a normal body mass index. Students'

characteristics related to climate change are presented in Table 2. Significant group differences were found in feeling responsible for preventing global climate change and in the perceived role of diet in preventing it ($p<0.05$). No significant differences were detected among the groups for the remaining climate change-related characteristics ($p>0.05$).

**Table 1. Descriptive characteristics of students.**

| Variables | Total (n=104) | | Creative Drama (n=36) | | Asynchronous Teaching Method (n=34) | | Traditional Model (n=34) | | Test Statistic/p |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | |
| **Department** | | | | | | | | | |
| Nursing | 50 | 48.1 | 17 | 47.2 | 18 | 52.9 | 15 | 44.1 | $\chi^2$=0.546 p=0.761 |
| Midwifery | 54 | 51.9 | 19 | 52.8 | 16 | 47.1 | 19 | 55.9 | |
| **Age** | | | | | | | | | |
| Average (SD) | 21.98 (0.92) | | 21.72 (0.84) | | 22.02 (0.83) | | 22.20 (1.03) | | F=2.538 p=0.084 |
| Median (min-max) | 22 (20-24) | | 22 (20-24) | | 22 (21-24) | | 22 (20-24) | | |
| **High School Type** | | | | | | | | | |
| Super/Anatolian/Science High School | 84 | 80.8 | 29 | 80.6 | 27 | 79.4 | 28 | 82.4 | $\chi$*=6.929 p=0.265 |
| Health Vocational High School | 9 | 8.7 | 5 | 13.9 | 3 | 8.8 | 1 | 2.9 | |
| Normal High School | 2 | 1.9 | 0 | 0 | 2 | 5.9 | 0 | 0 | |
| Other | 9 | 8.7 | 2 | 5.6 | 2 | 5.9 | 5 | 14.7 | |
| **Place of Residence** | | | | | | | | | |
| Dormitory | 82 | 78.8 | 26 | 72.2 | 27 | 79.4 | 29 | 85.3 | $\chi$*=4.442 p=0.279 |
| With Family | 21 | 20.2 | 10 | 27.8 | 7 | 20.6 | 4 | 11.8 | |
| With Friends | 1 | 1.0 | 0 | 0 | 0 | 0 | 1 | 2.9 | |
| **Income–Expense Balance** | | | | | | | | | |
| Income lower than expenses | 36 | 34.6 | 6 | 16.7 | 14 | 41.2 | 16 | 47.1 | **$\chi$*=11.169 p=0.018** |
| Income balanced with expenses | 60 | 57.7 | 24 | 66.7 | 19 | 55.9 | 17 | 50.0 | |
| Income higher than expenses | 8 | 7.7 | 6 | 16.7 | 1 | 2.9 | 1 | 2.9 | |
| **Body Mass Index** | | | | | | | | | |
| Underweight | 7 | 6.7 | 3 | 8.3 | 2 | 5.9 | 2 | 5.9 | $\chi$*=1.098 p=0.941 |
| Normal weight | 84 | 80.8 | 28 | 77.8 | 27 | 79.4 | 29 | 85.3 | |

**$\chi^2$:** Chi-square test, **$\chi$*:** Fisher's Exact Test, **F:**One-way ANOVA.

Among the participants, 99.0% stated that global climate change is a serious problem for the world and for human health. In addition, 88.5% considered climate change preventable, 35.6% identified education and community awareness as the most effective strategy for prevention, and 95.2% reported feeling responsible for preventing climate change. Furthermore, 88.5% stated that diet plays an effective role in preventing climate change, while 67.3% reported insufficient knowledge about sustainable nutrition and 69.2% reported not having knowledge about planetary health (Table 2).

Table 3 presents the comparison of students' mean scores on the Sustainable and Healthy Eating Behavior Scale according to teaching method. No significant difference was observed among the groups in pre-test mean scores ($p>0.05$), indicating that the groups were comparable at baseline. In contrast, significant group differences emerged in the two assessments conducted after the intervention ($p<0.05$). Scores in the creative drama group were higher at both time points than those in the asynchronous learning and traditional instruction groups. No significant difference was detected between the two comparison groups across these assessments ($p>0.05$). Within each group, scores differed significantly from baseline to the first post-intervention assessment ($p<0.05$), indicating improvement across all three instructional approaches. A sustained change was observed only in the drama-based group: its later assessment score remained significantly higher than the baseline score ($p<0.05$). In this group, however, scores did not differ significantly between the first and later post-intervention assessments ($p>0.05$). These findings indicate that the effect of drama-based education was maintained more effectively over time than the effects of the other instructional methods.

**Table 2. Characteristics of students regarding climate change.**

| Variables | Total (n=104) | | Creative Drama (n=36) | | Asynchronous Teaching Method (n=34) | | Traditional Model (n=34) | | Test Statistic / p |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | |
| **Is global climate change perceived as a serious global problem?** | | | | | | | | | |
| Yes | 103 | 99.0 | 36 | 100 | 33 | 97.1 | 34 | 100 | χ*=1.877 p=0.654 |
| No | 1 | 1.0 | 0 | 0 | 1 | 2.9 | 0 | 0 | |
| **Is global climate change a significant problem for human health?** | | | | | | | | | |
| Yes | 103 | 99.0 | 36 | 100 | 33 | 97.1 | 34 | 100 | χ*=1.877 p=0.654 |
| No | 1 | 1.0 | 0 | 0 | 1 | 2.9 | 0 | 0 | |
| **Can global climate change be prevented?** | | | | | | | | | |
| Yes | 92 | 88.5 | 34 | 94.4 | 31 | 91.2 | 27 | 79.4 | χ*=3.787 p=0.170 |
| No | 12 | 11.5 | 2 | 5.6 | 3 | 8.8 | 7 | 20.6 | |
| **What is the most effective method to prevent climate change?** | | | | | | | | | |
| Social measures | 26 | 25.0 | 11 | 30.6 | 5 | 14.7 | 10 | 29.4 | χ*=5.552 p=0.713 |
| Legal measures | 16 | 15.4 | 5 | 13.9 | 7 | 20.6 | 4 | 11.8 | |
| Education/Community awareness | 37 | 35.6 | 13 | 36.1 | 12 | 35.3 | 12 | 35.3 | |
| International collaborations and partnerships | 18 | 17.3 | 5 | 13.9 | 6 | 17.6 | 7 | 20.6 | |
| Individual measures | 7 | 6.7 | 2 | 5.6 | 4 | 11.8 | 1 | 2.9 | |
| **Do you feel responsible for preventing global climate change?** | | | | | | | | | |
| Yes | 99 | 95.2 | 36 | 100 | 33 | 97.1 | 30 | 88.2 | **χ*=4.633 p=0.044** |
| No | 5 | 4.8 | 0 | 0 | 1 | 2.9 | 4 | 11.8 | |
| **Is diet effective in preventing global climate change?** | | | | | | | | | |
| Yes | 92 | 88.5 | 36 | 100 | 30 | 88.2 | 26 | 76.5 | **χ*=10.151 p=0.003** |
| No | 12 | 11.5 | 0 | 0 | 4 | 11.8 | 8 | 23.5 | |
| **Do you have information about Sustainable Nutrition?** | | | | | | | | | |
| Yes | 34 | 32.7 | 12 | 33.3 | 14 | 41.2 | 8 | 23.5 | $\chi^2$=2.416 p=0.307 |
| No | 70 | 67.3 | 24 | 66.7 | 20 | 58.8 | 26 | 76.5 | |
| **Do you have information about planetary health?** | | | | | | | | | |
| Yes | 32 | 30.8 | 12 | 33.3 | 13 | 38.2 | 7 | 20.6 | $\chi^2$=2.655 p=0.288 |
| No | 72 | 69.2 | 24 | 66.7 | 21 | 61.8 | 27 | 79.4 | |

**$\chi^2$:**Chi-square test, **χ*:** Fisher's Exact Test

**Table 3. Comparison of the mean scores of the sustainable and healthy eating behavior scale according to teaching methods.**

| Variables | Creative Drama (n=36) | Asynchronous Teaching Method (n=34) | Traditional Model (n=34) | Test Statistic/p |
|---|---|---|---|---|
| Pre-test (1) Average (SD) | 3.55(0.58) | 3.52(0.77) | 3.62(0.62) | F=2.057 p=0.133 |
| Post-test (2) Average (SD) | 4.88(0.60)[a] | 3.86(0.68) | 4.07(0.38) | **F=30.756 p=0.000** |
| Follow-up test (3) Average (SD) | 4.79(0.56)[b] | 3.74(0.62) | 3.90(0.60) | **F=31.442 p=0.000** |
| Test Statistics | **F*=65.935 p=0.000 (1-2;1-3)** | **F*=10.207 p=0.001 (1-2)** | **F*=5.009 p=0.018 (1-2)** | |

**F:**One-way ANOVA

## DISCUSSION

Nutrition is no longer evaluated only in relation to human health; its environmental consequences have also become an important concern. To support a livable future, individuals need to adopt dietary practices that are compatible with both health promotion and environmental sustainability and to develop greater awareness of this issue (Yolcuoğlu & Kızıltan, 2022). In this regard, nursing and midwifery students, as future health professionals, are expected to contribute to sustainable healthcare and to guide individuals in making informed choices that benefit their own health, their families, and the planet.

Climate change produces ecological and social effects that pose significant risks to human health, and because these effects may influence population health both immediately and over time, they should be considered an urgent public health concern (Crimmins et al., 2016). In the present study, nearly all students reported that global climate change is a serious problem for both the world and human health. This finding is consistent with previous research showing that university students generally recognize the seriousness of climate change (Selek, 2023; Dijkstra & Goedhart, 2012; Deveci et al., 2019; Nigatu et al., 2014; Özer et al., 2021). The higher rates observed in more recent studies may be related to the growing visibility of climate-related problems and the increasing direct experience of their consequences.

In the present study, most of the students also reported that global climate change can be prevented, a finding consistent with previous studies in which the proportion of participants who considered climate change preventable ranged from 64.9% to 86.1% (Selek, 2023; Crimmins et al., 2016; Yang et al., 2018). In addition, some students stated that education and raising public awareness are the most effective strategies for preventing climate change. In this regard, Tong and Ebi (2019) noted that health professionals have important responsibilities in managing the negative health effects of climate change, with public health professionals being particularly well positioned to raise community awareness and protect population health. Supporting this view, the 2024 theme of the International Confederation of Midwives, "Midwives: A Vital Climate Solution," highlights the contribution of midwives to building climate-resilient health systems. Similarly, the International Council of Nurses stated in its 2018 position statement, "Climate Change, Nursing, and Health," that nurses should help reduce the effects of climate change and support adaptation among individuals and systems, in line with their roles in health protection, sustainability, and social justice (ICN, 2018). The high proportion of students who felt responsible for climate change prevention in the present study may therefore reflect the increasing emphasis placed on this issue by international nursing and midwifery organizations.

Midwives and nurses may help respond to climate-related health problems through advocacy, education, and targeted interventions within health systems. One of their key responsibilities in preventing climate change-related problems is "Promoting Sustainable Lifestyles and Providing Information on Environmentally Friendly Products and Practices" (Ganapathy et al., 2024). In the present study, most of the students considered diet to be effective in climate change prevention, although more than half reported insufficient knowledge of sustainable nutrition and planetary health. Previous research has shown that many university students have not received formal education on climate change during their undergraduate studies, that discipline-specific curricula often provide limited climate-related knowledge and awareness, and that students frequently obtain information on this topic from social media (Selek, 2023; Ergin et al., 2021; Koşan et al., 2023; Tahkol, 2023). Similar studies among healthcare professionals have also shown that more than half of participants lack knowledge of sustainable nutrition (Özdoğan & Beşler, 2024; Akay, 2020; Gülsöz, 2017).

As knowledge, professional skills, and required attitudes continue to change rapidly, health professional education needs new approaches that can strengthen health systems, connect education with practice, and support educational transformation at a broader level (Garret, 2012). Educators who prepare future health professionals should therefore use teaching strategies that engage students and increase motivation, particularly when addressing knowledge and behaviors related to individual and public health. In the present research, students who received the Planetary Health Diet program through the drama-based method obtained higher scores in both later assessments than students in the asynchronous and traditional instruction groups. This finding supports the study's H1 hypothesis. According to recent data, no studies with similar findings were found, and this result has been discussed with studies using similar teaching methods. In Acar and Bayat's (2018) study, it was found that nutrition and exercise education given to adolescents through creative drama positively affected knowledge, attitudes, and behaviors. In Sayar & Çapık (2022) study, positive changes in smoking perception and health monitoring focus were observed among students who received drama education. Additionally, there are studies where drama has been used to improve various skills of nursing students (Sayar & Çapık, 2021). By contrast, Uslu (2016) found that drama-based education for adolescents with diabetes did not produce significant changes in perceived stress, problem-solving, hopelessness, or HbA1c values. In a study by Stanszus et al. (2019), which used a different educational method, the authors found that mindfulness-based education did not automatically ensure success in promoting sustainable nutrition

behavior, and its impact on participants was minimal. Yolcuoğlu and Kızıltan (2022), in their research with Faculty of Health Sciences students, found that nutrition education improved eating behaviors related to both health and sustainability.

In the present study, students' eating behavior scores related to health and sustainability increased following all three instructional approaches. However, a significant difference between baseline and later assessment scores was observed only in the drama-based group. This result indicates that the education provided through creative drama is more temporally lasting than the other teaching methods. A study by Guevara et al. (2003) emphasizes that interactive educational programs positively impact young people's health and self-management. Interventions aiming to influence attitude and behavior change through interactive methods such as role-playing, improvisation, games, and group work are stated to lead to reductions in risk behaviors. Creative drama has also been shown to be effective in developing correct health behaviors and attitudes (Uzunlu et al., 2026). Recent literature and policy-related documents indicate that drama- and theater-based educational practices can make the connection between sustainability and education more visible and may contribute to addressing environmental and social problems (Zakopoulos et al., 2023). From this perspective, the present research may contribute to the existing literature by showing that drama-based education can help nursing and midwifery students develop dietary practices that support both personal health and future public health practice.

### Study Limitations

Since the research was limited to students at the relevant university, the results can only be generalized to the students who participated in the research.

## CONCLUSION

The results indicate that Planetary Health Diet education improved nursing and midwifery students' eating behaviors in relation to health and sustainability across all three instructional approaches: drama-based education, asynchronous learning, and traditional instruction. However, only the drama-based group showed a significant difference between baseline and follow-up scores. This suggests that the drama-based approach produced a more sustained educational effect than the other methods. In light of these results, creative drama could significantly contribute to university students' education, aiming to create lasting changes in individuals to prevent environmental and social issues such as the climate crisis. Education on the Planet Health Diet Program is important in promoting both individuals' healthy and balanced eating habits and contributing to sustainable food sources. In this context, it is foreseen that the inclusion of this education in undergraduate education programs will be beneficial.

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### Conflict of Interest

The author declare no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

### Author Contributions

**Plan, design:** ZYE; **Material, methods and data collection:** ZYE, EÇA; **Data analysis and comments:** ZYE, EÇA, SÖA **Writing and corrections:** ZYE, EÇA, SÖA

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### Ethical Approval

Institution: Gaziosmanpaşa University Social and Human Sciences Research Ethics Committee
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## REFERENCES

Acar, M.D., Bayat, M. 2018. The effect of dietexercise trainings provided to overweight and obese teenagers through creative drama on their knowledge, attitude, and behaviors. *Childhood Obesity*. 15: 93-104.

Akay, G. (2020). Evaluation of the knowledge level of university students studying in the field of health about the relationship between sustainable nutrition and the environment. Necmettin Erbakan University, Faculty of Health Sciences, Department of Nutrition and Dietetics, Master Thesis, Konya, Türkiye.

Ay, F., Erik, N.Y. 2020. Üniversite öğrencilerinin küresel ısınma ve iklim değişikliğine yönelik bilgi ve algı düzeyleri. Cumhuriyet Üniversitesi *Fen-Edebiyat Fakültesi Sosyal Bilimler Dergisi* 44(2), 1–18. http:// cujos.cumhuriyet.edu.tr/tr/pub/issue/58900/75310

Bonnamy, J., Levett-Jones, T., Carr, B., Lokmic-Tomkins, Z., Maguire, J., Catling, C., ... Brand, G. 2024. Australian and New Zealand nursing and midwifery educators' planetary health knowledge, views, confidence and teaching practices: A descriptive survey study. Journal of Advanced Nursing. https://doi.org/10.1111/jan.16317

Campbell-Lendrum, D. , Neville, T. , Schwelzer, C. , Nelbra, M. 2023. Climate change and health: Three grand challenges. *Nature Medicine*, 29, 1631–1638.

Crimmins, A., Balbus, J., Gamble, J. L., Beard, C. B., Bell, J. E., Dodgen, D., Ziska, L. 2016. The impacts of climate change on human health in the United States: a scientific assessment. The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment.

Dijkstra, E. M., Goedhart, M. J. 2012. Development and validation of the ACSI: Measuring students' science attitudes, pro-environmental behaviour, climate change attitudes and knowledge. *Environmental Education Research.* 18(6):733–49.

Deveci, S.E., Kurt, O., Pirinçci, E., Oğuzöncül, A. F. 2019. Knowledge and awareness of a medical faculty students in Turkey about global warming, climate change and their consequences. *International Journal of Human Sciences*. 16(2): 679-689.

Ergin, E., Altinel, B., Aktas, E. 2021. A mixed method study on global warming, climate change and the role of public health nurses from the perspective of nursing students. *Nurse Education Today*, *107*, 105144.

Ganapathy, D., Tzeli, M., Vivilaki, V. 2024. Midwives: Essential guardians in the climate crisis journey. *European Journal of Midwifery*, 8(May):22. https://doi.org/10.18332/ejm/188196

Garret, B.M. (2012). Changing the game; some thoughts on future healthcare demands, technology, nursing and interprofessional education. *Nurse Education in Practice*, 12(4): 179-181.

Guevara, J. P., Wolf, F. M., Grum, C. M., & Clark, N. M. (2003). Effects of educational interventions for self management of asthma in children and adolescents: Systematic review and meta-analysis. *BMJ, 326*(7402), 1308–1312. https://doi.org/10.1136/bmj.326.7402.1308

Gülsöz, S. 2017. Yirmi yaş ve üzeri bireylerin sürdürülebilir beslenme konusundaki bilgi düzeylerinin ve uygulamalarının değerlendirilmesi. Yüksek Lisans Tezi. Başkent Üniversitesi, Ankara.

Ho, K.H.M., Cheng, H.Y., McKenna, L., Cheung, D.S.K. 2024. Nursing and midwifery in a changing world: Addressing planetary health and digital literacy through a global curriculum. *Nursing Open* , 11 (1), e 2075.

International Council of Nurses. (ICN). (2018). Nurses, climate change and health. https://www.icn.ch/sites/default/files/inlinefiles/ICN%20PS%20Nurses%252c%20climate%20change%20and%20health%20FI NAL%20.pdf. Erişim tarihi:16.12.2024

Intergovernmental Panel on Climate Change (IPCC). 2022. The Working Group II contribution to the IPCC Sixth Assessment Report assesses the impacts of climate change, looking at ecosystems, biodiversity, and human communities at global and regional levels. It also reviews vulnerabilities and the capacities and limits of the natural world and human societies to adapt to climate change. https://www.ipcc.ch/report/ar6/wg2/

Jones, A.D., Hoey, L., Blesh, J., Miller, L., Green, A., Shapiro, L.F. (2016). A systematic review of the measurement of sustainable diets.Advances in Nutrition. 7(4), 641-664.

Koşan, Z., Yavuz, E., Yılmaz, S., Yerli, E.B. (2023). Tıp Fakültesi Öğrencilerinin Küresel İklim Değişikliği ve Sağlık Etkilerine Yönelik Farkındalık Düzeyleri. *Climate Health*. 3(2):46-62.

Küçük Biçer, B., Acar Vaizoğlu, S. 2015. Hemşirelik Bölümü Öğrencilerinin Küresel ısınma / İklim Değişikliği Hakkındaki Bilgi ve Farkındalıklarının Belirlenmesi. *Hacettepe Üniversitesi Hemşirelik Fakültesi Dergisi.* 2(2), 30–43.

Köksal, E., Bilici, S., Dazıroğlu, M. E. Ç., Gövez, N. E. 2023. Validity and reliability of the Turkish version of the Sustainable and Healthy Eating Behaviors Scale. *British Journal of Nutrition*, 129(8), 1398-1404.

Nigatu, A. S., Asamoah, B. O., Kloos, H. 2014. Knowledge and perceptions about the health impact of climate change among health sciences students in Ethiopia: A cross-sectional study. *BMC Public Health*. 14(1):1–10

Özdoğan, Y., Beşler, Z. N. 2024. Views on sustainable nutrition among nutrition and dietetics students, dietitians, and healthcare professionals. *Journal of Contemporary Medicine.* 14(6), 348-354.

Özer, Z., Teke, N., Görümlü, N., Kılınç, Z. 2021. Sağlık Bilimleri Fakültesi öğrencilerinin küresel ısınma hakkında bilgi düzeylerinin belirlenmesi. *Sağlık Akademisyenleri Dergisi*, 8(3), 199-205.

Rockström, J., Thilsted, S. H., Willett, W. C., Gordon, L. J., Herrero, M., Hicks, C. C., ... & DeClerck, F. (2025). The EAT–Lancet Commission on healthy, sustainable, and just food systems. *The Lancet*, *406*(10512), 1625-1700.

Stanszus, L. S., Frank, P., Geiger, S. M. 2019. Healthy eating and sustainable nutrition through mindfulness? Mixed method results of a controlled intervention study. *Appetite*, *141*, 104325.

Sayar, S. E., Çapık, C. 2022. A New Course in Nursing Education: Drama. *YOBU Faculty of Health Sciences Journal*, 3(1): 46-52.

Selek, M. 2023. Ankara Üniversitesi Tıp Fakültesi dönem 6 öğrencilerinde küresel iklim değişikliği farkındalığı ve ilişkili faktörler. Halk Sağlığı Anabilim Dalı Tıpta Uzmanlık Tezi. Ankara

Schulz, K.F., Altman, D.G., Moher, D. *et al.* CONSORT 2010 Statement: updated guidelines for reporting parallel group randomised trials. *BMC Med* **8**, 18 (2010). https://doi.org/10.1186/1741-7015-8-18

Şavlı, R., Tunçer, E. 2024. Toplum Beslenmesinde Gezegen Sağlığı Diyetinin Önemi. *Beslenme ve Diyet Dergisi.* 52(1), 99-109.

Tedik, S.E. 2019. Adölesanlarda sağlık inanç modeli temelli yaratıcı drama eğitiminin sağlık denetim odağı ve sigara algısına etkisi. Doktora Tezi. Atatürk Üniversitesi. Erzurum.

Tahkol, D. 2023. Hemşirelik öğrencilerinin sürdürülebilir kalkınma tutumları Ve Iklim değişikliğine yönelik Bilgi düzeyleri Master's thesis, Dokuz Eylul Universitesi, İzmir.

Tong, S., Ebi, K. 2019. Preventing and mitigating health risks of climate change. Environ Res. 174:9-13

Uslu, N. 2016. İnsan bakım modeli'ne göre yaratıcı drama ile verilen problem çözme ve stresle baş etme eğitiminin tip 1 diabetes mellitus'lu adölesanların güçlendirilmesine etkisi. Doktora Tezi, Erciyes Üniversitesi, Kayseri

United Nations / UNFCCC, 2023. https://unfccc.int/climate-action/un global-climate-action-awards/planetary-health

Uzunlu, Ş., Sayar, S. E., Çalım, G. A., & Çapık, C. (2026). Effect of a creative drama-based educational intervention on menstrual attitudes and genital hygiene behaviors in adolescent girls: A randomized controlled trial. *BMC Public Health, 26*(1). https://doi.org/10.1186/s12889-026-26331-6

Vicedo-Cabrera, A. S. 2021. The burden of heat-related mortality attributable to recent human-induced climate change. *Nature Climate Change,* 11, 492–500.

Yang, L., Liao, W., Liu, C., Zhang, N., Zhong, S., Huang, C. 2018. Associations between knowledge 71 of the causes and perceived impacts of climate change: A cross-sectional survey of medical, public health and nursing students in universities in China. *International Journal of Environmental Research and Public Health,*15(12):1–14.

Yolcuoglu, I.Z., Kızıltan, G. 2022. Effect of nutrition education on diet quality, sustainable nutrition and eating behaviors among university students. *Journal of the American Nutrition Association.* 41(7), 713-719.

Żakowska-Biemans, S., Pieniak, Z., Kostyra, E., Gutkowska, K. 2019 Searching for a measure integrating sustainable and healthy eating behaviors. *Nutrients* 11, 95. https://doi.org/10.3390/nu11010095

Zakopoulos, V., Makri, A., Ntanos, S., Tampakis, S. 2023. Drama/theatre performance in education through the use of digital technologies for enhancing students' sustainability awareness: A literature review. *Sustainability, 15*(18), 13387.