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# Comparison of Cancer Awareness Levels of Physiotherapy and Rehabilitation Students Who Took and Did Not Take Cancer Prevention Lesson

# Kanserden Korunma Dersi Alan ve Almayan Fizyoterapi ve Rehabilitasyon Öğrencilerinin Kansere Yönelik Farkındalık Düzeylerinin Karşılaştırılması

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**Öz**

**Giriş ve Amaç:** Bu araştırmanın amacı, kanserden korunma dersi alan ve almayan fizyoterapi ve rehabilitasyon öğrencilerinin kansere yönelik farkındalık düzeylerini karşılaştırmaktır.

**Gereç ve Yöntemler:** Müdahale araştırması olarak planlanan bu çalışmaya fizyoterapi ve rehabilitasyon bölümünde öğrenim gören ve kanserden korunma dersi alan (n=53) ve almayan (n=53) toplam 106 ikinci sınıf öğrencisi dâhil edildi. Öğrencilerin kansere yönelik farkındalık düzeyleri Kansere Yönelik Farkındalık Anketi (KYFA) ile değerlendirildi. Kanserden korunma dersi alan ve almayan öğrencilerin KYFA toplam puanlarının karşılaştırılmasında bağımsız gruplarda t testi, öğrencilerin KYFA'da yer alan sorulara verdikleri doğru cevapların oranlarının karşılaştırılmasında ki-kare testi kullanıldı.

**Bulgular:** Kanserden korunma dersi alan ve almayan öğrencilerin diğer sosyo-demografik özellikleri benzerdi ($p>0,050$). Kanserden korunma dersi alan öğrencilerin kansere yönelik farkındalık düzeyleri kanserden korunma dersi almayan öğrencilere göre daha yüksekti ($p<0,001$). Ayrıca, KYFA'da yer alan 54 sorunun 43'ünü (%79,62) kanserden korunma dersi alan öğrencilerin daha yüksek oranda doğru cevapladığı görüldü.

**Sonuç:** Kanserden korunma dersinin öğrencilerin kanser farkındalıkları üzerinde etkili olduğu bulundu. Mezuniyetleri sonrası kanser rehabilitasyonu sürecinde aktif bir rol üstlenmesi beklenen fizyoterapi ve rehabilitasyon öğrencilerinde kansere yönelik farkındalık düzeylerinin iyileştirilmesi için ders öğretim planlarında kansere yönelik derslere yer verilmesi önerilmektedir.

**Anahtar kelimeler:** Eğitim, Farkındalık, Kanser, Sağlık bilimleri.

**Abstract**

**Aim;** The aim of this study was to compare the cancer awareness levels of physiotherapy and rehabilitation students who took or did not take cancer prevention lesson.

**Method;** A total of 106 second-grade students who were studying physiotherapy and rehabilitation and who took a cancer prevention lesson (n=53) and who did not (n=53) were included in the research which was planned as intervention study. Students' cancer awareness levels were evaluated with the Cancer Awareness Survey (CAS). Independent sample t-test was used to compare the CAS total scores of students who took and did not take a

cancer prevention lesson, and the chi-square test was used to compare the rates of students' correct answers to the questions in the CAS.
**Results;** Socio-demographic characteristics of students who took and did not take a cancer prevention lesson were similar ($p>0.050$). The cancer awareness levels of students who took cancer prevention lesson were higher than students who did not take cancer prevention lesson ($p<0.001$). It was observed that students who took cancer prevention lesson answered 43 of the 54 questions (79.62%) in the CAS correctly at a higher rate.
**Conclusion;** It was found that the cancer prevention course was effective on students' cancer awareness. It is recommended that cancer-related courses be included in course curriculums to improve cancer awareness levels in physiotherapy and rehabilitation students who are expected to take an active role in the cancer rehabilitation process after graduation.

**Keywords:** Education, Awareness, Cancer, Health sciences.

## 1. Introduction

It is reported that non-communicable diseases are the most common cause of death worldwide and are responsible for approximately 70% of deaths [1]. Cancer, which is included in the group of non-communicable diseases, is defined as a type of disease characterized by the uncontrolled growth of any cell group and metastasis to the organ from which it originated and other organs [2]. Cancer, which is a significant cause of mortality and morbidity, is known to be the second most common cause of death worldwide [1]. In this context, it is reported that approximately 8 million people lose their lives due to cancer every year [3]. In recent years, it is known that the prevalence of cancer patients has been increasing due to innovations in the field of medicine and technology and the implementation of new diagnostic tests and screening programs by health professionals [4]. Accordingly, it is predicted that the number of new cancer cases seen worldwide will increase to approximately 27 million in 2030 and 40 million in 2040 [5]. However, as a result of the developments in the average life expectancy and treatment of cancer, the average survival times of cancer patients are increasing, and the level of these patients' ability to cope with cancer and their quality of life are increasing. It is becoming increasingly important to increase it [4]. In line with these purposes, cancer rehabilitation practices are intensively carried out in our country as well as all over the World [6].

In addition to cancer rehabilitation practices, it is very important to explain cancer prevention strategies to individuals who can be reached in the society before they are diagnosed with cancer or develop cancer and to raise awareness in the society on this issue. Today, information on cancer prevention strategies is carried out by a multidisciplinary team consisting of many health professionals through events such as seminars, meetings, panels, etc.[7]. Physiotherapists, who are an important member of this multidisciplinary team, play an active role in the process of protecting and/or improving public health by providing physiotherapy and rehabilitation practices during the cancer rehabilitation process and by making healthy lifestyle recommendations such as physical activity, exercise and sports to healthy individuals within the scope of cancer prevention strategies [8]. Therefore, it is necessary to raise awareness about cancer in physiotherapy and rehabilitation students who are expected to play an active role in this process after their undergraduate graduation or to improve the existing awareness levels of these students. Accordingly, it is important to include cancer-related lessons in physiotherapy and rehabilitation lesson curriculums, to determine the effectiveness of these lessons, and to revise lesson curriculums in line with the results obtained.

There are many studies in the current literature examining the cancer awareness levels of university students studying in the health field [1,9-12]. However, academic differences between departments (curriculum, lesson content, grade level, etc.) or possible differences in the sociodemographic characteristics of students studying in different fields (age, gender, place of residence, having/not having a family history of cancer, etc.) may affect the results obtained from these studies. When the studies conducted in the field of physiotherapy and rehabilitation are examined, it is seen that these studies mostly focus on physiotherapists [13-15]. However, it has been concluded that there are a limited number of studies [3].

To our knowledge, there is no research in the current literature comparing the cancer awareness levels of physiotherapy and rehabilitation students who took and did not take any cancer-related lessons. Accordingly, the aim of this study was to compare the cancer awareness levels of physiotherapy and rehabilitation students who took and did not take a cancer prevention lesson.

To our knowledge, there is no study in the current literature comparing the cancer awareness levels of physiotherapy and rehabilitation students who have taken or not taken any cancer-related lessons. Accordingly, the aim of this study was to compare the cancer awareness levels of physiotherapy and rehabilitation students who took and did not take a cancer prevention lesson.

Research Hypothesis

Ho: There is no difference between the cancer awareness levels of physiotherapy and rehabilitation students who took and did not take a cancer prevention lesson.

H1: There is a difference between the cancer awareness levels of physiotherapy and rehabilitation students who took and did not take a cancer prevention lesson.

## 2. Method

### 2.1. Design and Participants

This study was conducted as an intervention study at a faculty in western of Türkiye between 15 January 2024 and 15 February 2024, in the 2023-2024 academic year.

The sample of the study was calculated using the OpenEpi program. It was determined that the number of students who took and attended the Cancer Prevention Lesson in the MCBU University Elective Lessons Pool was 59. In cases where the sample is not homogeneous and has different deviation amount as 0.05, and a minimum of n=52 was calculated for each group. The study included 106 second-year students who took a cancer prevention lesson (n=53) and did not take a lesson (n=53). According to the retrospective power analysis (G*Power 3.1.9.2 version, Heinrich-Heine-Universität, Düsseldorf, Germany) using the data obtained from the study (mean and standard deviation values of the total scores obtained from the Cancer Awareness Survey (CAS) by students who took and did not take a cancer prevention lesson), the power of the study (with Effect Size=1.62) was found to be 99% [16].

The inclusion criteria of the study were determined as follows: volunteering to participate in the study, studying in the physiotherapy and rehabilitation department, and being able to read and understand Turkish, and the exclusion criteria were determined as follows: having cancer in the past, being cancer patient, studying in any field other than the physiotherapy and rehabilitation departments.

Cancer prevention lesson: “The cancer prevention lesson”, which is included in the university elective lesson curriculum at the university site where the research was conducted, is given to students studying in the second or third year in the third or fifth semester of undergraduate education (2 hours each week) for a total of 15 weeks. The content of the lesson includes topics such as cancer epidemiology, cancer formation, benign cancers, malignant cancers, cancer prevention, respiratory system cancers, digestive system cancers, breast cancer, skin cancer, urogenital cancers, lymphatic system cancers and blood cancers [17-28].

Students from any faculty and department of the university can register and attend this lesson. In the semester when the lesson was conducted, all of the students who chose the lesson due to the location of the faculty where the lesson was held had been consisted of second grade students from the physiotherapy and rehabilitation department. When the lesson curriculum of the physiotherapy and rehabilitation department was examined, it was seen that there was no lesson on cancer and it was deemed necessary to draw attention to this issue.

### 2.1. Data Collection Forms

**2.1.1. Student Introduction Form**: It is a form prepared by the researchers according to the literature [1,9,12,29-31] and consists of 14 questions including sociademografic characterictics (age, gender, etc.), risk factors (smoking, drinking, genetic etc.) and having knowledge about the diasese.

**2.1.2. Cancer Awareness Survey (CAS):** It was created by the researchers in line with the literature [32-36]. The form contains 54 statements prepared to determine the awareness levels about cancer. Participants' statements about cancer are scored as 'correct = 1 point', 'incorrect = 0', 'and I have no idea = 0 points'. A score between 1 and 18 points on the form indicates 'poor awareness', a score between 18 and 36 points indicates 'moderate awareness', and a score between 37 and 54 points indicates 'good awareness'. The CAS was practised with the participants at the end of the semester and after the cancer prevention lesson. Cronbach alpha of the scale was found to be 0.94.

### 2.2. Data Collection

Within the scope of the research, a structured survey form created by the researchers using the Google Forms (Google, Mountain View, California, USA) application was delivered to the students via social communication tools. The first section of the survey form consisted of a general information text about the purpose of the research and the options "I want to participate in the research" and "I do not want to participate in the research". Students who selected the option "I want to participate in the research" were able to proceed to the other sections of the survey form. The second part of the questionnaire consisted of questions regarding the sociodemographic characteristics of the students (age, gender, place where most of their lives were spent, place where they lived during university education, smoking/alcohol habits, regular sports activities, regular fruit/vegetable consumption, whether or not any of their family/relatives/friends were diagnosed with cancer, whether or not a relative died of cancer), and the third part consisted of questions included in the CAS. Data were collected in an average of 15-20 minutes.

### 2.3. Data Analysis

The analysis of the data obtained within the scope of the research was performed with the IBM SPSS Statistics Standard Concurrent User V 26 (IBM., Armonk, New York, USA) package program. Categorical variables of the participants were given as number (n) and percentage (%); numerical variables were given as mean and standard deviation (mean±SD). The Shapiro Wilk test was used to evaluate the normality of the variables. Independent groups t-test was used to compare the total scores of the students who took and did not take the cancer prevention lesson in the CAS and the chi-square test was used to compare the rates of correct answers given by the students to the questions in the CAS. The significance level was accepted as $p<0.05$.

### 2.4. Ethical Aspect of the Research

Prior to the research, ethics committee approval was obtained from the Manisa Celal Bayar University Faculty of Medicine Health Sciences Ethics Committee (Decision Date / No: 20.12.2023 /2158). In addition, all researchers acted in accordance with the Declaration of Helsinki throughout the research.

## 3. Results and Discussion

The rate of female students in intervention group was lower than the rate of female students in control group, and the smoking habit rate of students intervention group was higher than the smoking habit rate of those in control group ($p=0.019$, $p<0.001$, respectively). However, the sociodemographic characteristics of students were similar except for gender and smoking habits ($p>0.050$) (Table 1).

**Table 1.** ***Comparison of sociodemographic characteristics of the students (n=106)***

| | **Intervention Group (n=53)** | **Control Group (n=53)** | **p[a,b]** |
|---|---|---|---|
| **Sociodemographic characteristics** | **$\bar{x}$ ±SD** | **$\bar{x}$ ±SD** | **p[a]** |
| Age (year) | 20.66±1.76 | 20.09±1.54 | 0.304 |
| | **n (%)** | **n (%)** | **p[b]** |
| Gender<br>Woman<br>Man | <br>32 (60.40)<br>21 (39.60) | <br>43 (81.10)<br>10 (18.90) | **0.019*** |
| Place where most of life is spent<br>Village/town<br>District<br>City | <br>6 (11.30)<br>16 (30.20)<br>31 (58.50) | <br>6 (11.30)<br>10 (18.90)<br>37 (69.80) | 0.384 |
| Place lived during education<br>State dormitory<br>Private dormitory<br>With friend<br>Alone<br>At home with family | <br>26 (49.10)<br>5 (9.40)<br>5 (9.40)<br>4 (7.50)<br>13 (24.50) | <br>32 (60.40)<br>4 (7.50)<br>1 (1.90)<br>1 (1.90)<br>15 (28.30) | 0.254 |
| Smoking<br>Yes<br>No | <br>25 (47.20)<br>28 (52.80) | <br>8 (15.10)<br>45 (84.90) | **<0.001 ** |
| Drinking Alcohol<br>Yes<br>No | <br>24 (45.30)<br>29 (54.70) | <br>17 (32.10)<br>36 (67.90) | 0.163 |
| Regular exercise status<br>Yes<br>No | <br>11 (20.80)<br>42 (79.20) | <br>8 (15.10)<br>45 (84.90) | 0.447 |
| Regular vegetable/fruit consumption<br>Yes<br>No | <br>36 (67.90)<br>17 (32.10) | <br>37 (69.80)<br>16 (30.20) | 0.834 |
| Family history of cancer diagnosis<br>Yes<br>No | <br>7 (13.20)<br>46 (86.80) | <br>3 (5.70)<br>50 (94.30) | 0.184 |
| Cancer diagnosis in relatives<br>Yes<br>No | <br>32 (60.40)<br>21 (39.60) | <br>34 (64.20)<br>19 (35.80) | 0.689 |
| Friends diagnosed with cancer<br>Yes<br>No | <br>20 (37.70)<br>33 (62.30) | <br>15 (28.30)<br>38 (71.70) | 0.302 |

| | | | |
|---|---|---|---|
| Death of a relative due to cancer<br>Yes<br>No | <br>35 (66.00)<br>18 (34.00) | <br>34 (64.20)<br>19 (35.80) | 0.839 |

x̄: Mean; SD: Standard Deviation; p[a]: t test in independent groups; p[b]: chi-square test; * p<0.050, ** p<0.010

It was seen that the cancer awareness levels of the students in intervention group were higher than those in control group (p<0.001) (Table 2).

**Table 2.** ***Comparison of total scores obtained from CAS by students who took and did not take cancer prevention lesson (n=106)***

| | **Intervention Group (n=53)** | **Control Group (n=53)** | |
|---|---|---|---|
| | **X̄±SD** | **x̄±SD** | **p value** |
| CAS Total Score | 46.79±5.34 | 34.20±9.58 | **<0.001**** |

x̄: Mean; SD: Standard Deviation; CAS: Cancer Awareness Survey. p: t test in independent groups; ** p<0.010

This study was conducted to compare the cancer awareness levels of physiotherapy and rehabilitation students who took and did not take a cancer prevention lesson. As a result of the study, it was concluded that the cancer awareness levels of students in intervention group were higher than those in control group.

According to the results of the ROC analysis performed through the CAS scores of the groups, the AUC value for CAS score was found as 0.880 and the p value was determined as <0.05, demonstrating that it was important for increasing awereness about cancer (Table 3, Figure 1).

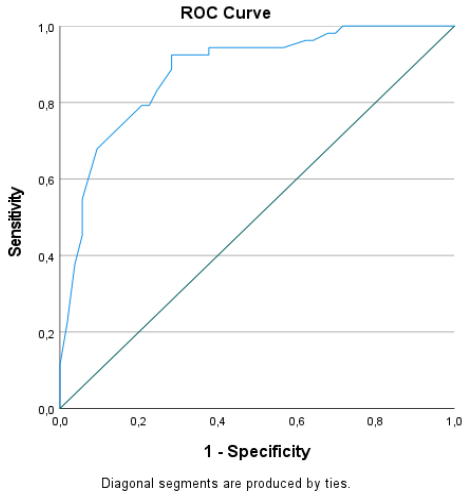


**Figure 1.** ***ROC curve of CAS scores of the intervention and control groups***

**Table 3.** ***The ROC analysis of CAS scores of intervention and control group (n=106)***

| **Area** | **Std. Error[a]** | **Asymptotic Sig.[b]** | **Asymptotic 95% Confidence Interval** | |
|---|---|---|---|---|
| | | | **Lower Bound** | **Upper Bound** |
| 0.880 | 0. 033 | 0.000 | 0.815 | 0.945 |

The test result variable(s): CAS score has at least one tie between the positive actual state group and the negative actual state group.
a. Under the nonparametric assumption
b. Null hypothesis: true area = 0.5

As in the rest of the world, in our country, due to the increasing average life expectancy, the prevalence of many chronic diseases, especially cancer, in the society is also increasing significantly [37,28]. This situation increases the importance of cancer rehabilitation and cancer prevention strategies every passing day. Today, information about cancer rehabilitation and cancer prevention strategies is carried out by a multidisciplinary health team [39]. An important member of this team is physiotherapists [40]. Therefore, it is important to examine the cancer awareness levels of physiotherapy and rehabilitation students who will serve as members of a multidisciplinary team in the health field after graduation and to provide feedback to the students on this issue.

When the current literature is examined, it is seen that there are many studies examining the awareness levels of students studying in different health fields regarding different types of cancer. In this context, Karaca and Koyucu (2020) reported in a study examining the knowledge levels of first and second year female students studying in the field of health about breast cancer that the students had general knowledge about breast cancer, but their knowledge about breast self-examination and its importance was insufficient [11]. Carter and Ogden [41] reported in a study examining the oral cancer awareness levels of medical and dentistry students studying in different grades (2nd, 3rd, 4th and 5th grades) that the students' awareness levels about oral cancer were insufficient and emphasized the importance of increasing the students' knowledge and awareness levels about cancer. In a study examining the knowledge and awareness levels of university students studying in the field of health regarding colorectal cancer, Aga et al. [42] reported that students' knowledge and awareness levels regarding colorectal cancer were quite low. Loo et al. [43] included students studying in the field of health in a study examining the cancer awareness

levels of university students. As a result of their study, they reported that the majority of students' knowledge and awareness levels regarding cancer were low (94.4% and 64.9%, respectively). Farazi et al. [44] conducted a study to investigate the level of awareness of cervical cancer among university students in the health sciences field. Their findings revealed that the students' knowledge and awareness of cervical cancer prevention varied, and they concluded that it would be beneficial to develop educational programs about cancer for students. Abdallah et al. [45] reported in a study examining the awareness and attitudes of nursing students studying in different grades towards protection from cervical cancer that the majority of the students had insufficient knowledge about protection from cervical cancer and that the education provided at the undergraduate level should be at a level that motivates students to actively participate in awareness-raising, screening and management processes. When these studies conducted on students studying in different fields related to health are examined, It was concluded that students studying in different classes were included in the studies and that the students' awareness levels regarding cancer were examined regardless of whether they had taken any lessons/education related to cancer. The results obtained from the studies were largely similar and it was observed that the knowledge and/or awareness levels of students studying in different health-related fields were insufficient. These results obtained from the studies suggested that adding cancer-related lessons to the lesson curriculum of health-related departments or increasing the number of existing lessons could be beneficial in improving students' awareness levels regarding cancer.

When the studies conducted in the field of physiotherapy and rehabilitation were examined, it was seen that these studies mostly focused on physiotherapists [13-15]. However, it was concluded that there were a limited number of studies focusing on the awareness levels of physiotherapy and rehabilitation students about cancer [3]. In this context, Üstündağ et al. [1] included physiotherapy and rehabilitation students in a study in which they examined the awareness of health sciences students about colorectal cancer risk factors using a questionnaire form that included questions about colorectal cancer risk factors, preventive approaches and symptoms. As a result of this study, which included approximately 40% second-year students and 47.3% physiotherapy and rehabilitation students, they reported that the knowledge and awareness levels of physiotherapy and rehabilitation students in particular were not sufficient and that training should be provided to increase the knowledge and awareness levels of students [1]. In a study examininig the knowledge levels of physiotherapy and rehabilitation students regarding breast cancer, Parle et al. [46] reported that the students' breast cancer knowledge levels were moderate. Irfan et al. [47] included physiotherapy and rehabilitation students in a study examining the breast cancer awareness levels of university students. As a result of their study, they reported that the students' breast cancer awareness levels were relatively good, but they were not knowledgeable about breast self-examination procedures. Pattanshetty and Pawar [3], in their study examining the knowledge and awareness levels of physiotherapy and rehabilitation students regarding cancer and including only female students from each class, interpreted the students' knowledge and awareness levels regarding cancer based on their answers to questions including general information, risk factors, preventive measures and information sources regarding cervical cancer in a structured survey, using the number (n) and percentage (%) values. As a result of their research, they reported that female students' knowledge and awareness levels regarding cancer were low and that steps should be taken to improve their knowledge and awareness levels regarding cancer [3].

The comparison of the correct answers given by students in intervention and control groups to the CAS questions is given in Table 4. Accordingly, it was concluded that students in intervention group answered 43 of the 54 questions (79.62%) correctly at a higher rate. However, early diagnosis, screening, lung cancer, foods with additives, benign tumors, smoking, etc. It was observed that students in each groups answered questions containing expressions that are generally known to be associated with cancer (questions 2, 3, 4, 5, 8, 11, 12, 13, 20, 33, 47) correctly at similar rates ($p>0.050$).

**Table 4.** ***Comparison of correct answers given to questions in CAS by students who took and did not take cancer prevention lesson (n=106)***

| **CAS items** | **Intervention Group (n=53)** | **Control Group (n=53)** | |
|---|---|---|---|
| | **n (%)** | **n (%)** | **p values** |
| 1. Cancer is a contagious disease. | 50 (94.30) | 43 (81.10) | **0,038*** |
| 2. Cancer is an unpreventable disease. | 46 (86.80) | 43 (81.10) | 0.427 |
| 3. Cancer Early Diagnosis, Screening and Education Centers are working in the fight against cancer. | 52 (98.10) | 48 (90.60) | 0.093 |

| | | | |
|---|---|---|---|
| 4. Early diagnosis of cancer can save lives. | 52 (98.10) | 53 (100.00) | 0.315 |
| 5. Breast cancer is more common in women. | 52 (98.10) | 50 (94.30) | 0.308 |
| 6. Men can also get breast cancer. | 40 (75,50) | 24 (45.30) | **0.001**** |
| 7. Lung cancer is more common in men. | 45 (84.90) | 18 (34.00) | **<0.001**** |
| 8. Women can get lung cancer. | 52 (98.10) | 48 (90.60) | 0.093 |
| 9. The main cause of death from cancer is nutritional deficiencies. | 32 (60.40) | 8 (15.10) | **<0.001**** |
| 10. Some benign tumors can turn into malignant tumors over time. | 48 (90.60) | 39 (73.60) | **0.023*** |
| 11. Benign tumors should also be monitored regularly. | 53 (100.00) | 52 (98.10) | 0.315 |
| 12. Eating or drinking foods with additives can cause cancer. | 53 (100.00) | 52 (100.00) | 0.315 |
| 13. Stress can cause cancer. | 52 (98.10) | 47 (88.70) | 0.051 |
| 14. Using a mobile phone can cause cancer. | 37 (69.80) | 27 (50.90) | **0.047*** |
| 15. Using aerosol-containing deodorants, etc. can cause cancer. | 46 (86.80) | 31 (58.50) | **0.001**** |
| 16. Physical injuries such as hitting or crushing can cause cancer. | 21 (39.60) | 2 (2.80) | **<0.001**** |
| 17. Using plastic products (cups, plates, etc.) at home can cause cancer. | 48 (90.60) | 40 (75.50) | **0.038*** |
| 18. Exposure to sunlight can cause cancer. | 51 (96.20) | 42 (79.20) | **0.008**** |
| 19. Using tanning beds can cause cancer. | 49 (92.50) | 36 (67.90) | **0.002**** |
| 20. Smoking can cause cancer. | 53 (100.00) | 52 (98.10) | 0.315 |
| 21. Exposure to secondhand smoke can cause cancer. | 53 (100.00) | 43 (81.10) | **0.001**** |
| 22. Drinking alcohol can cause cancer. | 51 (96.20) | 43 (81.10) | **0.014*** |
| 23. Microorganisms such as human papillomavirus, hepatitis B and C viruses can cause cancer. | 46 (86.80) | 20 (37.70) | **<0.001**** |
| 24. Air pollution can cause cancer. | 53 (100.00) | 42 (79.20) | **<0.001**** |
| 25. Pesticides can cause cancer. | 46 (86.80) | 33 (62.30) | **0.004**** |
| 26. Having a family history of cancer can cause cancer. | 51 (96.20) | 45 (84.90) | **0.046*** |
| 27. Being overweight can cause cancer. | 46 (86.80) | 21 (39.60) | **<0.001**** |
| 28. A sedentary lifestyle can cause cancer. | 50 (94.30) | 32 (60.40) | **<0.001**** |
| 29. Consuming vegetables, fruits, grains and legumes in meals can reduce the risk of cancer. | 50 (94.30) | 43 (81.10) | **0.038*** |
| 30. Various lesions such as acne, moles, redness, swelling and wounds can develop on the skin and some of these lesions can turn into cancer. | 47 (88.70) | 30 (56.60) | **<0.001**** |
| 31. Sores on the skin or in the mouth that do not heal within 1 month may be a precursor to cancer. | 44 (83.00) | 23 (43.40) | **<0.001**** |
| 32. Moles, freckles and warts that grow and change in appearance may be a precursor to cancer. | 48 (90.60) | 36 (67.90) | **0.004**** |
| 33. A mass that can be felt anywhere on the body may be a precursor to cancer. | 50 (94.30) | 44 (83,00) | 0,066 |
| 34. Long-term, unexplained hoarseness may be a precursor to cancer. | 40 (75.50) | 23 (43.40) | **0.001**** |
| 35. Long-term, unexplained cough may be a precursor to cancer. | 47 (88.70) | 34 (64.20) | **0.003**** |
| 36. Difficulty swallowing that gradually increases or lasts longer than 1 month may be a precursor to cancer. | 41 (77.40) | 27 (50.90) | **0.005**** |
| 37. Changes in bowel habits may be a precursor to cancer. | 44 (83.00) | 28 (52.80) | **0.001**** |
| 38. Abnormal bleeding and discharge from any part of the body may be a precursor to cancer. | 48 (90.60) | 34 (64.20) | **0.001**** |
| 39. Unexplained pain may be a precursor to cancer. | 50 (94.30) | 39 (73.60) | **0.004**** |
| 40. Unexplained fever may be a precursor to cancer. | 45 (84.90) | 23 (43.40) | **<0.001**** |
| 41. Unexplained loss of appetite and weight loss may be early signs of cancer. | 52 (98.10) | 41 (77.40) | **0.001**** |
| 42. Unexplained fatigue may be early signs of cancer. | 47 (88.70) | 34 (64.20) | **0.003**** |
| 43. Changes in urination habits may be early signs of cancer. | 44 (83.00) | 28 (52.80) | **0.001**** |
| 44. Dizziness that lasts for weeks may be early signs of cancer. | 46 (86.80) | 24 (45.30) | **<0.001**** |

| | | | |
|---|---|---|---|
| 45. Postmenopausal bleeding or changes in menstrual cycle before menopause may be early signs of cancer. | 49 (92.50) | 20 (37.70) | **<0.001**** |
| 46. Cervical cancer can be diagnosed, prevented and treated early by performing a Human Papilloma Virus (HPV) or Pap Smear Test. | 51 (96.20) | 41 (77.40) | **0.004**** |
| 47. There is a vaccine that prevents cervical cancer. | 34 (64.20) | 27 (50.90) | 0.169 |
| 48. Having more than one sexual partner/partner can be a risk factor for cervical cancer. | 53 (100.00) | 43 (81.10) | **0.001**** |
| 49. Those who start having sexual interlesson at an early age may have a higher risk of developing cervical cancer. | 43 (81.10) | 23 (43.40) | **<0.001**** |
| 50. For early diagnosis of breast cancer, every woman after the age of 20 should perform a monthly breast self-examination. | 53 (100.00) | 47 (88.70) | **0.012*** |
| 51. Women should ideally perform a monthly breast self-examination 7-10 days after the start of menstruation. | 44 (83.00) | 28 (52.80) | **0.001**** |
| 52. For early diagnosis of breast cancer, women should have a mammogram every two years after the age of 40. | 50 (94.30) | 39 (73.60) | **0.004**** |
| 53. Testicular cancer is the most common type of cancer in men aged 20-40. | 44 (83.00) | 18 (34.00) | **<0.001**** |
| 54. For early diagnosis of testicular cancer, men should perform a testicular self-examination every month. | 51 (96.20) | 24 (45.30) | **<0.001**** |

p: chi-square test; *p<0.050, **p<0.010.

To our knowledge, this study is the first to compare the cancer awareness levels of physiotherapy and rehabilitation students who took a lesson on cancer and those who did not. The results of the study showed that the cancer awareness levels of students in intervention group were higher than those in control group. However, although the students in control group answered questions that included statements commonly known by the public to be related to cancer, such as early diagnosis, screening, lung cancer, and smoking, at similar rates, the students in intervention group answered questions that included statements that were generally unknown or misunderstood by the public (such as men can also get breast cancer, lung cancer is more common in men, etc.) at a higher rate. These results showed that the cancer prevention lesson was effective in increasing the cancer awareness levels of physiotherapy and rehabilitation students. In addition, the results we obtained from the study are largely similar to the results of studies in the literature that aim to determine the cancer awareness levels of students studying in different health fields [11,41,45, 49, 50].

This study has some limitations. First, the differences in some sociodemographic characteristics of the students may have affected the results we obtained from the study. Second, this study was conducted only on second-year students studying in the physiotherapy and rehabilitation department of a state university. This prevents the generalizability of the results and/or inferences obtained from the study to students studying in different classes or different physiotherapy and rehabilitation departments. Finally, the fact that the CAS used in the study did not have a cut-off score is another limitation of this study. It is thought that these details should be taken into consideration in future studies on this subject.

## 4. Conclusion

As a result of this study, it was concluded that the cancer awareness levels of students who took cancer prevention lesson were higher than those who did not take cancer prevention lesson. In this context, it is recommended that cancer-related lessons be included in physiotherapy and rehabilitation lesson curriculums or the number of existing lesson be increased in order to raise public awareness of cancer prevention strategies and to develop cancer awareness among physiotherapy and rehabilitation students who are expected to take an active role in the cancer rehabilitation process after graduation, or to improve existing awareness levels**.**


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