Evaluation of the level of knowledge about cancer prevention and early screening methods in healthcare workers

Sağlık çalışanlarında kanserden korunma ve erken tarama yöntemleri ile ilgili bilgi düzeylerinin değerlendirilmesi

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Abstract

Purpose: The purpose of this article is to investigate the effect of planned training of healthcare workers to increase awareness of cancer prevention and early screening programmes.

Material and methods: In our cancer early diagnosis training, a questionnaire with 15 questions was applied to 60 healthcare workers on the awareness of cancer prevention and early screening programmes. Three male and fifty-seven female healthcare workers who participated in the training were included in the study. Wilcoxon signed-rank test and Mann-Whitney U test have been used to investigate the effect of the training on healthcare workers.

Results: Following the 15-question questionnaire administered to 60 healthcare workers, the Wilcoxon signed-rank test showed that the median correct response in the pre-education test was 12, while the median correct response in the post-education test was 13, which was statistically significant (p=0.00). The median correct answer was 12 in the pre-education test in women and 8 in the pre-education test in men (p=0.02). The number of correct answers was significantly higher between men and women in the pre-education test in favour of women. The post-education test median response was 13 in women and 11 in men (p=0.13). No statistical significance was found between pre-education test and post-education test according to age, educational status, nurses and other healthcare workers.

Conclusion: It was found that the level of knowledge increased statistically significantly with information about cancer early diagnosis methods and prevention methods in healthcare workers working in the hospital. It was seen that the level of knowledge increased more in male healthcare workers with cancer information training. Utilisation of new tests such as fecal immunochemical testing (FITs) in colorectal cancer, screening with low dose thorax CT (LDCT) in lung cancer and autofluorescence imaging bronchoscopy (AFI), narrow band imaging bronchoscopy (NBI) increases the diagnosis of cancer at early stages.

Key words: Cancer education, nurses, healthcare workers, cancer prevention and early screening.

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Öz

Amaç: Kanserden korunma ve erken tarama programlarının farkındalığını arttırmak için sağlık çalışanlarına planlı eğitiminin etkisini araştırmaktır.

Gereç ve yöntem: Kanser erken tanı eğitimimizde kanserden korunma ve erken tarama programlarının bilinirliği üzerine 60 sağlık çalışanına 15 soru ile anket uygulandı. Eğitime katılan 3 erkek, 57 kadın sağlık çalışanı çalışmaya alındı. Wilcoxon işaretli sıralar testi ve Mann-Whitney U testi kullanarak eğitimin sağlık çalışanları üzerindeki etkisi araştırıldı.

Bulgular: 60 hemşire ve sağlık çalışanına uygulanan 15 soruluk anket yanıtlandığında Wilcoxon işaretli sıralar testi ön test doğru yanıt median 12 iken son test median doğru yanıt median 13 istatistiksel olarak anlamlı bulundu (p=0,00). Kadınlarda ön testte median doğru 12, erkeklerde ön testte median 8' dir (p=0,02). Erkekler ile kadınlar arasında ön testte belirgin kadınlar lehine doğru sayısı fazlaydı. Kadınlarda son testmedian yanıt 13, erkeklerde son testte median yanıt 11'dir (p=0,13). Yaş, eğitim durumu, hemşire ve diğer sağlık çalışanlarına göre anket ön test ve son testler arasında istatistiksel anlamlılık bulunmadı.

Sonuç: Hastanede çalışan sağlık çalışanlarında kanser erken tanı yöntemleri, korunma yöntemleri ile ilgili bilgilendirme ile bilgi düzeylerinin istatistiksel anlamlı olarak arttığı görülmüştür. Erkek sağlık çalışanlarında kanser bilgilendirme eğitimi ile bilgi düzeylerinin daha fazla arttığı görüldü. Kolorektal kanserinde fekal immünokimyasal test (FITs), akciğer kanserinde düşük doz toraks BT (LDCT) ile tarama ve otofloresan görüntüleme bronkoskopisi (AFI), dar bant görüntüleme bronkoskopisi (NBI) gibi yeni tetkiklerin kullanılması erken evrede kanser tanısının konulmasını arttırır.

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Introduction

Cancer is the second leading cause of death after cardiovascular diseases. The mortality rate from cancer is lower in societies where cancer is detected at an early stage. The incidence of cancer is gradually increasing and this increase has led to the need to initiate cancer screening programmes. In addition to early diagnosis and screening of cancer, it is very important to raise awareness about the causes, risk factors and symptoms of cancer in the society and to create behavioural change. Early diagnosis and screening studies for cancer prevention should be planned by those working to improve public health [1]. Implementation of cancer early diagnosis and screening programs are recommended by the World Health Organization [2]. The national community-based cancer screenings of the Ministry of Health of the Republic of Turkey are conducted by Cancer Early Detection, Screening and Education Centres (KETEM), Family Health Centres (FHC) and Community Health Centres (TSM). It is recommended to perform mammography every two years in women aged 40-69 years for breast cancer, HPV and pap smear test every five years in women aged 30-65 years for cervical cancer, and Fecal Occult Blood Test every two years and colonoscopy every 10 years in all men and women aged 50-70 years for colorectal cancers [3]. In the guidelines of the European Society of Medical Oncology (ESMO), it is recommended by the European Breast Cancer Commission for women over the age of 40, while women over the age of 50 are necessarily asked to have mammograms in every one year or two years. Particularly those with a family history of breast cancer with or without a BRCA mutation are recommended to have annual mammograms and breast MRI scans [4]. In many countries of the world, nurses are involved in health education of healthy/ patient individuals to increase early diagnosis of cancer [5]. When individuals at risk are given the necessary warnings and information by healthcare personnel, they go to the health institution and switch from a passive role to an active role in disease screening. As part of the prevention programme, nurses can also prevent complications by educating and regularly monitoring patients [6]. Nurses also have an important role and responsibility in the process of protecting women from breast cancer and acquiring the habit of self-examination [5]. Self-manual examination, which is an economical and easy method that every woman can easily perform, is a technique developed especially for the investigation/examination of cancer. In order to get to know the breast tissue better and to determine possible changes, it is necessary to perform manual self-examination at regular and periodic intervals, to be willing to have a breast examination, to know the examination technique well and to feel responsible for its practice [7].

Cervical cancer is the best example of cancers that can be prevented by protection. After the researches, it is assumed that providing education contributes to the elimination of women's lack of knowledge [1]. In protecting against cervical cancer, it is important to know the factors that are thought to cause cancer from the point of view of measures to be taken [6]. Human papillomavirus DNA test recommended by ASCO is repeated every 5 years between the ages of 25 and 65, and is repeated every 10 years if it is negative 2 times in 5 year periods between the ages of 30-65. HPV DNA testing is performed in HIV-positive women [8]. The American Society of Clinical Oncology (ASCO) primarily performs faecal occult blood test and faecal immunochemical test in asymptomatic individuals aged 50-75 years. Flexible sigmoidoscopy and colonoscopy are recommended according to the tests. Digital rectal examination, double-contrast barium enema radiography, flexible sigmoidoscopy, and colonoscopy are recommended for symptomatic individuals [9].

The US Preventive Services Task Force (USPSTF) prefers clinicians and individuals to decide together on PSA-based screening for prostate cancer in men aged 55-69 years, while PSA-based screening is recommended for men aged 70 years and older [10]. Subclinical prostate cancer is common in men over the

age of 50. PSA-based screening should not be performed in men who do not have symptoms. In the European Society of Medical Oncology (ESMO) guidelines, PSA testing is used in men over 70 years of age in patients with symptoms [11].

Lung cancer is the most common cancer-causing cancer in the world, and early diagnosis is important for long-term survival. Increased survival is achieved by low-dose thorax CT screening in high-risk individuals [12]. Lung cancer is the most common cancer-causing disease in the world, and early diagnosis is important for long-term survival. Low-dose thorax CT screening improves survival in high-risk individuals [12]. NBI (narrow-band imaging) video bronchoscopy is a new endoscopic technique for detecting submucosal and mucosal microvascular lesions. In many studies, NBI (narrow-band imaging) is superior to white light video bronchoscopy. Autofluorescence video bronchoscopy and narrow-band imaging video bronchoscopy provide easier detection of premalignant lesions in the airway [13].

Material and methods

Study design

A pre-education test and post-education test questionnaire were administered to 60 nurses and healthcare workers working in the hospital on 11 April 2022 during cancer early diagnosis and prevention information training. In the questionnaire, questions about cancer incidence, risk factors causing cancer as the cause of death of the most common cancers, cancer symptoms, cancer diagnosis, cancer treatment options, regular exercise, proper nutrition were asked in our cancer early diagnosis training. In addition, early cancer detection tests such as fecal occult blood test for colon cancer, mammography for breast cancer, HPV and pap smear tests for cervical cancer are administered by the Ministry of Health of the Repulic of Turkey, KETEM, and were asked in our questionnaire. In the pre-education and post-education survey, early cancer diagnosis methods, prevention methods were evaluated whether cancer information in nurses and other healthcare workers was statistically significant. 15 questions were asked in the pre-education test and post-eduction test in the survey about early diagnosis.

Statistical analysis

Survey questions applied to 60 people were statistically evaluated by using the answers in SPSS 20 programme. The answers given to the questions before and after the questionnaire about early diagnosis and cancer prevention were evaluated using the Wilcoxon signed-rank test. Their responses according to age, gender, educational status, nurse, and other healthcare workers were evaluated using the Mann-Whitney U test. A p-value of <0.05 was considered significant in statistical evaluation.

The study protocol was approved by the Medical Ethics Committee at Pamukkale University. The study was conducted in accordance with the principles set out in the Helsinki Declaration. Written consent was obtained from the study participants. The researcher informed the participants about the study and obtained their verbal and written informed consent.

Results

The median age of the healthcare workers involved in the study was 40.5 SD 6,879, minimum age 24, and maximum age 53. Of those who participated in the education, 57 women and 3 men were healthcare workers. 52 nurses and 8 other healthcare workers were enrolled in the early diagnosis study. Cancer early diagnosis and cancer prevention survey questions were shown in Table 1.

The data were evaluated for normal distribution with Kolmogorov Smirnov test and with graphics. When 15 questions were answered using the nonparametric Wilcoxon signed-rank test, the median correct answer was 12 in the pre-education test and 13 in the post-education test. (p=0.00).

Age, gender, education, nurses, and other healthcare workers' demographic characteristics were shown in Table 2.

According to the Mann-Whitney U test applied to age, gender, educational status, nurses and other healthcare workers, the median of the answers given to the questionnaire questions was 12 between the ages of 18-40 in the pre-education test and 11 over the age of 40 in the pre-education test (p=0.60). While the median of the responses to the post-training

Table 1. Cancer early diagnosis screening informational education questionnaire questions (Q) for nurses and healthcare workers

Q-1	What is the disease that most often leads to death after cardiovascular diseases?
Q-2	What is the most common cancer in women in Turkey?
Q- 3	What is the most common cancer in men in Turkey?
Q-4	What is the most common cancer that causes death in Turkey?
Q-5	Which treatment is not one of the curative treatments of cancer?
Q-6	Which is not of the risk factors that cause breast cancer?
Q-7	Which quadrant of the breast is most common for cancer?
Q-8	What is the most common symptom of breast cancer?
Q-9	What first should do the women to early detection and diagnose of breast cancer?
Q-10	Which is not one of the risk factors leading to lung cancer?
Q-11	Which of the methods of diagnosis of lung cancer is not used?
Q-12	Which is not used by the Republic of Ministry of Health's cancer early detection centers (KETEM) for routine cancer screening?
Q-13	Which is not one of the risk factors that lead to stomach cancer?
Q-14	Which methods are not effective in protecting against cancer?
Q-15	Which cancer can be prevented by vaccination in women?

Table 2. Demographic characteristics of nurses and healthcare workers (n=60)

	Demographic characteristics	N Percent
Age	18-40 years 40 years>	28 (46.7%) 32 (53.3%)
Gender	Male Female	3 (5%) 57 (95%)
Academic degree of Nurses and Healthcare Workers	High school Bachelor / Master	27 (45%) 33 (55%)
Profession	Nurse Other Healthcare Worker	52 (86.7%) 8 (13.3%)

test was 13 between the ages of 18-40, the median of the responses to the post-education test was 13 over the age of 40 (p=0.20). No statistical significance was found between pre-test or post-test on age. According to gender, in the pre-education test the median was 12 in women, while it was 8 in men (p=0.02). In the post-education test the median is 13 in women, while it is 11 in men (p=0.13). There is no difference between men and women in the post-test median, whereas there is a difference in the pre-test median with incorrect answers to the questions about early diagnosis and prevention. The correct number of responses in nurses' pre-test the median was 11.50, while the pre-education test results in other healthcare workers the median was 13 (p=0.69), while the post-test results the median was 13 in nurses, and the post-test in other healthcare workers the median was 14 (p=0.17). There were no statistically significant differences between the correct numbers among nurses and other healthcare workers. According to educational status, the pre-test median of high school graduates was 11.50, while the pre-test median of bachelor/master graduates was 12 (p=1.00). The median number of correct answers in the post-test of high school graduates was 13, while the median number of correct answers in the post-test of bachelor / master graduates was 13 (p=0.84). There was no statistical significance in the number of correct answers of the survey test according to educational status. The pre-test and post-test results of the Wilcoxon signed-rank test applied to 60 healthcare workers and the Mann-Whitney U test results between age, gender, educational status, nurses and other healthcare workers are shown in Table 3.

Table 3. Results of education for nurses and healthcare workers

	Educational tests		Correct answer	*p*
Wilcoxon signed-rank test		pre-test post-test	Median 12.00 min:6-max:15 Median 13.00 min:9-max:15	*p*=0.00
Mann-Whitney U Test	18-40 years 40 years>	pre-test pre-test	Median 12.00 min:6-max:14 Median 11.00 min:7-max:15	*p*=0.60
	18-40 years 40 years>	post-test post-test	Median 13.00 min:9-max:14 Median 13.00 min:10-max:15	*p*=0.20
	Female Male	pre-test pre-test	Median 12.00 min:7-max:15 Median 8.00 min:6-max:11	*p*=0.02
	Female Male	post-test post-test	Median 13.00 min:9-max:15 Median 11.00 min:10-max:13	*p*=0.13
	Nurse Healthcare Worker	pre-test pre-test	Median 11.50 min:7-max:15 Median 13.00 min:6-max:14	*p*=0.69
	Nurse Healthcare Worker	post-test post-test	Median 13.00 min:9-max:15 Median 14.00 min:10-max:14	*p*=0.17
	High school Bachelor/Master	pre-test pre-test	Median 11.50 min:7-max:15 Median 12.00 min:6-max:14	*p*=1.00
	High school Bachelor/Master	post-test post-test	Median 13.00 min:9-max:15 Median 13.00 min:10-max:15	*p*=0.84

While 50 people (83.3%) gave the correct answer in the pre-test about self-examination for breast cancer detection, 54 people (90%) gave the correct answer in the post-test. While the rate of those who knew the early cancer screening tests performed at KETEM was 75% in 45 people in the pre-test, an increase in knowledge was observed in 48 people (80%) in the post-test. While 48 people (80%) knew the symptoms of breast cancer correctly in the pre-test, it was 56 people (93.3%) in the post-test. For a vaccine that protects against cervical cancer, 59 people gave 98.3% correct answers in the pre-test and 60 people gave 100% correct answers in the post-test.

Discussion

In this study, it was observed that the knowledge of healthcare professionals about cancer prevention and early diagnosis methods increased with the education. In our study, self-examination response in the most common method of early diagnosis of breast cancer in women, 50 people (83.3%) answered correctly in the pre-education test, while 54 people (90%) answered correctly in the post-education test.

While 48 people (80%) knew the symptoms of breast cancer correctly in the pre-education test, it was 56 people (93.3%) in the post-education test. While the early diagnosis rate of those who knew mammography for breast cancer, pap smear test for cervical cancer, and fecal occult blood test for colon cancer was 75% in 45 people in the pre-education test, an increase in knowledge was observed in 48 people (80%) in the post-education test. Awareness about self-manual examination and mammography increased among healthcare workers after the training. According to a study supporting our study, 236 (41.7%) nurses who accepted to participate from 565 nurses working in a university hospital were administered self-actualisation, health responsibility, exercise, nutrition, interpersonal support, stress management, healthy lifestyle behaviours assessment scale score. In this study, it was found that the total score of the healthy lifestyle behaviours scale was higher in nurses who had adequate breast cancer knowledge, performed regular self-examination for breast cancer and received training on breast cancer [14]. In a study in which 200 female healthcare personnel working in hospitals participated, demographic data, breast self-manual examination, mammography, breast ultrasonography, smear test, hepatitis vaccination, human papillomavirus (HPV) vaccination were questioned with a seventeen-question survey. 21% of the participants stated that they had never performed breast self-manual examination, 56% had never had mammography and/or breast USG, and 56.5% had never had a smear test. 72% (n=144) of the

participants knew about the HPV vaccine, and 6.5% had the HPV vaccine. It was determined that they did not get enough of the HPV vaccine, which prevents early diagnosis and cancer. In addition to institutional studies evaluating the knowledge and attitudes of women's healthcare workers on this issue, it has been reported that in-house training programmes should be established if necessary [15]. Similarly, our study showed that the knowledge level of healthcare workers increased after the training. We believe that training programmes will increase the implementation of early diagnosis methods. In another study that is similar to ours, the knowledge level of midwives, nurses, and healthcare workers for early diagnosis and cancer prevention is increased with regular education, and health education is one of the most important roles for the community, especially the group at risk [6]. In one study, women have not enough information about the symptoms of cancer, early diagnosis, and screening of cancer.

The results of this study are similar to our study, and in our National Cancer Screening Programme, screening against cancer has been increased with breast, cervical and colon cancer risk factors, symptoms, prevention, early diagnosis and awareness trainings [1]. In a study with a sample of 254 women, it was found that 44.1% of the women living in the neighbourhood where the study was conducted had never had mammography, and when the reasons were questioned, 99.2% of the women who did not have mammography were due to lack of information and education. Lack of knowledge about educational levels and early screening tests prevent early diagnosis of breast cancer. They stated that education would increase the implementation of cancer screening tests [16]. In a study of another 280 women, they reported that if education for breast cancer is increased, self-manual examination, which is an effective diagnostic method, believing in the examination, detection of breast cancer will increase if it is applied at the right time and frequency [5]. In a study conducted with 153 female cases, breast cancer and cervical cancer symptoms, cancer early diagnosis and prevention methods information data were collected and women were trained after the education phone calls and home visits were made to the women for six months to keep track of the changes. At the end

of the study, it was found that 84% of women began to practice self-manual examination of the breast. As a result, it was reported that women's knowledge about breast and cervical cancer changed positively with planned follow-up and education [17]. In a study conducted on 161 women with no health education working in support services in hospitals, it was found that 81.4% of the women knew the early diagnosis and screening methods of breast cancer. 49.1% of the women said that they knew breast self-manual examination, but only 6.2% said that they did it once a month. Clinical breast examination was performed by 32.9% of women, breast ultrasound by 22.4% and mammography by 22.3%. The majority of the women stated that they did not have any of these methods performed. As seen in our study, the level of breast cancer knowledge of women increased statistically significantly after planned education compared to the pre-education period [18]. In a study of 800 women, 80.5 % had heard from some sources that they should perform breast self-manual examination. Of the women who had heard about breast self-manual examination, 12.6% stated that they regularly performed breast self-manual examination once a month. While 30.4% of the women stated that they had been clinically examined at least once by health personnel, 36.8% of women over the age of forty had had mammography at least once. It was also determined that women who received breast health education were 3.81 times more likely to perform breast self-manual examination and 3.41 times more likely to have had clinical breast examination than women who did not receive breast health education. In order to disseminate early diagnosis behaviours, it is important to first determine the factors that are effective in women's performing these behaviours, then to organise training programmes and to support this training with reminders [19].

In our study, questions were asked about breast cancer self-manual examination, mammography, HPV testing for cervical cancer, fecal occult blood tests used for stomach and colon cancers used for an early diagnosis made by KETEM in our country. Nurses and healthcare workers were informed about the most common cancers, symptoms of cancer, ways to protect against cancer, exercise, diets. Early diagnosis is important to reduce mortality

and morbidity from cancer. We believe that new tests should be used for the early diagnosis of cancer. New tests determined by the Ministry of Health can be added to the KETEM cancer screening program to improve survival by diagnosing more types of cancer. New studies are used in breast cancer, lung cancer, and colon cancer. The use of the fecal occult blood test for colorectal cancer screening is supported by randomized trials demonstrating effectiveness in cancer prevention and widely recommended by guidelines for this purpose. The fecal immunochemical test (FIT), as a direct measure of human hemoglobin in stool, has several advantages relative to the conventional fecal occult blood test and is increasingly used relative to that test [20]. Autofluorescence imaging bronchoscopy (AFI) in lung cancer is used in Endobronchial lesions and narrow-band imaging bronchoscopy (NBI) is used to evaluate the diagnosis of premalignant airway lesions in the mucosal and submucosal vascular system [12, 13, 21]. Low-dose thorax CT (LDCT) screening for early diagnosis of lung cancer for heavy smoking, an increase in diagnosis has been observed [22]. For early-stage non-small cell lung cancer with peripheral blood samples, a concept analysis in 182 patients was evaluated in microRNA when miR-126-3p in disease-free survival and overall survival were statistically significant. They reported that miR-126-3p may be a prognostic marker in early-stage non-small cell lung cancer [23]. Early diagnosis of low contrast lesions of breast cancer can be detected using semi-monochromatic techniques. It can provide high-quality images in combination with fixed digital breast tomosynthesis (s-DBT) over a short scan time using an X-ray source array that makes the semi-monochromatic technique difficult to use alone possible [24]. When evaluated for early detection with the Panseer test, a non-invasive blood test based on tumour DNA methylation circulation, stomach, oesophageal, colorectal, lung and liver cancers were detected four years early in 191 of 605 asymptomatic patients. 223 cases of cancer were diagnosed when a blood sample test was taken. Five different common cancers were detected four years earlier by the panseer test with a specificity of over 95% [25]. Many cancers can be detected early and survival can be improved by adding the panseer test to the Ministry of Health's screening programme.

In conclusion, knowledge about early diagnosis methods and prevention methods in cancer increased statistically significantly in nurses and other healthcare workers working in the hospital. There has been seen a significant increase in the knowledge level of male healthcare workers after receiving cancer awareness education. The use of new diagnostic methods such as fecal immunochemical testing in colorectal cancer, screening with low-dose thorax CT in lung cancer and autofluorescence imaging bronchoscopy, narrow-band imaging bronchoscopy increases the diagnosis of early-stage cancer.

Conflict of interest: The authors declare that they have no conflict of interest.

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Authors' contributions to the article

H.S. have constructed the main idea and hypothesis of the study. H.S. and B.Y.T. developed the theory and arranged/edited the material and method section. H.S. has done the evaluation of the data in the results section. The discussion section of the article was written by H.S., and reviewed, corrected and approved by B.Y.T. In addition, all authors discussed the entire study and approved the final version.