RESEARCH ARTICLE

Cancer Awareness among University Students in Turkey

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Abstract

Background: One of the most important reasons for the high mortality rates of cancer is the low level of awareness, which can lead to a late diagnosis and treatments starting too late. Therefore, it is necessary for individuals, especially at younger age, to gain awareness and integrate taking the necessary precautions into their lifestyle in order to prevent cancer and ensure early diagnosis. The aim of this study was to assess the levels of awareness of factors for major cancers among students studying in two different campuses of a university in the Western Black Sea Region. Materials and Methods: This descriptive/cross-sectional study was performed between January-March 2014. Students studying in the 2013-2014 academic year in a university in the Western Black Sea Region in two separate campuses were the subjects. Results: The mean age was 21.01±3.63. While female students (51.2%) were the majority in the health sciences campus (74.8%), male students (48.8%) were the majority in the social sciences campus (76.5%). Some 9.6% of the students from the health sciences campus and 12.4% of the students from the social sciences campus thought that cancer was communicable, while most of the students from both campuses knew that smoking caused cancer. It can also be seen that the rate of answering questions regarding cancer correctly was higher among students studying in the health sciences campus. Conclusions: It was determined that students who do not study at the health sciences campus have insufficient information on cancer, cancer symptoms, and the possibility of breast cancer in males and approximately half of them regarded obesity as a risk factor for cancer.

Keywords: Awareness - cancer - risk factors - university students - Turkey

Introduction

Despite much advancement in the fields of medicine and technology, cancer is still an important health problem worldwide with regard to morbidity and mortality rates. Every year, the incidence of cancer increases by 2% (Oksel et al., 2010; Alpteker et al., 2011; Kav et al., 2013). Cancer is a potentially fatal disease with high incidence that threatens health and family in society, taking second place in terms of mortality in Turkey and in many other countries in the world after cardiovascular disease (Peter and Bernard, 2008). According to a report published in Turkey titled "Cancer Burden 2006" (The Burden of Cancer, 2006), every year, 11 million people in the world and 150,000 in Turkey develop cancer (Peter and Bernard, 2008; WHO, 2008; Bayrak et al., 2010).

In Turkey, cancer is the second most common cause of death after cardiovascular diseases. The incidence and mortality rates of the cancer types seen in our country vary according to age and gender (Yilmaz et al., 2011). According to the Turkey Almanac of Statistics 2012 Report, the incidence of cancer in our country was 280.5 in a hundred thousand in men and 172.0 in a hundred thousand in women in 2008. In our country and worldwide, the types of cancer seen vary according to gender. The three most common types of cancer in men worldwide are respectively prostate, lung, and colon cancers, while in Turkey the most common types in men are lung, prostate, and bladder cancers. The three most common types of cancer in women worldwide are respectively breast, colon, and lung cancers, while in Turkey the most common types in women are breast, thyroid, and colorectal cancers (TUIK, 2012; IARC, 2012).

Alongside age and gender, many unhealthy lifestyle factors such as smoking, alcohol, obesity, an insufficient or unbalanced diet, stress, some chemicals, and the lack of physical activity affect the formation of cancer. Thus, awareness and information about such diseases hold an important place in their prevention and treatment. Recent studies have shown that cancer is a preventable and treatable disease. While changing genetic and environmental factors is often difficult, factors pertaining to behavior, knowledge, attitude and lifestyle can be changed through informing and creating awareness, making it possible to prevent cancer. More than 30% of cancer related deaths can be thus prevented (Perez-Contreras et al., 2004; WHO, 2008; Bayrak et al., 2010; Loo et al., 2013).

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The most important reason for the high mortality rates of cancer is the low level of awareness, which leads to a late diagnosis and the treatments starting too late. For this reason, it is important for individuals, especially at younger ages, to gain awareness and integrate taking the necessary precautions into their lifestyle in order to prevent cancer and ensure early diagnosis (Robb et al., 2009; Linsell et al., 2010).

The World Health Organization (WHO) classifies the group of people of age 10-24 as "Young People". Over one and a half billion people in the world are in this age group and four fifth of these people (1.4 billion) live in developing countries (WHO, 2008; TUIK, 2012). According to the results of census of population conducted by State Institute of Statistics in 2000, people of age 10-24 constitute 21.1% of the whole population in Turkey. As a result one out of every five people in Turkey is considered young (TUIK, 2012).

It is thus imperative to design training programs for students in universities that increase the level of awareness on the risk factors of cancer and the importance of early diagnosis and intervention (Shin et al., 2012; Mafuvadzea et al., 2013).

This study was performed with the goal of determine the levels of awareness of students studying in two different campuses of a university in the Western Black Sea Region on cancer and its symptoms.

Materials and Methods

Study design

The study was conducted as a descriptive cross-sectional design.

Setting and sample

The study was performed in a university which is located at the Western Black Sea Region of Turkey from January 1 to March 30, 2014. Students studying in the 2013-2014 academic year in a university in the Western Black Sea Region formed the universe of the study. The study was performed in two separate campuses belonging to the university. The first campus was the "Health Sciences Campus" where students studied health related fields, while the second was the "Social Sciences Campus" where students studied in fields not related to health sciences such as engineering and economics. 105 students from the social sciences campus and 104 students from the health sciences campus accepted to participate in the study.

Data collection

Data for the study was collected by researcher in face-to-face interviews. The questionnaire, contains of 25 items, was developed by researchers after a review of the literature (WHO, 2008; Ertem, 2009; Ozmen 2008). The questionnaire was divided into two parts. The first part included 14 questions about socio-demographic information such as; questions regarding age, gender and history of cancer in the family. In part two 11 questions were included; evaluating the knowledge of the students on breast, cervix, and prostate cancers. The response categories for this section on knowledge were in a yes/no/I don't know format.

Statistical analysis

Statistical analysis of the data was performed frequency; means, standard deviations and percentage were calculated for all responses in the survey. Data analysis was performed using the chi square test. Results had 95% confidence interval with p<0.05, indicating statistical significance.

Ethical considerations

The permission from the institutional ethical committee was taken before starting the study. The researchers followed the principles of the Declaration of Helsinki and received oral consent of participants. Participation in the survey was voluntary and students were free to withdraw from the study at any time. Students were exposed to minimal, if any, risk during participation. Each interview took approximately 15 minutes and students received no benefits for their participation.

Results

Table 1 shows the characteristics of the students. The mean age of the students was 21.01 ± 3.63. It was determined that 51.2% of the students were female and 50.2% were studying social sciences. Among the students, 53.1% had a history of cancer within their family and 43.5% lost a relative due to cancer. The mothers of 97.9% of the cases and the fathers of 95.42% of the cases were still alive, while the parents of 90.7% of the cases were still together. The ratio of students whose total family income was below 500 was 3.3%, and the mothers of 85.2% didn't work. The mothers of 55.9% and the fathers of 35.2% of the students were elementary school graduates. 37.7% of the cases had a single sibling, and 40.1% were the first child in their family.

When we examined whether students' answers differed by the department they studied at, we determined that health science students had significantly higher knowledge levels about smoking ($X^2 =20.701$ p=0.000), obesity ($X^2=32.457$ p=0.000), and stress ($X^2=20.706$ p=0.000) causing cancer; about vegetable and fruit consumption decreasing cancer risk ($X^2=6.353$ p=0.042); about men having breast cancer ($X^2=86.353$ p=0.000); about lung cancer being the most common cancer type among men in Turkey ($X^2=28.083$ p=0.000) and breast cancer being the most common cancer type in women ($X^2=14.324$ p=0.001). In addition, it was found that the rate of health science students who reported that they knew about cancer symptoms ($X^2=35.984$ p=0.000) and detectable cancer types ($X^2=26.960$ p=0.000) was significantly higher (Table 2).

Students studying in the social sciences can be scanned as age increases in the rate of cancers know which rises to create a significant difference ($X^2=12.205$ p= 0.002); age decreases, the most common form of cancer in women know that breast cancer cases increased ($X^2=11.629$ p=0.020) was observed. Students studying in health sciences decreases in the age of cancer is a disease that can

be treated so as to create a significant difference to know the rate is higher (X^2=10.217 p=0.037) was identified. For students majoring in social sciences, gender detectable cancers are found to affect the extent of knowledge. Know the types of cancer that can be scanned in girls than boys who expressed so as to create a significant difference was found to be more (X^2= 8.086 p=0.018). Students studying in health sciences in the sadness and stress cause cancer is an expression that showed significant differences by gender the ratio of the students; will make a significant difference in girls than boys by the way has been found to be more (X^2= 6.787 p= 0.034).

Students studying in the social sciences to be individuals who died from cancer among relatives in the treatment of cancer is a disease that can be created so that information regarding the condition affects a significant difference (X^2 =16.465 p=0.002).

Discussion

Cancer is an important health problem both in Turkey and worldwide. In our country, cancer has the highest mortality rate after cardiovascular diseases (Yilmaz et al., 2011). The reasons for high cancer mortality include insufficient and/or incorrect information about cancer formation, diagnosis and treatment. It has been reported that cancer incidence throughout the world will increase by two times in the year 2030. It has been assumed that 75% of this increase would be observed in developing or underdeveloped countries, including Turkey. Therefore, these countries are compelled to place importance on cancer prevention and early diagnosis of cancer through cancer control programs since they have only 5% of the worldwide budget spent on cancer (Mafuvadzea et al., 2013).

Table 1. Characteristics of the Students

Variable	N	%
Age (mean±SD) 21.01±3.63 (min= 19 max= 44)		
≤ 21	142	67.9
22-24	42	20.1
≥ 25	25	12.0
Gender		
Male	102	48.8
Female	107	51.2
Campus		
Health sciences campus	104	49.8
Social sciences campus	105	50.2
Having a family member with any cancer		
Yes	111	53.1
No	94	45.0
Unknown	4	1.9
If yes, (n=111) cancer type		
Breast cancer	42	37.9
Lung cancer	22	19.8
Colorectal cancer	18	16.2
Stomach cancer	14	12.6
Leukemia	6	5.4
Bladder cancer	6	5.4
Cervical and ovarian cancer	3	2.7
Having a relative who died due to cancer		
Yes	91	43.5
No	112	53.6
Unknown	6	2.9

Table 2. The Distribution of the Answers the Students Gave to the Questions Regarding Cancer

Questions	Health Sciences Campus						Social Sciences Campus						X^2, P, df
	Yes		No		Don't know		Yes		No		Don't know		
	n	%	n	%	n	%	n	%	n	%	n	%	
Is cancer communicable?													X^2=4,624
	10	9.6	93	89.4	1	1	13	12.4	86	81.9	6	5.7	p=0,099; df=2
Can cancer be cured?													X^2=1,201
	97	93.3	5	4.8	2	1.9	94	89.5	9	8.6	2	1.9	p=0,548; df=2
Is cancer preventable?													X^2=0,787
	97	93.3	5	4.8	2	1.9	95	90.5	6	5.7	4	3.8	p=0,685; df=2
Does smoking cause cancer?													X^2=33,497
	104	100	-	-	-	-	86	81.9	6	12.4	6	5.7	p=0,000; df=2
Does obesity cause cancer?													X^2=27,744
	81	77.9	12	11.5	11	10.6	41	39	32	30.5	32	30.5	p=0,000; df= 2
Does stress cause cancer?													X^2=20,706
	100	96.2	3	2.9	1	1	78	74.3	10	9.5	17	16.2	p=0,000; df=2
Does consuming fruit and vegetables reduce the risk of cancer?													X^2=6,353
	91	87.5	7	6.7	6	5.8	79	75.2	9	8.6	17	16.2	p=0,042; df=2
Do you know the types of cancer that can be scanned for?													X^2=36,960
	62	59.6	32	30.8	10	9.6	27	25.7	48	45.7	30	28.6	p=0,000; df=2;
Did you know men could also develop breast cancer?													X^2=86,353
	102	98.1	2	1.9	-	-	40	38.1	54	51.4	11	10.5	p=0,000; df=2
Do you know the symptoms of cancer?													X^2=35,984
	83	79.8	16	15.4	5	4.8	41	39	48	45.7	12	15.2	p=0,000; df=2
Did you know that prostate cancer is the most common type of cancer in men worldwide?													X^2=4,847
	90	86.5	13	12.5	1	1	81	77.1	18	17.1	6	5.7	p=0,089 df=2
Did you know that lung cancer is the most common type of cancer in men in Turkey?													X^2=28,083
	93	89.4	9	8.7	2	1.9	60	57.1	32	30.5	13	12.4	p=0,000; df=2
Did you know that breast cancer is the most common type of cancer in women?													X^2=14,324
	103	99	1	1	0	0	89	84.8	12	11.4	4	3.8	p=0,001; df=2

Cancer is becoming more prevalent and affects the whole society through its consequences. However, studies which determine the level of information, sensitivity, and awareness regarding cancer in Turkey seem to be insufficient. In our country, there are shortcomings in education programs provided by doctors for patients or the society (Musellim, 2007). In one study, it was determined that information on cancer is mostly provided by television and that the rate of people who has not been informed by health personnel is very high (Gultekin et al., 2011). According to studies conducted on cancer awareness in the UK, low levels of awareness regarding cancer symptoms lead to late cancer diagnosis (Robb et al., 2009; Simon et al., 2012).

In our study, it was found that the majority of students at both campuses knew that cancer is not a contagious disease, can be prevented and is treatable. All students who were receiving health education and those who were not had general information on cancer. This was a satisfying finding of our study.

Smoking, obesity, an unbalanced diet, and excessive stress are among important risk factors of cancer formation. In a study by Perez-Contreras et al. (2004), which was conducted with 13293 students who study at Mexican state schools and who were aged between 11-24 years, it was found that 78% of male students and 74% of female students gave wrong answers to questions about risk factors for cancer. It has been determined that smoking is mainly responsible for the etiology of lung cancer in particular and that approximately 90% of lung cancer patients smoked. The relationship between smoking and lung cancer was first determined in 1950 and studies conducted later supported this relationship. The risk of lung cancer is 24-36 times higher in smokers (Musellim, 2007). In a study by Freedman et al. (2011), which investigated the relationship between smoking and bladder cancer in 467528 Americans, the risk of bladder cancer was observed in 65% of males and 30% of females compared to those who never smoked.

In a study which investigated the Turkish population's level of information on cancer and its risk factors in 3096 people residing in 26 different provinces, it was found that only 89% of the participants stated that smoking may cause cancer (Gultekin et al., 2011). Similarly, Demirbag et al. (2013) has been determined to the majority of mothers (39.7%) seen as a cause of cancer in their children has expressed that smoking in pregnancy, in their study with mothers who had children aged 0-13.

Azhar and Nouf Alsayed (2012) has been determined to the studying in the non-health department students were smoking is more than studying in the health department and

about the harmful effects of smoking have determined that they have less knowledge, in their study with college students. In our study, 100% of the students at the health science said yes to the question "Does smoking cause cancer?", whereas 81.9% of the students at the social sciences campus said yes to the question. Our results are in parallel with research findings.

Another important risk factor for cancer is obesity. In epidemiological studies, obesity was found to be related to esophagus, thyroid, colon, rectum, bladder, renal, liver cancers, leukemia, lymphoma, and postmenopausal, breast, and endometrial cancers in women (Kocak and Erem, 2013). In a prospective study by Whitlock et al. (2009) which was conducted in Western Europe and South America, it was determined that every 5 kg/m^2 increase in normal body mass index (22.5-25 kg/m^2) lead to a 30% increase in all mortality rates and a 10% increase in cancer mortality rates. In our study, it was observed that 77.9% of the students at the health science said yes to the question "Does being obesity cause cancer?", whereas 39.0% of the students at the social science said yes to the question. This result clearly shows that education on obesity and cancer should be provided for students who study at non-health departments.

It has been determined that excessive consumption of fatty, salty, and hormonal food and food of animal origin play a role in cancer formation; whereas consumption of vegetal foods, fresh fruits and vegetables, and a vitamin-mineral rich diet is protective against cancer (Arslan et al., 2013). In addition, it has been reported that the cancer incidence in obese people is more than 33% (Kocak and Erem, 2013). Therefore, it is important to be aware of the significance of a balanced diet and adopt it as a lifestyle and to avoid gaining excessive weight. In a study by Gultekin et al. (2011), it was found that 99% of the participants reported nutrition as a possible cause of cancer and that 66% stated that nutrition is a protective factor against cancer. In our study, 87.5% of the students at the health science said yes to the question "Does eating fruits and vegetables decrease cancer risk?", whereas 75.2% of the students at the social science said yes to the question. More than 50% of the students gave a correct answer to the question. This was a satisfying finding in means of students' awareness regarding the relationship between eating healthy and cancer.

Excessive stress and distress is another risk factor for cancer formation. In a study by Bilge and Cam (2008), which was conducted with 78 women aged between 36-59 years, it was found that 62% of the women reported that stress is the most important cause of cancer. In our study, 96.2% of the students at the health science said yes to the question "Does stress cause cancer?", whereas 74.3% of the students at the social sciences stated that stress may cause cancer.

Numerous cancer types are observed throughout the world. Cancer incidences vary according to gender and age in particular. Both in Turkey and worldwide, the most prevalent cancer type in women is breast cancer; whereas the most prevalent cancer type in men is prostate cancer in the world and lung cancer in Turkey (TUIK, 2012; IARC, 2012). However, breast cancer, which is regarded as exclusive to women, can rarely be seen in men. In the United States, 1% of diagnosed breast cancer cases and 0.48% of cases in Turkey include male breast cancer patients (Anderson et al., 2010; Reiner et al., 2011; Zeren et al., 2011; Zygogianni et al., 2012).

Breast self examination (BSE), clinical breast examination (CBE) and mammography (MG) are the most commonly used screening programs for breast cancer (Ozmen, 2008; Yilmaz et al., 2013). In our country, every

woman between the ages of 40-69 are tested by MG every two years, and counseling is provided on BSE to every woman above the age of 20 (Karadag Caman and Bilir, 2013).

In a study by Ozaydin et al. (2009), which was conducted with 908 women randomly chosen from the lists of the Turkish Statistics Institution in order to investigate the level of information on breast cancer, sources of information, and behavior of receiving breast cancer screening in women aged between 40-69 residing in Istanbul-Bahcesehir, it was found that 3 out of every 4 women who has not been diagnosed with breast cancer before stated that "breast cancer" is the most prevalent cancer observed in Turkish women. In another study by Ozaydin et al. (2009), similar findings were obtained.

Al-Sharbat et al. (2013) has been determined to the breast self-examination practice and breast cancer risk perception is higher than rates in the students in the family with breast cancer, in their study that is examined to the breast self-examination practice and breast cancer risk perception among female university students.

Breast cancer is rare among men. Therefore, symptoms of breast cancer are unnoticed in men and men are diagnosed at late stages of cancer (Zeren et al., 2011). The lack of studies on breast cancer in males may indicate insufficient levels of information on the presence of breast cancer in men. As shown in our study, 98.1% of the students at the health sciences said yes to the question about the presence of breast cancer in males, whereas 38.1% of the students at the social sciences said yes to the question. It can be concluded that the level of information on cancer types by gender is low in students who study at non-health departments.

In our study, students studying in the social sciences in the age increases; In studying age decreases in health sciences treatable type of cancer is determined that increased rate of knowing. Again, students studying social sciences in the age increases, the most common form of cancer in women know that breast cancer rates are increasing. This condition in the health sector of students enrolled in their classes' cancer, cancer types and treatment methods to be included in the social sciences of the students with age, duration of education on the rise because of campus life within the health sciences education students interact more with the possibility of finding may be due.

In our study, the cancer-causing grief and stress is a factor representing the ratio of the men is higher than in girls. This condition affects boys and girls between the social life due to the differing priorities and applied during the child's development may be due to gender-specific differences in attitudes and roles.

In our study, students studying in the social sciences relatives of individuals who died of cancer are a disease that can be cured of the cancer that is found to affect the availability of information. This situation, in the social sciences studying students, cancer, cancer type and treatment in less than studying in health science knowledge may be caused and are due to in society can be identified with the death of cancer.

In conclusion, according to our study results, students

at both health sciences and social sciences: *i*) Know that cancer is not contagious, is preventable and treatable, *ii*) Almost all students know that smoking is an important risk factor for cancer formation, *iii*) Regard stress as an important risk factor for cancer formation, *iv*) Have insufficient information on cancer screening.

In addition, it was determined that students who do not study at the health sciences have insufficient information on cancer, cancer symptoms, and the presence of breast cancer in males and approximately half of them regarded obesity as a risk factor for cancer. It was concluded that students at both health sciences and social sciences have general information on prevalent cancer types according to gender in the world and in Turkey.

These results show that people should be more informed on cancer, which is disease with high mortality rates, and that information on cancer should be provided for university students in particular. In addition, health related courses should be included in the education programs of students who study at non-health departments. Raising cancer awareness and providing information on cancer for university students would contribute to prospective cancer prevention and early diagnosis of cancer. Therefore, education should be provided for university students in order to raise awareness. In conclusion, university students should be aware of cancer symptoms and the importance of early diagnosis in cancer treatment.

Acknowledgements

References

Alpteker H, Gumus D, Dogan S, et al (2011). To determine the knowledge and practise of female students about breast cancer and breast self examination. *J Breast Health*, **7**, 176-81.

Al-Sharbatti SS, Burhanuddin Shaikh R, Mathew E, et al (2013). Breast self examination practice and breast cancer risk perception among female university students in Ajman. *Asian Pac J Cancer Prev*, **14**, 4919-23.

Anderson F, Jatoi I, Tse J, Rosenberg S (2010). Male breast cancer: A population-based comparison with female breast cancer. *J Clin Oncol*, **28**, 232-9.

Arslan E, Ozcelik F, Demirbas Ş (2013). Cancer types related to obesity. *Anatol J Clin Investig*, **7**, 176-184.

Azhar A, Alsayed N (2012). Prevalence of smoking among female medical students in Saudai Arabia. *Asian Pac J Cancer Prev*, **13**, 4245-8.

Bayrak U, Gram E, Menges E, et al (2010). The knowledge and attitude of university students about health habitude and cancer. *Dokuz Eylul University Faculty of Medicine Magazine*, **24**, 95-104.

Bilge A, Cam O (2008). Investigation of women's styles of coping with stress in the prevention of cancer and their health beliefs. *Anatolian J Psychiatry*, **9**, 16-21.

Demirbag BC, Kurtuncu M, Guven H (2013). Knowledge of Turkish mothers with children in the 0-13 age group about cancer symptoms. *Asian Pac J Cancer Prev*, **14**, 1031-5.

Ertem G (2009). Awareness of cervical cancer risk factors and screening behavior among nurses in a rural region of Turkey. *Asian Pac J Cancer Prev*, **10**, 735-8.

Freedman ND, Silverman DT, Hollenbeck AR, et al (2011).

Association between smoking and risk of bladder cancer among men and women. *JAMA*, **306**, 737-45.

Gultekin M, Ozgul N, Olcayto E, et al (2011). Level of knowledge among turkish people for cancer and cancer risk factors. *J Turkish Soc Obstets Gynecol*, **8**, 57-61.

International Agency for Research on Cancer (IARC) (2012). Latest world cancer statistics. Available at: http://www.iarc. fr/en/media-centre/pr/2013/pdfs/pr223_E.pdf. Accessed Jan 2013.

Kav S, Citak E, Akman A, et al (2013). Nursing students' perceptions towards cancer and caring for cancer patients in Turkey. *Nurse Educ Pract*, **13**, 4-10.

Karadag Caman O, Bilir N (2013). Health promotion in the "Cancer Early Diagnosis, Screening and Education Centers" in Ankara: Mixed methods research among women. *Turk J Public Health*, **11**, 174-85.

Kocak M, Erem C (2013). Obesity and cancer. *Turkiye Klinikleri J Endocrin-Special Topics*, **6**, 40-44.

Linsell L, Forbes LJL, Burgess C, et al (2010). Validation of a measurement tool to assess awareness of breast cancer. *Eur J Cancer*, **46**, 1374-81.

Loo JL, Ang YK, Yim HS (2013). Development and validation of a cancer awareness questionnaire for Malaysian undergraduate students of Chinese ethnicity. *Asian Pac J Cancer Prev*, **14**, 565-70.

Mafuvadzea B, Manguvob A, Hea J, et al (2013). Breast cancer knowledge and awareness among high school and college students in Mid-Western USA. *Int J Sci Educ*, **3**, 144-58.

Musellim B (2007). Epidemiology and etiology of lung cancer. Istanbul University Cerrahpasa Medical Faculty, Continuing Medical Education Symposium Series of Events, **58**, 113-118.

Oksel E, Ertem G, Donmez YC, (2010). Lived experiences of nursing students with mothers/fathers with cancer: phenomenologic approach. *Asian Pac J Cancer Prev*, **11**, 1009-14.

Ozaydin AN, Gulluoglu BM, Unalan PC, et al (2009). Breast cancer knowledge, source of information, and breast health practices of women in Bahcesehir. *J Breast Health*, **5**, 214-24.

Ozmen V (2008). Breast cancer in world and Turkey. *J Breast Health*, 4, 7-12.

Pérez-Contreras I, Allen B, Ruiz-Velasco S, et al (2004). Levels and correlates of knowledge about cancer risk factors among 13,293 public school students in Morelos, Mexico. *Prev Med*, **39**, 286-299.

Peter B, Bernard L (2008). World cancer report 2008. World Health Organization, International Agency for Research on Cancer.

Reiner AS, Jacks LM, Zee V, et al (2011). A Seer-Medicare population -based study of lymphedema-related claims incidence following breast cancer in men. *Breast Cancer Res Treat, **130**, 301-306*.

Robb K, Stubbings S, Ramirez A, et al (2009). Public awareness of cancer in Britain: a population-based survey of adults. *Br J Cancer*, **101**, 18-23.

Shin KR, Park HJ, Kim M (2012). Practice of breast self-examination and knowledge of breast cancer among female university students in Korea. *Nur Health Sci*, **14**, 292-7.

Simon AE, Forbes LJL, Boniface D, et al (2012). An international measure of awareness and beliefs about cancer: development and testing of the ABC. *BMJ Open*, **2**, 1-9.

Turkey Statistical Institute, Statistical Yearbook of Turkey (TUIK) (2012). Available at: http://www.tuik.gov.tr/yillik/ yillik.pdf. Accessed Jan 2014.

Whitlock G, Lewington S, Sherliker P, et al (2009). Body-mass index and cause-specific mortality in 900 000 adults: collaborative analyses of 57 prospective studies. *Lancet*, **373**, 1083-96.

World Health Organization (WHO) (2008). Are the number of cancer cases increasing or decreasing in the world?. Available at: http://www.who.int/features/qa/15/en/index. html Accessed Jan 2014.

Yilmaz HH, Yazihan N, Tunca D, et al (2011). Cancer trends and incidence and mortality patterns in Turkey. *Jpn J Clin Oncol*, **41**, 10-16.

Yilmaz D, Bebis H, Ortabag T (2013). Determining the awareness of and compliance with breast cancer screening among Turkish residential women. *Asian Pac J Cancer Prev*, **14**, 3281-8.

Zeren S, Sobutay E, Agca B, et al (2011). Male breast cancer. *Okmeydani J Med*, **27**, 110-3.

Zygogianni AG, Kyrgias G, Gennatas C, et al (2012). Male breast carcinoma: epidemiology, risk factors and current therapeutic approaches. *Asian Pac J Cancer Prev*, **13**, 15-9.

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Newly diagnosed without treatment