Clinical and Experimental Health Sciences

Knowledge, Beliefs and Practices of University Students Regarding Testicular Cancer and Testicular Self-Examination

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ABSTRACT

Objective: Although seen rarely, testicular cancer remains to be a public health problem as it is the most common cancer type in males aged between 15 and 35 years. The aim of this study is to evaluate knowledge, beliefs and practices of male university students regarding testicular cancer and testicular self-examination.

Methods: This descriptive study was conducted with 681 first-year university students between November and December 2016. The data were collected using a Descriptive Form, Testicular Cancer Questionnaire and the Champion's Health Belief Model Scale (HBMS).

Results: It was found that 91% of the students had no previous knowledge on testicular cancer, 88.3% had never heard of Testicular Self-Examination (TSE). Most of the students stated that they obtained information on testicular cancer and TSE from the internet. Students were found to have moderate level of perceived benefit, susceptibility, barrier, motivation/seriousness and self-efficacy with respect to testicular cancer and TSE.

Conclusion: As a result of this research, it was found that university students lacked sufficient knowledge on testicular cancer and TSE. In order to improve the level of knowledge on testicular cancer and TSE, health professionals may provide trainings at universities, awareness may be raised among university students through elective courses and information may be disseminated via mass media.

Keywords: Testicular neoplasms, men's health, students

1. INTRODUCTION

Testicular cancer is the second most common cancer after leukemia in males aged between 15 and 19 and remains to be a public health problem for its high prevalence in males aged 15-35 years (1). The worldwide prevalence of testicular cancer varies depending on geographic, racial and ethnic factors. While testicular cancer is seen in less than 1 out of 100,000 people in Africa and a large part of Asia, and at rates as low as 1.2 out of 100,000 among the black people in the United States, rates up to 9.4 out of 100,000 can be seen in Denmark and 9.9 out of 100,000 in Norway. Testicular cancer is becoming increasingly more common in the world and particularly among the white race with a prevalence of 6-11 in 100,000 and the annual increase is reported to be 3-6% (1-3).

According to the data issued by American Cancer Society, testicular cancer is rarely seen before adolescence but its prevalence increases after adolescence. Although it is more common in young and middle-aged males, it can occur in any period of life. In the cases seen so far, 6% involved children and adolescents and 8% individuals aged 55 and over. Testicular cancer cases have increased in the last 40 years without an apparent reason. It is estimated that 410 deaths due to testicular cancer will occur in 2019 (4). An age-specific rate distribution in Turkey showed that the prevalence of testicular cancer is 3.7 in 100,000 and it is the leading cancer type seen in males in the 15-24 age group (5).

Despite increasing prevalence of testicular cancer, testicular cancer screening behaviors of males are not at a desired level due to lack of knowledge (6). Such insufficient knowledge and behavior lead to delayed recognition of testicular cancer symptoms, decreased efficacy of the treatment and increased mortality (7). Early diagnosis of testicular cancer allows employment of less toxic and simpler treatment options (8). Testicular self-examination (TSE) is a screening method used for early detection of testicular cancer. With this very easily exercised method, physical abnormalities in the testicles can be noticed at an early stage (9). TSE is an easy, fast and costless method as compared to those that

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involve intense treatment and heavy costs (10). TSE can also prevent delays due to hesitance of the individual to seek healthcare assistance (9).

The epidemiological studies in the literature show that people in the world and in our country have limited knowledge on testicular cancer and TSE. For this reason, public health campaigns are being organized in many developed countries to raise awareness for testicular cancer and to promote TSE (11). Many studies on the subject have also recommended that the society's awareness for testicular cancer should be increased and people should be informed and educated on TSE (11-15).

The cancer-related knowledge, attitudes and behaviors of people are highly associated with personal factors such as age, gender, education and cancer-related experiences (16). Considering the ages during which testicular cancer is frequently encountered, research for identifying knowledge, attitudes and behaviors of university students regarding testicular cancer and TSE becomes extremely important in providing guidance for the trainings on testicular cancer and TSE to be given to the males in this age group and in raising awareness about this issue. For this reason, this study was planned thinking that it will provide guidance for the trainings to be organized for this group of male university students by way of identifying their knowledge, health beliefs and practices in relation to testicular cancer and TSE.

Research Questions:

- At what level is the knowledge of male university students on testicular cancer and TSE?
- What are the factors influencing students to exercise TSE?
- What are the health beliefs of students about TSE?

2. METHODS

2.1. Design and Sample

This descriptive study was conducted with the 681 first-year university students between November and December 2016. The study population consisted of the entire first-year male university students (n=1094). No sampling method was used and 681 students who met the inclusion criteria and agreed to take part in the study comprised the sample of the study. The study was conducted with the first-year male undergraduate students who were receiving education in 9 faculties and 1 occupational college of the foundation university. A total of 413 students who suspended their education, who refused to take part in the study, who were absent on the day of administering the questionnaires and who filled out inaccurate or incomplete questionnaires were excluded. The study was completed with a 62% participation.

2.2. Measurements

The study data were collected on a self-report basis using a Descriptive Form, Testicular Cancer Questionnaire prepared by the researchers, and the Champion's Health Belief Model Scale.

Descriptive Form: This form consisted of 13 questions about the socio-demographic characteristics of the students such as age, department of study and place of living.

Testicular Cancer Questionnaire: Prepared by the investigators, this questionnaire also consisted of 13 questions, which were designed to measure the students' level of knowledge on testicular cancer and TSE.

Champion's Health Belief Model Scale: By modifying Champion's Health Belief Model (CHBM), a CHBM Scale (CHBMS) was developed for testicular cancer screenings to identify beliefs and practices regarding TSE (17). The Turkish version of the scale that was adapted by Pınar et al. (18) was used in this study.

Champion's Health Belief Model Scale consists of 5 subdomains, 'susceptibility', 'motivation/seriousness', 'barriers of TSE', 'benefits of TSE' and 'TSE self-efficacy'. The scale is a 5-point Likert-type measurement tool. The response 'strongly disagree' receives 1 point, 'disagree' 2 points, 'neutral' 3 points, 'agree' 4 points and 'strongly agree' 5 points in the scale. The minimum and maximum points obtainable are 5 and 25 for susceptibility, 7 and 35 for motivation, 3 and 15 for benefits of TSE, 5 and 25 for barriers of TSE and 6 and 30 for TSE self-efficacy. Higher scores indicate increased perception of the respective subdomains (18). The Alpha reliability coefficients of the scale were found to be 0.93 for susceptibility, 0.89 for motivation/seriousness, 0.86 for benefits, 0.84 for barriers and 0.87 for self-efficacy in this study.

2.3. Data Collection Procedures

Appointments were made with the heads of the departments before going to the academic units to collect data. The study data were collected on a self-report basis while the students were in their classrooms. Before initiating the data collection procedure, detailed information on the study was provided to the students and informed consent forms were distributed to those who agreed to participate. Data were collected by administering the Descriptive Form, Testicular Cancer Questionnaire and Champion's Health Belief Model Scale to the students who read and signed the Informed Consent Form.

2.4. Data Analysis

The data were analyzed using the The SPSS 11.5 program (SPSS Inc., Chicago, IL, USA). While evaluating the study data, the parameters were checked for normal distribution using the Kolmogorov Smirnov test and they were found

to be normally distributed. Descriptive statistical methods, medians and frequencies were used to assess the study data.

2.5. Ethical Considerations

An ethics committee approval (letter numbered 87517843 and dated 25/10/2016) was obtained from the Ethics Committee of the Maltepe University. An informed consent form was given to each of the participants to be read and signed.

3. RESULTS

The mean ± standard deviation age of the male students who participated in the study was 20.11±3.27. Of these students, 98.8% were single, 69.8% lived with their families, 16.2% with their friends and 14.1% in dormitories. A large majority of the students (91.9%) did not have any health problems. It was found that 1.5% of the students had a family member diagnosed with testicular cancer and 4.8% experienced a health problem related to their testicles in a period of their life (Table 1).

Table 1. *Descriptive Characteristics of Participants (n=681)*

		n	%
Marital status	Single	673	98.8
	Married	8	1.2
Place where you lived longest	City	420	61.7
	Town	233	34.2
	Village	18	2.6
	Abroad	10	1.5
Your present place of living	With family	474	69.6
	With friends	110	16.2
	In a dormitory	97	14.2
Do you have any health problems?	Yes	55	8.1
	No	626	91.9
Is there anyone in your family who was diagnosed with testicular cancer?	Yes	10	1.5
	No	671	98.5
Have you experienced any health problems with your testicles?	Yes	33	4.8
	No	648	95.2
Age [mean (standard deviation)] = 20.11 (3.27) years			

Of the participating students, 91% reported that they had not been informed about testicular cancer previously. When the students who had some knowledge of testicular cancer were asked about their source of information, 4.7% stated that it was the Internet and 2.5% the media. While 88.3% of the students reported that they had never heard of TSE before, 3.1% of those who had heard about it stated that they had received the information from the internet. It was found that 96.2% of the students did not know how to do TSE and 73.3% of those who did not practice TSE stated that it was because of lack of knowledge and 10.9% because of negligence (Table 2).

Table 2. *Past Experiences and Opinions of Participants about Testicular Cancer and TSE (n=681)*

		n	%
Have you received any information on testicular cancer before?	Yes	61	9.0
	No	620	91.0
From where did you receive information on testicular cancer?	Internet	32	4.7
	Media	17	2.5
	Physician	15	2.2
	Instructor	13	1.9
	Family	9	1.3
	Friends	7	1.0
Have you heard of TSE before?	Yes	80	11.7
	No	601	88.3
Have you received information on TSE before?	Yes	55	8.1
	No	626	91.9
From where did you receive information on TSE?	Internet	21	3.1
	Physician	17	2.5
	Media	14	2.1
	Family	13	1.9
	Friends	10	1.5
	Instructor	6	0.9
Do you know how to do TSE?	Yes	26	3.8
	No	655	96.2
What is your reason to avoid TSE?	I do not know how to do TSE	499	73.3
	I have no motivation for the examination	74	10.9
	I am too young for having cancer, I postpone it	33	4.8
	I am afraid that something bad will arise as a result of the examination	18	2.6
	I find it sinful to do the examination	12	1.8
	I feel guilty due to the examination	10	1.5
Would you like to receive information on testicular cancer and TSE?	Yes	368	54
	No	313	46
If yes, from whom?	Health professionals	244	35.8
	The internet	104	15.3
	Books/journals	102	14.9
	Elective sex education lessons	78	11.5
	Television	40	5.9

TSE: testicular self-examination

Of the students who participated in the study, 54% wished to receive information on testicular cancer and TSE. While 35.8% of those who wished to receive information on testicular cancer and TSE preferred to receive such information from health professionals, 15.3% preferred to receive it from health sites on the Internet, 14.9% from books/journals, 11.5% from elective sex education lessons, and 5.9% from television programs (Table 2).

A review of the knowledge levels of the students regarding testicular cancer and TSE showed that 83.7% of the students did not know that a history of an undescended testicle was a risk factor for testicular cancer and only 4.8% of them

thought that testicular cancer is a curable disease. It was also found that 70.5% of the students did not know that TSE was an early screening method used for testicular cancer (Table 3).

Table 3. *Knowledge Status of Students on Testicular Cancer and TSE (n=681)*

	Right	Wrong	Do not know
	n (%)	n (%)	n (%)
Testicular cancer is most common in males aged between 15 and 35 years.	105 (15.4)	58 (8.5)	518 (76.1)
The largest group at risk of testicular cancer is those who have undescended testicles.	79 (11.6)	32 (4.7)	570 (83.7)
Testicular cancer can never be treated fully.	33 (4.8)	163 (25.9)	485 (71.2)
Males who have a family member with testicular cancer are at greater risk of having this disease.	176 (25.8)	25 (3.7)	480 (70.5)
Males who have testicular cancer are usually at my age.	41 (6)	85 (12.5)	555 (81.5)
With early diagnosis, the chances of recovery from testicular cancer increases by 80-90%.	191 (28)	25 (3.7)	465 (68.3)
The method for the earliest diagnosis of testicular cancer is self-examination.	164 (24.1)	37 (5.4)	480 (70.5)
A testicular examination should be done in shower or immediately after shower.	65 (9.5)	31 (4.6)	585 (85.9)
Testicular self-examination should be done regularly every month.	127 (18.6)	22 (3.2)	532 (78.1)

TSE: testicular self-examination

It was found that the students did not know that a mass felt by hand on a testicle (76.9%) and swelling of a testicle (75%) were symptoms of testicular cancer (Table 4).

Table 4. *Testicular Cancer Symptom Recognition Status of Students (n=681)*

Symptoms	Can recognise n (%)	Cannot recognise n (%)
Lump-mass felt by hand on a testicle	157 (23.1)	524 (76.9)
Generalized swelling of a testicle	170 (25)	511 (75)
Pain in a testicle	215 (31.6)	466 (68.4)
Pain or feeling of heaviness in the groin	194 (28.5)	487 (71.5)

The students' mean health belief scores with respect to testicular cancer and TSE are shown in Table 5. The students obtained 20.21±6.30 from the seriousness subdomain of the Health Belief Model Scale and 9.01±2.78 from the benefit subdomain, and the barrier to practicing TSE as perceived by the students was 12.94±3.99 (Table 5).

Table 5. *Mean Scores Obtained by Students from the Subdomains of the Health Belief Model Scale (n=681)*

	Min-Max Score	Median	1st Quarter - 3rd Quarter	Mean±SD	Number of Items
Perceived Susceptibility	5-25	13	10-15	12.19±4.23	5
Perceived Motivation/ Seriousness	7-35	21	16-24	20.21±6.30	7
Perceived Benefit	3-15	9	8-11	9.01±2.78	3
Perceived Barrier	5-25	14	10-15	12.94±3.99	5
Self-Efficacy	6-30	18	14-18	16.14±4.97	6

SD: standard deviation

4. DISCUSSION

Although there is an increase in the prevalence of testicular cancer almost all over the world, the knowledge of males on testicular cancer and TSE is still not at a desired level. Testicular cancer is one of the cancer types that have a good chance of recovery if detected at an early stage. For early diagnosis, individuals need to be aware of the issue and to practice TSE (18-19).

It was found in this study that a large majority of the students were not knowledgeable about testicular cancer and did not know how to do TSE. In their study with health college students, Yilmaz et al. (20) found that 60.9% of the students had previously heard about testicular cancer and 45.2% had received this information within the scope of their undergraduate lessons. In the same study, 92.7% of the students were found to be willing to receive further information on testicular cancer and TSE (20). Altinel and Avci (21) reported in their study that 57.6% of the students had heard about testicular cancer. In another study made by Pour and Cam (22), 72.4% of the male subjects had not heard about TSE previously, 89.4% did not know how to do it and 90.6% had not received any training on it. These results revealed the fact that young males had insufficient knowledge on testicular cancer and TSE, and almost all of them showed a need for information on the issue when their attention was attracted through study questions. This result, which is similar to the results of the present study, shows that trainings on testicular cancer and TSE should be included in the educational subjects on health development and protection to be provided to young males.

This study revealed that most of the students did not know that a history of undescended testicle was a risk factor for testicular cancer and a mass felt by hand and swelling of a testicle were symptoms of testicular cancer, and very few of them thought that testicular cancer was a treatable disease. In a study made by Altinel and Avci (21), 82.9% of the students did not know that the greatest risk factor for testicular cancer was an undescended testicle and 63.8% that early diagnosis increased the chance of recovering from

testicular cancer by 80-90%. The same study showed that only 9.2% of the students were aware of the testicular cancer symptoms (21). This lack of knowledge about testicular cancer and TSE can be explained by the fact that the health of males is overlooked both in the world and in Turkey and males behave indifferently towards their own health due to the social roles attributed them.

The reasons for the students to avoid TSE were explored in this study and it was found that most of the students chose to not practice TSE because they were unaware of it, some neglected it, and a few thought either they were too young to have cancer, were afraid that the outcome would be bad, or considered it to be sinful and felt guilty. In the study of Yilmaz et al. (20), 94% of the students did not practice TSE because they did not know how to do it, 2.4% because they felt guilty, 6% because they neglected it, 2.4% because they were afraid something bad would turn out during examination, 3.6% because they thought they were too young to have cancer, and 2.4% because they feared it and became stressed. In the study of Pour and Cam (22), again a large majority of the students (89.4%) stated that they chose to not practice self-examination because they did not know about TSE, 2.2% because they thought it was sinful, and 10.4% because they were afraid something bad would come up. Most of the studies on the subject found high rates of unawareness and lack of knowledge as the leading reasons for not doing TSE. However low their rates may be, the other barriers to practicing self-examination (guilt, fear, negligence, etc.) are actually the barriers/problems arising from lack of knowledge. The results of a qualitative study made by Carbone et al. (23) on patients diagnosed with testicular cancer demonstrated that lack of knowledge on cancer was one of the factors that delayed seeking health assistance even when the problem emerged. Ugwumba et al. (24) found in their study that the low level of knowledge and awareness of the students of medicine in their final year before a training provided to them about testicular cancer and TSE increased significantly after the training. These results suggest that if trainings on the subject are planned and effectively implemented, feelings of fear, sinfulness, guiltiness etc. may be reduced and such trainings may prevent in the future delays in seeking assistance when a problem arises.

While most of the students in this study wished to receive information on testicular cancer and TSE from health professionals, other students showed the internet and elective sex education lessons as their potential source of information. In the study of Gocgeldi and Kocak (25), 49.2% of the students wanted to receive this information from health professionals and 47.7% from conferences. When the sources of information on TSE were explored in the same study, 24.1% of the students were found to obtain this information from health professionals, 20.7% on their own, and 10.3% from television and newspapers (25). In the study of Ugwumba et al. (24), 73.1% of the students obtained the information from a hospital/clinic, 11.9% from conversations on health, 7.9% from the media, and 5.9% from their friends. Similarly, it was also found in the present study that the students obtained the information on testicular cancer and TSE mostly from the Internet. These results show that young people cannot adequately benefit from health professionals and health developing/protecting programs and widely use the internet as their source of information. These results suggest that health professionals should increase health developing/protecting programs for the youth and should reach those who use the Internet by also using the same medium.

The Champion's Health Belief Model Scale is not only a valid and reliable scale for testicular cancer and TSE, but it also shows that perceptions related to TSE affect the behavior (18, 21). The students in the present study obtained 20.21 points out of 35 from the seriousness subdomain of the Health Belief Model Scale and 9.01 points out of 15 from the benefit subdomain, and the barrier to practicing TSE as perceived by the students was 12.94 points out of 25 (Table 5). Similar to our study, a study made by Pinar et al. (18) also reported that their students obtained 9.36 points out of 15 from the benefit subdomain of the Champion's Health Belief Model Scale. A study reported that the likelihood of exercising TSE increased with perceived susceptibility and seriousness and as perceived benefit increased and perceived barriers decreased, the rate of doing TSE increased (26). When demonstrating a health behavior, the belief of individuals that such health behavior is beneficial for their health plays a great role in actualizing that behavior. Therefore, if the focal point of the trainings to be given on the subject is to increase the magnitude of benefit perceived by individuals, the likelihood of achieving a behavioral change will be greater.

5. CONCLUSION

This study has revealed that university students do not have adequate knowledge on testicular cancer and TSE and they wish to obtain more information on the subject. The students were found to have moderate level of perceived benefit, susceptibility, barrier, motivation/seriousness and self-efficacy with respect to testicular cancer and TSE. To improve knowledge on testicular cancer, which is extremely important for male health, and to promote the habit of TSE, health professionals may provide trainings at universities, awareness may be raised among university students through electives on the subject and information may be disseminated via mass media.

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