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Original Research

Awareness of Testicular Cancer and Testicular Self-Examination among Men in Bahrain

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Introduction: Although testicular cancer (TC) is a rare tumor accounting for 1% of malignancies in men, it is the most common cancer found in adolescents and young men between 15 to 35 years old. Routine screening for TC is not recommended. Therefore, testicular self-examination (TSE) is an important tool for the early detection of TC. If detected early, TC has a high survival rate. Increasing awareness of TC and TSE is crucial for early detection, diagnosis, and treatment. We aimed to assess the level of awareness of TC and TSE among men in Bahrain.
Materials and methods: A descriptive cross-sectional design was used to recruit a convenience sample of 243 men from public places using a questionnaire. Descriptive statistics and Chi-square test were conducted.
Results: The results showed that 43% were Bahraini, 53% were aware that men can get TC, 82% perceived themselves as having a low risk for developing TC, 15% knew signs of TC, 20% heard about TSE, and 5.8% reported performing TSE. A significant association between knowledge of early signs and symptoms of TC and nationality ($p = .006$), perception of the importance of performing TSE regularly and nationality ($p = .003$), and between age ($p = .013$), level of education ($p = .015$) and the willingness to perform TSE if the participant was educated about TSE.
Conclusion: Awareness about TC and TSE is poor among men in Bahrain. Policymakers in the Ministry of Education and Ministry of Health may consider integrating TC and TSE education in the curriculum and the healthcare provided to adolescents and young men across the kingdom.

Introduction

Although testicular cancer (TC) is a rare occurring tumor that accounts for 1% of malignancies in men, it is the most common cancer found in adolescents and young men between 15 to 35 years of age [1]. National data studies over 20 years in Saudi Arabia found that TC is most common in men between 20 and 35 years old [2]. Also, the rates of TC continue to increase worldwide. In 2013, the annual incidence of TC increased by 2.4% in Sweden, 2.9% in the United Kingdom, 5% in Spain, 3% in Australia, and 3.5% in China [3]. According to a study published in the European Urology Journal in 2019, that evaluated TC incidence trends in 41 countries between 1978 and 2012, there was a noticeable increase in TC incidence in countries that are previously known as low-incidence countries [4]. However, TC incidence plateaued in countries previously known as high-incidence countries [4]. Another European study published in 2019, predicted 21% increase in the number of TC cases in Northern Europe, 13% increase in Western Europe, and 32% increase in Eastern Europe all by the year 2035 [5].

Up to date, no known statistics or studies about TC in Bahrain were found. However, according to a study conducted in Saudi Arabia, a close neighboring country to Bahrain, between 1994 and 2013, TC mean incidence almost doubled from 30.5 cases/year in the first decade to 70 cases/year in the second decade with males aged 20 to 34 years being the most impacted age group [2].

Routine screening for TC is not recommended. Therefore, testicular self-examination (TSE) is considered a paramount tool for the early detection of TC. If detected early, TC has a high survival rate. It was reported that TC has five years relative survival rate of 95% [6].

Increasing awareness of TC and TSE is crucial for early detection, diagnosis, and treatment of TC. One study was done in Western New York, USA, to assess the impact of a proposed TC awareness campaign messages on male college students, in which there were two student groups, an experimental group that was exposed to the campaign and a control group that was not. The study showed being exposed to the TC awareness campaign messages increased the tendency of the students to perform TSE and were more aware of TC in general compared to the control group [7].

Although being most susceptible, young adult men from different countries have variant levels of knowledge of TC. For example, a cross-sectional survey was done in Port Harcourt, Nigeria, with 750 participants aged 18 to 50 years from three tertiary academic institutions. The survey showed low knowledge and awareness of TC. The main cause was that only a small number of participants pointed out that they were ever taught about TSE [8]. A multicenter study conducted in Turkey to test the public awareness of TC and TSE concluded that the awareness was very low with only 11.1% of participants had knowledge about TC and only 1% of participants were carrying out TSE regularly once a month [9]. Hence, there should be a serious attempt by healthcare providers to enlighten the society about TC and the importance of TSE.

The purpose of this study was to assess the level of awareness of TC and TSE among men in Bahrain and the relationship between dependent variables and sociodemographic variables.

Materials and Methods

Design

This study employed a descriptive cross-sectional design to assess the level of awareness of TC and TSE among men in Bahrain.

Sample and sitting

A convenient sample of 243 males was recruited from shopping malls and public parks. Sample inclusion criteria included (1) Bahraini and non-Bahrain male, (2) age between 18 to 70 years old.

Procedure

Ethical approval was obtained from the Royal College of Surgeons in Ireland, Medical University of Bahrain Ethical Research Committee. Informed consent was obtained from the participants after a thorough explanation of the study, purpose, and procedure.

Instrument

Data were collected at a single point using an investigator-developed survey. The survey included two parts: (1) demographic questions such as age, nationality, marital status, educational level, and employment status, and (2) questions about knowledge and awareness of TC and TSE which were developed based on literature [8-12].

Data analysis

Data were analyzed using SPSS® version 23. Descriptive statistics were used to analyze the demographic characteristics of the participants and the questionnaire's items. Chi-square for independent was used to compare between Bahraini and non-Bahraini participants.

Results

Sample characteristics

Participants' ages ranged between 18 and 68 years (M = 36.8) of which 88 (36.2%) participants were 30 years old or younger. The majority of participants 104 (43%) were Bahraini, 87 (36%) were from South Asia. Participants were distributed over four Governorates. One hundred and twenty-nine (53%) lived in the Capital Governorate, 56 (23%) lived in the Northern Governorate, 39 (16%) lived in Muharraq Governorate, and 19 (8%) lived in Southern Governorate. Around two-thirds (70 %) of the participants were married and 25% were single. About half of the participants (49%) had an educational level at a bachelor's degree and the majority (88%) were employed (Table 1).

Variable	n (%)
Age	
18-30	88 (36.2)
31-40	69 (28.4)
41-50	47 (19.3)
51-60	30 (12.3)
61-68	9 (3.8)
Nationality	
Bahraini	104 (42.8)
Asian	107 (44)
*GCC: Kuwait, **KSA	5 (2.1)
Middle Eastern: Yemeni, Egyptian, Jordanian	20 (8.2)
European: British, Polish, French	3 (1.2)
North African: Tunisia, Moroccan	2 (0.8)
American	1 (0.4)
Australian	1 (0.4)
Educational level	
High school or less	71 (29.2)
Diploma	37 (15.2)
Bachelor Degree	118 (48.6)
Advanced Degree	17 (7)
Employment	
Employed	213 (87.7)
Unemployed	14 (5.8)
Retired	16 (6.6)

Table 1: Socio-demographic Characteristics of the Participants (N = 243).

*Gulf Cooperation Council, **Kingdom of Saudi Arabia

Awareness about testicular cancer

One participant reported that he had a history of testicular cancer, 23 (10%) stated that they knew someone who has had a TC. Nearly 47% of the participants were not aware that men can get TC. When asked to rate their perceptions of risk for developing TC, the majority (82%) reported that

their risk was low. Two participants (<1%) reported that they perceive the risk to develop TC as high. Only 11.9% answered yes to a question about their knowledge of common early symptoms of TC. Thirty participants responded to the question about the most common early symptoms: pain or discomfort in the testicle or scrotum (7%), swelling or enlargement of a testicular (2.1%), bloody urine (1.2%).

Awareness about testicular self-examination

Nearly 80% of respondents have never heard of TSE. Less than 10% reported that they knew how to perform TSE of which 4% learned TSE from school, 7% from friends, 30% from media, and 44% reported learning TSE from healthcare providers. Only 14 (5.8%) participants reported performing TSE of which 41% performed TSE once every three months. Only 6% of those who performed TSE reported performing it once a month. The main reported reasons for not performing TSE were lack of knowledge on how to perform TSE (73%), “don’t think it is important” (9%), “don’t think that I am at risk to develop TC” (9%), and “afraid to find an abnormality” (3%). Regarding the importance of performing TSE regularly, 84% reported that TSE is important and nearly 69% stated that they will start performing TSE regularly if they were educated about it.

Chi-Square Test for Independence

A non-parametric statistic: Chi-square ($x2$) for independence with Yates Continuity Correction was conducted to explore the relationship between categorical variables. Continuous data were collapsed into categorical variables. The assumption of x2 for the minimum expected cell frequency was met. The minimum expected counts were five or greater. Fisher’s Exact Test was reported when the minimum expected counts were less than five. If the assumption for the minimum expected cell frequency is violated in tables larger than two by two (2x2), the Likelihood Ratio was reported. The assumption of sample independence was met. The effect size was also computed for 2x2 tables using phi coefficient based on Cohen’s [13] rule where .10 is small, .30 is medium, and .50 is large effect size. For tables larger than 2x2, Cramer’s V value is reported. The relationships between dependent variables and independent variables (education, nationality, marital status, and age) were analyzed. A Chi-square test indicated significant association between knowledge of early signs and symptoms of TC and nationality $x2$ (1, n = 241) = 7.5, p = .006, phi = -.2. There was a significant relationship between perception of importance of performing TSE regularly and nationality $x2$ (1, n = 242) = 9.0, p = .003, phi = .2. Bahraini men highly regarded the importance of performing TSE regularly than other nationalities. Similarly, a significant relationship was found between age $x2$ (1, n = 241) = 8.7, p = .013, phi = .2, the level of education $x2$ (1, n = 241) = 8.0, p = .015, Cramer’s V = .2 and the willingness to perform TSE if the participant was educated about TSE.

No further statistical significant results were found between dependent variables and education, nationality, marital status, or age.

Discussion

The study sample is found to be representative of the total population in the Kingdom of Bahrain. Our sample shows that around 43% were Bahraini and 44% were Asian, which is comparable to the 2018 population of Bahrain where 46% were Bahrain and 45.5% were Asian [14]. Researchers recruited participants from all four governorates. Participants from each of the four governorates roughly represented the male population in these governorates. Participants from Northern, Southern, Capital, and Muharraq Governorates accounted for 23, 8, 53, and 16% of the total sample, comparing to 22, 21, 41, and 16% of the male population reside in these Governorates in

2016, respectively [15].

When comparing educational levels, we found that the percentage of people holding Diploma, Bachelor and Advanced Degrees is higher among our sample than that of the total male population: 15.2%, 48.6%, and 7% to 8.3%, 7%, and 1.8% in 2010, respectively. This could be attributed to five years of differences between our study findings and the national census and to the vast advance of education as more programs and educational institutes are opened in the Kingdom.

Knowledge of TSE and TC among men in Bahrain is poor and is consistent with the reported findings in the literature [8,16-18]. Our findings showed that around half of the participants (53.5%) were not aware that men can get TC which is lower than the rate reported by Ugboma et al. [8] of 88.6% and by Kuzgunbay et al. [9] of 88.9%. This could be attributed to the difference in the sample demographics educational levels of the participants as our sample reported having higher educational levels than the Ugboma et al. [8] and Kuzgunbay et al. [9] studies.

Most of the respondents (79%) reported that they had never heard of TSE. Studies reported inconsistent findings. In Northern Ireland, Roy et al. [16] reported the lowest rate (17%, N = 150). In Addis Ababa 23.9% (N = 826) of university students reported that they never heard of TSE [19]. Atuhaire et al. [14] reported that 58% (N = 165) of high school students were unaware of the TSE. Whereas Salati [18] indicated that 93% (N = 532) of a sample of expatriate Indians living in Saudi Arabia was not aware of TSE. Lack of consensus in the reported percentages of knowledge deficiency of the TSE could be related to the difference in the sample characteristics and geographical background.

Our study demonstrated that only 9.5% of participants know how to perform TSE of which 5.8% performed TSE. Similar studies showed inconsistencies in the reported findings. A study done in the United States of America on 191 adult men with age ranging between 18 to 36 years found that 36% regularly practiced TSE [12]. In Iran, 10% of participants 17 to 41 years old performed TSE [20]. Dutch researchers reported a lower percentage (2%) in young men aged 15-19 years [11]. Our results could be interpreted with caution when we compare our findings and the findings above as our study included men age 18 to 68 as compared to the age range of 15 to 41.

Although the majority of the participants reported that they do not perform TSE because of a lack of knowledge on how to perform it, most of them acknowledged the importance of TSE and that they would perform it if they knew how to. This finding is important as men need awareness and education to practice healthy behavior.

The most-reported sources for information on TC and TSE were from healthcare providers followed by social media, which is consistent with the findings of Atuhaire et al. [14]. Even though health information is accessible to everyone on the internet, nevertheless, people still rely on healthcare providers for information. This put a huge responsibility on the healthcare providers in raising awareness about TC and TSE in direct contact with clients or through social media.

We did not find a relationship between knowledge of TC and TSE and age and marital status, which is concordant with the findings of Ugwumba et al. [21]. This may indicate that awareness of TC and TSE is poor even with advanced age and regardless of marital status which could be assumed otherwise. However, Roy et al. [16] found that men older than 25 years have heard of TSE compared to younger men. Bahraini men perceived the importance of performing TSE more than other nationalities. However, this finding should be interrupted with caution as not all participants live in Bahrain as some were visiting from neighboring countries.

In conclusion, this is the first known study on TC and TSE conducted in the Kingdom of Bahrain. Some of our findings were consistent with the findings from the literature, but inconsistencies were also found. The results revealed that there is generally poor knowledge of TC and TSE. Most participants considered themselves as having a low risk for TC. This study has several strengths

and limitations. This is the first known study conducted in the Kingdom which set the base for further studies. Although we used a convenient sample method, recruiting participants from the four governorates enhanced the generalizability of the results. About half of the participants did not speak Arabic. The use of both Arabic and English versions increased the likelihood of participation. We used unstandardized survey questions. Although the questions in the survey were based on literature, yet reliability could not be established. The self-report survey may affect the validity of the data, which was mitigated by informing the participants that their answers are anonymous. While the reported common age for TC is 15-35 years, however, due to the consent age, we could not recruit men younger than 18 years. It would be beneficial to assess the level of awareness and knowledge in high school students and incorporate TSE health education in the schools' and undergraduate curriculum. Since healthcare providers were reported to be the main source for information on TC and TSE, they should be vigilant when taking care of male clients and provide education on TC and TSE. Health policies should be put in place to increase awareness of TC and TSE through various programs and awareness campaigns with a focus on the use of social media.

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