

Knowledge, Attitudes and Practice toward Testicular Cancer and Testicular Self-Examination among adolescents and young adults in Aseer region, Saudi Arabia

Abdulaziz Alamri (1)

Yahya Mohammed Alqahtani (2)

Mohammed Mushabab Al-Mudhi (2)

Bander Bin Saleh A. Alsalmi Asiri (2)

Khalid Abdullah Alasmari (2)

Shehata Farag Shehata (3)

Raed Almannie (4)

(1) Associate Professor , Department of Surgery (Urology), Chairman, Department of Surgery, Urology Consultant Aseer Central Hospital, President , Saudi Society for Medical Education

(2) Medical Student, King Khalid University

(3) Assistant Professor, Department of Family and Community Medicine, College of Medicine, King Khalid University, Abha 61421

(4) Assistant Professor, Urology Department ,College of Medicine, King Saud university

Corresponding Author:

Abdulaziz Alamri, Associate Professor, Department of Surgery (Urology)

Chairman, Department of Surgery

Urology Consultant Aseer Central Hospital

President , Saudi Society for Medical Education

Email: aazizamri@gmail.com; aalamri@kku.edu.sa

Received: May 2021; Accepted: June 2021; Published: July 1, 2021.

Citation: Abdulaziz Alamri et al. Knowledge, Attitudes and Practice toward Testicular Cancer and Testicular Self-Examination among adolescents and young adults in Aseer region, Saudi Arabia. *World Family Medicine*. 2021; 19(7): 68-75 DOI: 10.5742/MEWFM.2021.94082

Abstract

Background: Testicular cancer incidence rates are increasing worldwide making it the most common malignancy in males aged 15 to 45 years. More than 90% of patients are cured with surgery, radiotherapy, and chemotherapy alone or a combination of them. This success depends on early and accurate disease diagnosis and the application of optimum treatment.

Aim: to assess adults' awareness, attitude, and practice regarding testicular cancer (TC) and testicular self-examination (TSE) in Aseer region, Saudi Arabia.

Methodology: A descriptive cross-sectional approach was used targeting all adults in Aseer region. The study was conducted during the period from February 2020 to May 2020. Data were collected using a structured questionnaire which was developed by the researchers after intensive literature review and expert's consultation. Adults' awareness regarding testicular cancer (TC) was assessed covering its main domains including general definition, signs and symptoms, age of incidence, self-examination methods, and curability. The questionnaire

was uploaded online, using social media platforms, by the researchers and their relatives and friends. All adults fulfilling the inclusion criteria who received the electronic questionnaire during the study period were invited to participate through filling out the questionnaire.

Results: The survey included 809 male participants who completed the questionnaire. Participants ages ranged from 18 to 55 years old with mean age of 26.9 12.7 years. The majority of participants (73.1%; 591) were single while 23.7% were married. Exactly 591 (73.1%) participants had heard about cancer tests and 651 (80.5%) knew it affects men. Regarding age susceptible to testicular cancer, 218 (26.9%) of the participants reported 15-40 years old. About 5.1% of the participants agreed that routine self-examination for TC is not important, 194 (24%) reported it is important.

Conclusions: In conclusion, the study revealed that male adult's awareness about TC and TSE are inadequate and the proportion who are performing it is below the average. Also, male adults' attitude towards TSE and its importance was not promising.

Key words: Testicular cancer, awareness, knowledge, testicular self-examination, practice, attitude, adults

Background

Testicular cancer (TC) is a tumour that develops in the testicles, a part of the male reproductive system (1). Testicular cancer (TC) is the most common cancer in men especially at the ages of 15 to 34 years, and the incidence is rising. About one in 500 men will develop TC before the age of 50, and nearly 25% will die of the disease. However, the cure rate is exceeding 90% if detected early (2, 3). During the middle of the last century, increased trend of the incidence of testicular cancer has been reported in many countries, including Canada, (4) the United States, (5) the Nordic countries (6) and England, (7) with the probable exception of children aged 14 years or less, where less likelihood for temporal variation has been detected (8). In spite of improved treatment methods, testicular cancer (TC) remains the third significant cause of cancer deaths among young men aged 18 to 50 years (9).

Recent studies illustrated that the cancer is easily detected at its early stage through frequent routine self-examination and can be effectively treated. Early diagnosis is associated with a reduced associated mortality, and in first stages of the disease, management is more likely to be associated with easier and less harmful treatment (10-12).

The largest portion of men have scrotal symptoms. Consequently, periodic testicular self-examination (TSE) has been advised for early detection of TC (13-15). Although there are few studies that have evaluated the usefulness of TSE, the case for men being aware of the occurrence of TC and that if they find a lump in their testes they should seek medical attention appears to be overwhelming. (1). Poor health education in some patients is thought to contribute to their undue delay before seeking medical advice (13).

Public awareness regarding TC and the importance of TSE is vital in early detection and reduced burden. The current study aimed to assess awareness, attitude and practice of public adults in Aseer region, Southern Saudi Arabia, regarding testicular cancer and TSE.

Methodology

A descriptive cross-sectional approach was used targeting all adults in Aseer region. The study was conducted during the period from February 2020 to May 2020. All those below the age of 18 years and those who were not permanently living in Aseer region (or for at least 1 year) were excluded. Data were collected using a structured questionnaire which was developed by the researchers after intensive literature review and expert's consultation. The questionnaire data included the person's socio-demographic data such as age, gender, education and monthly income. Adults' awareness regarding testicular cancer (TC) was assessed covering its main domains including general definition, signs and symptoms, age of incidence, self-examination methods and curability. The participant's attitude and practice regarding routine testicular examination was

also covered in the questionnaire. A panel of 3 experts reviewed the questionnaire independently for content validity and all reported changes and modifications were applied till the final tool was achieved. A consecutive convenience sampling method was used due to the current lockdown and lack of physical contact due to the COVID-19 pandemic. A pilot study was conducted to assess tool applicability and reliability. The tool reliability coefficient (Alpha Cronbach's) was assessed and equalled 0.76. Ethical approval was obtained from REC of the college and informed consent was taken from the participants.

After data was extracted, it was revised, coded and fed to statistical software IBM SPSS version 22 (SPSS, Inc. Chicago, IL). All statistical analysis was done using two tailed tests. P value less than 0.05 was considered to be statistically significant. For awareness items, each correct answer was scored one point and total summation of the discrete scores of the different items was calculated. A patient with score less than 60% (5 points) of the maximum score was considered to have poor awareness while good awareness was considered if he had a score of 60% (6 points or more) of the maximum or more. Descriptive analysis based on frequency and percent distribution was done for all variables including demographic data, awareness items and adults' practice and attitude.

Results

The survey included 809 male participants who completed the questionnaire. Participants' ages ranged from 18 to 55 years old with mean age of 26.9 12.7 years. The majority of participants (73.1%; 591) were single while 23.7% were married. Exactly 635 (78.5%) of participants were university graduated and monthly income was just sufficient among 396 (48.9%) of them (Table 1).

Table 2 illustrates distribution of testicular cancer awareness among adolescents and young adults. Exactly 591 (73.1%) participants had heard about cancer tests and 651 (80.5%) knew it affects men. Regarding age –susceptible to testicular cancer, 218 (26.9%) of the participants reported 15-40 years old. As for signs and symptoms, 244 (30.2%) reported for testicular oedema and swelling while 67 (8.3%) reported testicular heaviness. Exactly 377 (46.6%) of the participants said that testicular cancer is treatable and only 85 (10.5%) reported a cure rate of 75% to 100% if treated early. Also, 731 (90.4%) reported that they want to know more about cancer tests and their examination method. About 43% of the participants know about routine tests examination. Totally, 277 (34.2%) participants had good awareness regarding testicular cancer and its examination methods.

Table 3 demonstrates attitude regarding cancer tests examination among adolescents and young adults in Aseer region. Exactly 41 (5.1%) participants agreed that routine self-examination for TC is not important, 194 (24%) reported it is important and 238 (29.4%) agreed that it is very important. Regarding comparison between importance of routine testicular examination in males

relative to cancer of the cervix and breast self-examination in females, 364 (45%) participants reported they are equal regarding importance while 166 (20.5%) reported it is less important. Also, 645 (79.7%) participants agreed that it's important to examine testes regularly.

Regarding participants practice of routine testicular examination in Aseer region (Figure 1), exactly 61.4% had not done it before, 17.2% did the routine examination every 1-12 months while 12.4% did at longer periods (> 12 months).

Table 4 shows distribution of adults' awareness regarding testicular cancer by their personal data and practice. Good awareness was detected among 63.2% of adults who were aged 50 years or more compared to 29.1% of young

age group with reported statistical significance ($P=.001$). Also, 46.2% of adults who were divorced/widowed had good awareness level in comparison to 30.6% of the single group ($P=.002$). Exactly 44.2% of participants with secondary school level of education had good awareness compared to 33.3% of those with a lower level of education ($P=.019$). Nearly 50% of participants with high income had good awareness level compared to 16.7% of others with insufficient income ($P=.001$). Also, 39.1% of those who agreed on the importance of regular testicular examination had good awareness compared to 15.2% of those who did not ($P=.001$). Regarding practice, 64.4% of those who perform testicular examination monthly had good awareness regarding testicular cancer compared to 24.3% of those who did not perform the examination before ($P=.001$).

Table 1: Personal data adolescents and young adults in Aseer region, Saudi Arabia

Personal data	No	%
Age in years		
18-29	578	71.4%
30-39	121	15.0%
40-49	91	11.2%
50+	19	2.3%
Marital status		
Single	591	73.1%
Married	192	23.7%
Divorced/ widow	26	3.2%
Education		
Below secondary	27	3.3%
Secondary	147	18.2%
University/ more	635	78.5%
Monthly income		
Insufficient	150	18.5%
Just sufficient	396	48.9%
More than sufficient	263	32.5%

Table 2: Distribution of testicular cancer awareness among adolescents and young adults in Aseer region, Saudi Arabia

Awareness items		No	%
Know about testicular cancer	Yes	591	73.1%
	No	218	26.9%
Know that most men may have testicular cancer	Yes	651	80.5%
	No	158	19.5%
Age liable for testicular cancer	1-15	60	7.4%
	15-40	218	26.9%
	40-60	361	44.6%
	Don't know	170	21.0%
Signs and symptoms of testicular cancer	Scrotal heaviness	67	8.3%
	Testicular pain	133	16.4%
	Testicular oedema	244	30.2%
	Swelling	244	30.2%
	Lower abdomen pain	105	13.0%
	Don't know	260	32.1%
Testicular cancer is treatable	Yes	377	46.6%
	No	115	14.2%
	Don't know	317	39.2%
Cure rate in case of early treatment	0-25%	90	11.1%
	25%-50%	186	23.0%
	50%-75%	182	22.5%
	75%-100%	85	10.5%
	Don't know	266	32.9%
Want to know more about cancer tests and examination methods	Yes	731	90.4%
	No	78	9.6%
Know about routine testicular examination	Yes	351	43.4%
	No	458	56.6%
Overall awareness level	Poor (0-5)	532	65.8%
	Good (6-9)	277	34.2%

Table 3: Attitude regarding cancer tests examination among adolescents and young adults in Aseer region, Saudi Arabia

Attitude items	No	%
Importance of routine self-examination for TC		
<i>Not important at all</i>	41	5.1%
<i>May be important</i>	163	20.1%
<i>Important</i>	194	24.0%
<i>Very important</i>	238	29.4%
<i>Don't know</i>	173	21.4%
Routine self-examination for cancer tests relative to that for cancer cervix and breast among females		
<i>Less important</i>	166	20.5%
<i>Same importance</i>	364	45.0%
<i>More important</i>	53	6.6%
<i>Don't know</i>	226	27.9%
It's important to examine testes regularly		
<i>Yes</i>	645	79.7%
<i>No</i>	164	20.3%

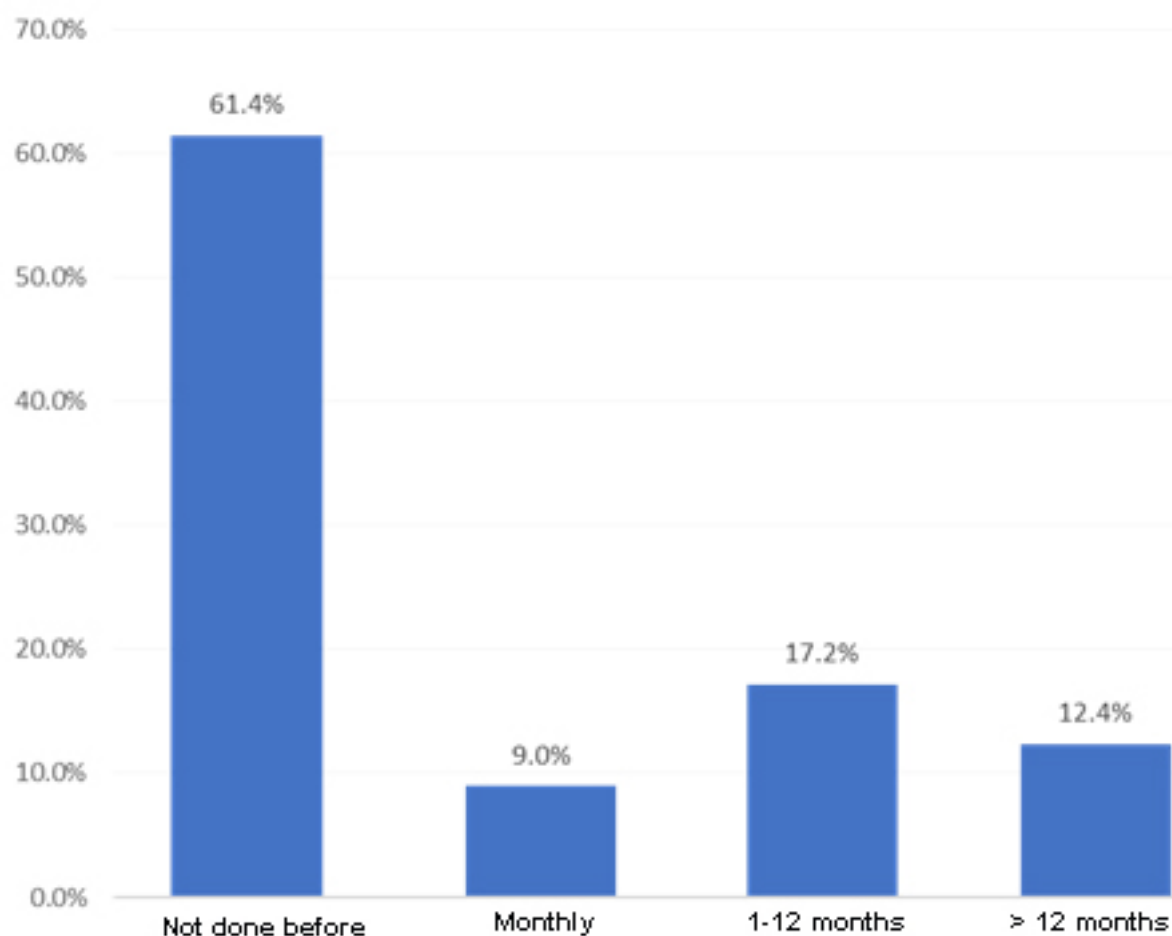
Figure 1: Frequency of routine testicular examination among adolescents and young adults in Aseer region, Saudi Arabia

Table 4.:Distribution of adults' awareness regarding testicular cancer by their personal data and practice

Factors		Awareness level				P-value
		Poor		Good		
		No	%	No	%	
Age in years	18-29	410	70.9%	168	29.1%	.001*
	30-39	51	42.1%	70	57.9%	
	40-49	64	70.3%	27	29.7%	
	50+	7	36.8%	12	63.2%	
Marital status	Single	410	69.4%	181	30.6%	.002*
	Married	108	56.3%	84	43.8%	
	Divorced/ widow	14	53.8%	12	46.2%	
Education	Below secondary	18	66.7%	9	33.3%	.019*
	Secondary	82	55.8%	65	44.2%	
	University/ more	432	68.0%	203	32.0%	
Monthly income	Insufficient	125	83.3%	25	16.7%	.001*
	Just sufficient	273	68.9%	123	31.1%	
	More than sufficient	134	51.0%	129	49.0%	
It's important to examine testes regularly	Yes	393	60.9%	252	39.1%	.001*
	No	139	84.8%	25	15.2%	
Previously did testicular examination	Not did before	376	75.7%	121	24.3%	.001*
	Monthly	26	35.6%	47	64.4%	
	1-12 months	64	46.0%	75	54.0%	
	> 12 months	66	66.0%	34	34.0%	

P: Pearson X2 test

* P < 0.05 (significant)

Discussion

Testicular cancers are not common but highly curable and reported mostly in young and middle-aged males (1, 16). Testicular cancer was detected as one of the cancers with a high cure rate by radiation and/or chemotherapy, and treatment has been improved over the last two decades (17). Currently, over 70% of all patients are curable regardless of the extent of cancer. So, all treatment of testicular cancer is significantly intending cure (18). However, it is important to know the extent of cancer and the specific type of testicular cancer to administer the best therapy. Males with an undescended testicle are reported at higher risk of developing testicular cancer than others whose testicles have moved normally down into the scrotum. This is true even if surgery has been performed early in life to place the testicle in the appropriate place in the scrotum (19).

The current study aimed to assess male adults' awareness, attitude and practice regarding testicular cancer and TSE in Aseer region. The study revealed that nearly 3 out of each four participating adults had previously heard about testicular cancer and know its affects in males. Regarding age group who are more at risk to develop testicular cancer, only one quarter of males reported the correct age (15-40 years), but the majority thought it affects older age

groups. As for symptoms associated with testicular cancer, testicular oedema and swelling were the most reported (by only one third of the participants) while scrotal heaviness was identified poorly. Also, less than half of the participants know that testicular cancer is highly curable and poorly reported the expected cure rate with early discovery. As for routine testicular self-examination, less than half of the male participants know about it and how to do it. Those all said that public adult male awareness regarding testicular cancer was poor (more than two thirds) which is an important finding due to the high curability if adults detect early any testicular tumours which will be affected by their awareness level. These findings were concordant with that reported by Khadra A et al, (20) who assessed awareness of TC and practice of TSE in a general practice population. The study revealed that 91% know about TC but only 26% knew both the age group most affected (25–34 years) and that TC can be curable if detected early. Belgam HI et al, (21) conducted a study to determine the knowledge of testicular cancer, risk factors and testicular self-examination (TSE) among university students. Less than half of them (44%) had heard of TC during their education and life but most of them had poor knowledge about signs and symptoms of TC. Only 5.9 % of them (n=38) indicated they had received information on TSE. Many other studies attribute the poor awareness regarding TC to lack of health education programs with lack of information during study

regarding TC (22-24). As for factors related to participant's awareness level, the study showed that higher awareness was significantly associated with old age, high income, and participants awareness of TSE and its importance. The surprising finding was that higher awareness was associated with secondary level of education rather than university graduation which most probably means that no information for TC was provided during study years and it is a personal duty.

Regarding Testicular self-examination, the current study revealed that nearly one third of the study participants reported that they previously did TSE (38.6%). Most of the participants did TSE nearly annually and others did it over longer time periods (more than 12 months). This was concordant with literature findings regarding frequency and attitude toward TSE. (19, 21, 23-30) This poor practice was mostly related to participant's poor attitude and lack of knowledge regarding this practice. About one quarter of the participants reported that TSE may not be important or may have some importance and 21% didn't know about it at all. On the other hand, three quarters agreed that it is important to do TSE regularly which means they may accept some knowledge regarding disease nature and curability which encouraged them to do the examination in future.

Conclusions

In conclusion, the study revealed that male adult's awareness about TC and TSE are inadequate and the proportion of those who are performing it is below the average. Male adults know about their lack of information regarding TC and TSE and are ready to learn.

Male adults' attitude towards TSE and its importance was not promising. Based on that, their information needs will be met; adding the education on testicular cancer, risk factors and TSE into study curriculum proposed with health education programs through media or at health care facilities will improve public awareness and practice preventing all irreversible consequences for a highly curable disease.

Acknowledgements:

Author acknowledged the services of Mr. Muhammad Abid Khan, for his valued input.

References

- Garner MJ, Turner MC, Ghadirian P, Krewski D. Epidemiology of testicular cancer: an overview. *International journal of cancer*. 2005 Sep 1;116(3):331-9.
- Ghazarian AA, Rusner C, Trabert B, Braunlin M, McGlynn KA, Stang A. Testicular cancer among US men aged 50 years and older. *Cancer epidemiology*. 2018 Aug 1; 55:68-72.
- Manecksha RP, Fitzpatrick JM. Epidemiology of testicular cancer. *BJU international*. 2009 Nov 1;104(9b):1329-33.
- Liu S, Wen SW, Mao Y, Mery L, Rouleau J. Birth cohort effects underlying the increasing testicular cancer incidence in Canada. *Canadian journal of public health*. 1999 May 1;90(3):176-80.
- Zheng T, Holford TR, Ma Z, Ward BA, Flannery J, Boyle P. Continuing increase in incidence of germ-cell testis cancer in young adults: experience from Connecticut, USA, 1935–1992. *International Journal of Cancer*. 1996 Mar 15;65(6):723-9.
- Bergström R, Adami HO, Möhner M, Zatonski W, Storm H, Ekblom A, Tretli S, Teppo L, Akre O, Hakulinen T. Increase in testicular cancer incidence in six European countries: a birth cohort phenomenon. *JNCI: Journal of the National Cancer Institute*. 1996 Jun 5;88(11):727-33.
- Nur U, Rachet B, Mitry E, Cooper N, Coleman MP. Survival from testicular cancer in England and Wales up to 2001. *British journal of cancer*. 2008 Sep 23;99(S1):S80-2.
- Znaor A, Lortet-Tieulent J, Jemal A, Bray F. International variations and trends in testicular cancer incidence and mortality. *European urology*. 2014 Jun 1;65(6):1095-106.
- Cronholm PF, Mao JJ, Nguyen GT, Paris RT. A dilemma in male engagement in preventive services: adolescent males' knowledge and attitudes toward testicular cancer and testicular self-exam. *American journal of men's health*. 2009 Jun;3(2):134-40.
- Rudberg L, Nilsson S, Wikblad K, Carlsson M. Barriers identified by Swedish school nurses in giving information about testicular cancer and testicular self-examination to adolescent males. *The Journal of school nursing*. 2005 Feb;21(1):17-22.
- Jones RH, Vasey PA. Part I: testicular cancer - management of early disease. *The Lancet oncology*. 2003 Dec 1;4(12):730-7.
- Stephenson A, Eggener SE, Bass EB, Chelnick DM, Daneshmand S, Feldman D, Gilligan T, Karam JA, Leibovich B, Liao SL, Masterson TA. Diagnosis and treatment of early stage testicular cancer: AUA guideline. *The Journal of urology*. 2019 Aug;202(2):272-81.
- Dearnaley DP, Huddart RA, Horwich A. Managing testicular cancer. *BMJ*. 2001 Jun 30;322(7302):1583-8.
- McClenahan C, Shevlin M, Adamson G, Bennett C, O'Neill B. Testicular self-examination: a test of the health belief model and the theory of planned behaviour. *Health Education Research*. 2007 Apr 1;22(2):272-84.
- Bresciani M, Boarin M, Facconi I, Manara DF, Villa G. Awareness of testicular cancer among young men: A literature review. *International Journal of Urological Nursing*. 2020. Under publication.
- Hayes-Lattin B, Nichols CR. Testicular cancer: a prototypic tumour of young adults. In *Seminars in oncology* 2009 Oct 1 (Vol. 36, No. 5, pp. 432-438). WB Saunders.
- Cheng L, Albers P, Berney DM, Feldman DR, Daugaard G, Gilligan T, Looijenga LH. Testicular cancer. *Nature Reviews Disease Primers*. 2018 Oct 5;4(1):1-24.
- Baird DC, Meyers GJ, Hu JS. Testicular cancer: Diagnosis and treatment. *American family physician*. 2018 Feb 15;97(4):261-8.
- Boccellino M, Vanacore D, Zappavigna S, Cavaliere C, Rossetti S, D'Aniello C, Chieffi P, Amler E, Buonerba C, Di Lorenzo G, Di Franco R. Testicular cancer from diagnosis to epigenetic factors. *Oncotarget*. 2017 Nov 28;8(61):104654.

20. Khadra A and Oakeshott P. Pilot study of testicular cancer awareness and testicular self-examination in men attending two South London general practices. *Family Practice* 2002; 19: 294–296.
21. Belgam HI, Tella AO. Testicular Cancer Awareness and Testicular Self-Examination Among Senior Secondary School Students in An Urban. *Asian Pacific Journal of Cancer Prevention*. 2011; 12: 695-98.
22. Pour HA, Kunter D, Norouzzadeh R, Heidari MR. The Effect of Testicular Self-Examination Education on Knowledge, Performance, and Health Beliefs of Turkish Men. *Journal of Cancer Education*. 2018 Apr 1;33(2):398-403.
23. Atuhaire C, Byamukama A, Cumber RY, Cumber SN. Knowledge and practice of testicular self-examination among secondary students at Ntare School in Mbarara District, South western Uganda. *The Pan African Medical Journal*. 2019;33.
24. Sawale S, Yeola M, Shukla S, Acharya S. Self-Examination of Scrotum - Need of the Hour to Create Awareness Regarding Testicular Pathologies - A Cross Sectional Study. *J Evolution Med. Dent. Sci*. 2020; 9 (19): 1528-32.
25. Wardle J, Steptoe A, Burckhardt R, Vogele C, Vila J, Zarczynski Z. Testicular self-examination: attitudes and practices among young men in Europe. *Preventive Medicine*. 1994 Mar 1;23(2):206-10.
26. Moore RA, Topping A. Young men's knowledge of testicular cancer and testicular self-examination: a lost opportunity? *European journal of cancer care*. 1999 Sep;8(3):137-42.
27. Roy RK, Casson K. Attitudes toward testicular cancer and self-examination among Northern Irish males. *American journal of men's health*. 2017 Mar;11(2):253-61.
28. Yurt, Seher & Sağlam, Rabia & Kadioglu, Hasibe. (2021). Knowledge, Beliefs and Practices of University Students Regarding Testicular Cancer and Testicular Self-Examination. 10.33808/clinexphealthsci.645328.
29. Pietrzyk, Ł., Denisow-Pietrzyk, M., Czezelewski, M. et al. Cancer education matters: a report on testicular cancer knowledge, awareness, and self-examination practice among young Polish men. *Sci Rep* 10, 20684 (2020). <https://doi.org/10.1038/s41598-020-77734>
30. Bresciani, M, Boarin, M, Facconi, I, Manara, DF, Villa, G. Awareness of testicular cancer among young men: A literature review. *Int J Urol Nurs*. 2021; 15: 5– 11. <https://doi.org/10.1111/ijun.12248>