Original Article

Testicular Self-examination: Knowledge, Attitude and Practice of Male Medical Students in Alfajr College for Science and Technology, Khartoum, Sudan, 2022.

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Abstract

Background: Testicular cancer is one of the malignancies of young adult males, especially between the ages of 15 and 35. Although this type of cancer is relatively uncommon, being only 1% of all cancers globally, yet its incidence has doubled over the past 40 years. Testicular self-examination (TSE) involves examining and palpating the testes to detect potential changes that may indicate early signs of testicular cancer.

Aim: To determine Knowledge, Attitude and Practice about testicular self-examination among male medical students in Alfajr College for Science and Technology, 2022.

Materials and Methods: The study was a descriptive cross-sectional, institutional-based study conducted among male medical students, at all five levels in the College. The sample size was estimated at 149 distributed by stratified sampling technique over the five levels of medical students. Self-administered interview using structured questionnaire designed by the researcher and approved by the supervisor was used, then it was entered, revised, and analyzed using SPSS version 25.

Results: The study involved 148 participants with 99% response rate. Most of the students' age (79.7%) ranged between 15-26 years. Only 44 (29.7%) of the students had ever heard about TSE. The overall knowledge of students about TSE was 11.36%; and 20.45% had favorable attitude towards TSE.

However, practicing TSE regularly was rather poor being only performed by 2.27%.

These results are less than reports from other countries in the region like Nigeria, Ethiopia and Uganda, where studies from these countries showed more knowledge and practice among their male population about testicular cancer and TSE.

Conclusion: The low rate of knowledge and practice of TSE among medical students in Alfajr College is worrisome. This probably reflects the paucity of health educational programs about testicular cancer among males in Sudan compared to other countries in the region. This preliminary report draws attention to this important issue and probably more research and action are needed in this respect.

Keywords: *Testicular cancer, Testicular self-examination, knowledge, Attitude, Practice.*

Introduction:

Testicular cancer (TC), the malignant tumor of the male sex organ (testicle), is an uncommon form of cancer, being only 1% of all cancers globally; and ranking at the 20th mark in the world cancer record. Its incidence increased in most countries around the Globe over recent years. (1,2) Although Africa has been within the lowest incidence rates, the incidence in the sub-Saharan Africa is expected to increase by more than three folds by 2030.(3)

In Sudan, TC formed less than 1.5% of all male cancers treated during the period from August 2004 to September 2012 at the Radiation and Isotope Centre of Khartoum (RICK).(4)

TC risk factors include age, an un-descended testicle, abnormal testicle development, testicular torsion, family history of the disease, HIV infection, a history of testicular cancer, body size, painless tumors of the testicles, significant decrease or increase in the testis and loss of sexual activity. (5,6) Globally, incidence rates of TC are increasing among the 15 to 54-year-old males, especially between the ages of 15–35 years, with the majority of those cases affecting males under 40 years. (7)

In the United Kingdom (UK), around two thousand new cases are diagnosed each year, which led the Cancer Registries and support groups to recommend an awareness program on TC for young men. The program should include that medical advice has to be sought if any abnormities are detected by self-examination. (8)

A useful tool for the early identification of TC is examination of the testicles by a male examiner to rule out any lumps. (3) Testicular self-examination (TSE) is a screening method of examining and palpating the testes to detect potential changes that may be early signs of cancer. (9) TSE is advised to be performed when standing and immediately following a warm shower, when the scrotum is relaxed and the testes are lower.(10) Low income nations have a high rate of morbidity and mortality from TC because of late presentation, poverty, and lack of management resources. Sudan is not an exemption, where in a retrospective study conducted in RICK in 2019, 54.4% of the patients presented either with stage three or four TC. (4) Early detection can be facilitated if men are knowledgeable and encouraged to practice TSE. (6)

This study aims to explore knowledge, practice and attitude towards TC and TSE among medical students in Alfajr College for Science and Technology.

Materials and Methods

The study was institutional, descriptive cross-sectional study conducted during November 2022 in Alfajr College for science and technology (ACST).

The study population: All registered male medical students at ACST from the first to the fifth academic years were considered for the study. The students who agreed to participate after an informed consent were included.

Sample size and Sampling: Sample size was estimated by the formula

$$n=N/ [1+N (E^2)]$$

Where n = the sample size, N = the total study population that included male medical students = 238, E is the margin of error at 95% C.I taken as 0.05.

$$n = 238/ (1+238(0.05)^2) = 149.21 =149$$

The students were chosen by stratified sampling technique, proportionate to the number of students in each level. Thus, 21 students were taken from the fifth level, 25 from the fourth level, 29 from the third level and 37 from each of the second and the first levels. Students from each level were chosen by convenience, taking the first responding to the required sample size.

Data collection

The data was collected using self-administered interview using a pre tested, pre coded, standard Google form questionnaire which was quoted and modified from previous studies. (11) The questionnaire consisted of four sections; the first section was the socio-demographic data, the second section was assessing the knowledge of students regarding TSE and it contained eight questions, the third section was assessing the attitude of students regarding TSE and it contained six questions. The last section was measuring the practice of the students and it contained five questions. The questionnaire was reviewed and accepted by an expert supervisor. The questionnaire was distributed through social media to the target population.

Data analysis

Data was entered and analyzed using SPSS software version 25. Descriptive statistics were carried out and inputs summarized as frequencies and proportions at a 95% confidence level.

The knowledge score was valued by categorizing the outputs of correct answers as follows: (a) good knowledge if the participant answered correctly 75% or more of the questions; (b) moderate knowledge if correct answers were 50% to 74.9%, and (c) poor knowledge if correct answers were less than 50%. The same was used for the attitude and practice scores.

Ethical approval

Ethical and technical approval was obtained from the department of community medicine at ACST. Written consent was obtained from each student as part of the electronic form with clarification that their participation is voluntary and the information obtained will be treated with confidentiality.

Results:

The total number of participants involved in this study was 148 with 99% response rate.

The majority of participants (79.7%) were in the age group of 15-26 years. Personal and family histories of TC were positive in less than 4%. (Table 1).

Table 1: Socio-demographic Characteristics of Male Medicine Program Students at Alfajr College for Science and Technology; (n=148).

Variable	Frequency	Percent
Age group		
15-20	37	25%
21-26	81	54.7%
27 and more	30	20.3%
Personal history of TC		
Yes	4	2.7%
No	144	97.3%
Family history of TC		
Yes	5	3.4%
No	143	96.6%

Only 44 students of the sample (29.7%) heard of TSE before. The major source of information was social media in 61.4%. Of the participants who knew about TSE, only one fifth answered correctly when asked about the range of age that would be at risk of TC; and only 9% gave the correct answer about the appropriate time for doing TSE. More details about the participants' knowledge are shown in (**Table 2).**

Table 2: Knowledge of the 44 Male Medicine Program Students (29.7% of the sample size) who heard of TSE before; Alfajr College for Science and Technology, 2022

Variable	Frequency	Percent
Source of information regarding TSE		
Social Media	27	61.4%
Friends	2	4.5%
Health profession	6	13.6%
Teachers	6	13.6%
Others	3	6.8%
What is the importance of doing TSE?		
For screening	18	40.9%
Others	26	59.1%
How often to do TSE?		
Once every month	8	18.2%
Other frequencies	36	81.8%
TC risk age group		
15-35 years	9	20.5%
Other age groups	35	79.5%
The best time to practice TSE		
Shortly after taking a shower	4	9.1%
Other times specified	40	90.9%
Probability that family history can increase TC		
Yes	18	40.9%
No	7	15.9%
Don’t know	19	43.2%
TC can be more serious than other diseases		
Disagree	13	29.6%
Uncertain	6	13.6%
Agree	25	56.8%
TSE can help in finding lumps in the testes		
Disagree	13	29.5%
Uncertain	8	18.2%
Agree	23	52.3%
Routine TSE can help in finding changes in the testes before it is discovered by regular health checkup		
Disagree	15	34.1%
Uncertain	6	13.6%
Agree	23	52.3%

Of the 44 students who heard of TSE before, only 5 (11.36%) had overall good knowledge score of TC and the majority, 27 (61.36%), had poor knowledge score. **(Figure 1)**

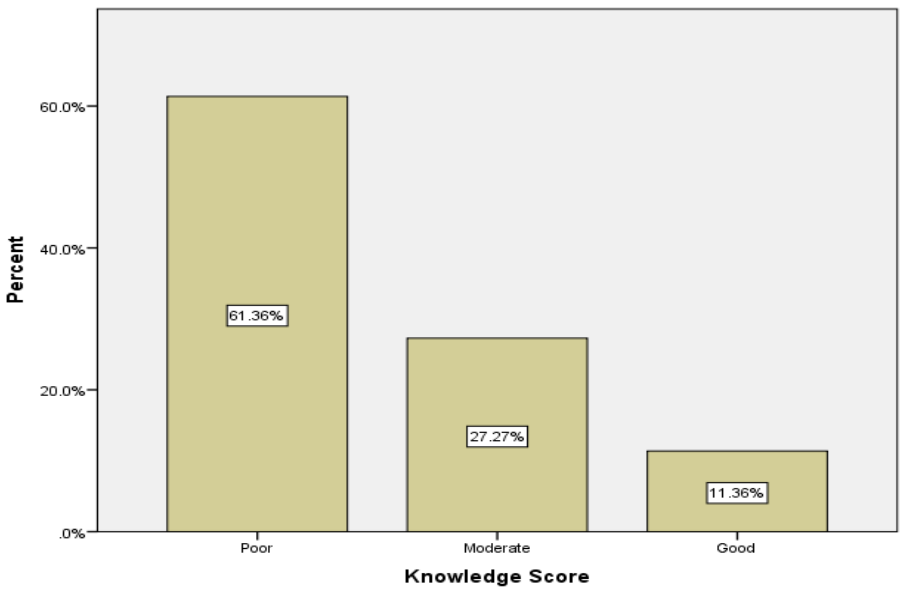

Figure 1: Overall Knowledge Score of Male Medicine Students in Alfajr College for Science and Technology, 2022 (n=44)

Questions probing for attitude regarding TSE showed that TSE was embarrassing for about 27% of the students; 18% thought that it could be painful and 20% thought that it could be time consuming. (Table 3)

Table 3: Attitude of the 44 Male Medicine Program Students (29.7% of the sample size) who heard of TSE before; Alfajr College for Science and Technology, 2022

Variables	**Frequency**	**Percent**
Routine TSE is embarrassing for me		
Disagree	15	34.1%
Uncertain	17	38.6%
Agree	12	27.3%
TSE can be painful		
Disagree	15	34.1%
Uncertain	21	47.7%
Agree	8	18.2%
TSE can be time consuming		
Disagree	16	36.4%
Uncertain	19	43.2%
Agree	9	20.5%

The majority of the participants (63.64%) had overall poor attitude score towards TSE, while only 20.45% had good attitude score. **(Figure 2)**

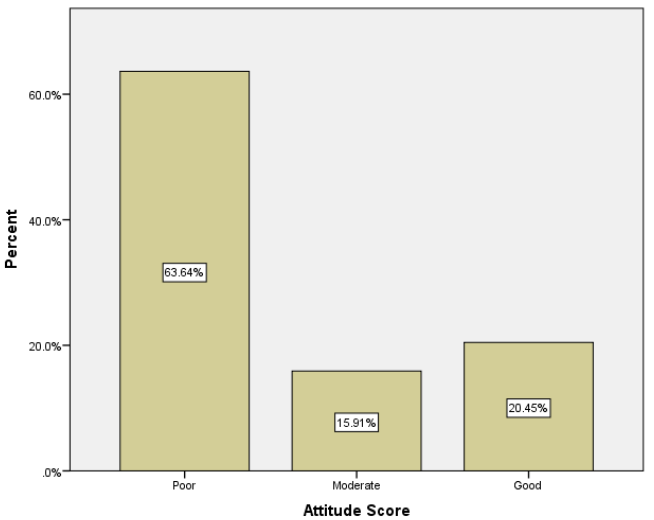

Figure 2: Overall Attitude score of Male Medicine Students at Alfajr College for Science and Technology, 2022 (N=44)

Only 23% of the 44 participants who knew of TSE actually practiced TSE and of them only 2.27% practice it as appropriate. **(Figure 3)**

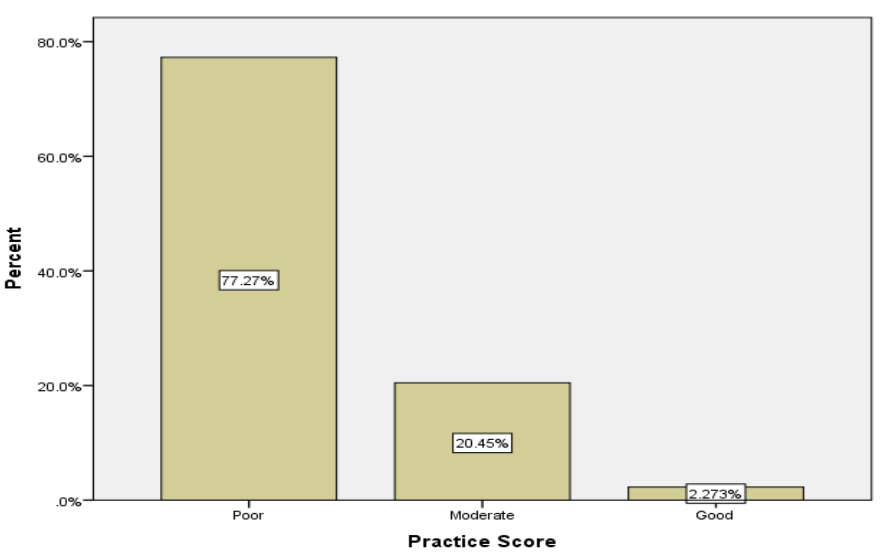

Figure 3: Overall practice score of Male Medicine Students at Alfajr College for Science and Technology, 2022 (N=10)

Discussion:

The most common cancers that can be detected by regular self-examination are breast cancer for women and TC for men. (11) While Breast Self-Examination is gaining much attention among women in the Sub-Saharan African region, knowledge of TSE in men in the same region remains poor. Although TC is far less prevalent than breast cancer, it is the most frequent cancer for men aged 18–50 who are considered a high-risk group. (11) In this study, the majority (79.7%) were in the age group of 15-26 years been within the targeted age of the most commonly affected by TC. (8)

The American Cancer Society (ACS) recommends that all men practice TSE every month and make the procedure a lifetime habit. The ACS based its recommendation on that nine out of every ten TC were detected by the patient self. (12). The ACS also advises that doctors should consider testicular examination as part of their routine cancer-related check-ups.(13) Besides TC assessment, males with knowledge about TSE can easily check themselves for male-specific urogenital health concerns, including scrotal abnormalities like varicoceles, hydroceles and unusual lumps and testicular torsion, which are all risk factors of TC. (5, 6) Every male at puberty should be taught and encouraged to perform TSE for detecting testicular tumors or other scrotal abnormalities. (14) It is reported that a better prognosis with a 5-year survival rate is likely in males who effectively carry out TSE and identify a lump in its early stages. (15) Although the ACS recommended young men between the ages of 15 - 35 years should practice TSE every month, a study done in the USA showed that only 46% of respondents reported performing TSE. (12)

In our study, a relatively good proportion, 44 (29.7%) out of the 148 respondents had heard about TSE. This figure is higher than studies done in Iran, Nigeria and Turkey, where those who heard about TSE were less than 5%, 5.9% and 1.3% respectively. (7,10,16) The discrepancy might be explained by the fact that the participants in our study were all medical students who should have better awareness of medical conditions than the general population. However, the overall knowledge level of respondents from our study was low, only 11.4% had good knowledge of TSE. This figure is lower than reports from Nigeria, Ethiopia and Uganda where TSE knowledge was of a good level in 52%, 30%, and 41.8% respectively. (10,11,17) This might be due to better health promotion programs for early detection of TC in those countries.

The sources for knowledge, attitude and practice of TSE include media information, health professionals, parents and teachers. (18) In our study, health profession was the source of information among 13.6% of the participants who had heard about TSE.

This is unlike the information from two studies from Nigeria in which none of the respondents got information from health professionals. (9,10)

Only 20.5% of our study sample knew the age group mostly affected by TC, This finding is slightly higher than data reported from Uganda where 13% of their study group were aware of the age group at risk. (17) This variation might be due to the higher awareness among medical students. When the participants in this study were asked about the appropriate time to perform TSE, 9.1% of the respondents knew the correct answer which is shortly after taking a shower. These findings are lower than a research done in Uganda, which was 29.0%. (17) This discrepancy might be due to lower information dissemination about TSE in our context.

About 41% of the respondents said TC probability would increase with family history. This result is lower than the research conducted in Nigeria which revealed that 67.4% of the respondents said "Men who have blood relatives with testicular cancer are more likely to get TC". (10)

In our study about 20% of the students had an overall favorable attitude towards TSE. In Nigeria and Ethiopia the attitudes were more favorable towards TSE at 57.2% and 51.3% respectively. (10,11) Moreover, only 23% of our respondents had practiced TSE. This finding is much lower than the researches in Nigeria, Turkey and Uganda in which the practice of TSE among participants were 45.9%, 17.7% and 14% respectively (10,16, 17) This huge difference may reflect the lack of health promotion for early detection of TC in our context.

Regarding the regularity of performing the TSE in this study, only 4.2% of respondents examined their testis every month. This low figure is consistent with the report by Jemal et. al. that only 3.1% of respondents from low-and-middle-income countries examined their testis regularly. (19)

Conclusion:

Our results showed that TSE knowledge, attitude and practice among this sample of male medical students were inadequate. Only 20% of the students showed favorable attitude towards TSE. The major reason not to perform TSE was lack of knowledge about TSE and under-appreciation of the importance of early detection of TC. This reflects that there is shortage of promotion for early detection of TC in our institution among medical students. Students in non-medical programs may be even less informed. Therefore, the benefits of early detection of TC through TSE for reduction of mortality and health care expenditure associated with management of the disease should be promoted. A larger scale research is needed to verify the size of the problem in the country.

Funding:

Authors own resources

Conflict of interest

None

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