Adult Male Awareness Regarding Testicular Self Examination

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Abstract

Background: Testicular cancer is the most common type of cancer in the urogenital system in men aged 15-34, ranging from as low as 1.86/100,000 prevalence in Egypt. Early detection of testicular cancer can be achieved by testicular self-examination (TSE). **Aim**: the study aimed to assess the adult male awareness regarding testicular self-examination for early detection of testicular cancer. **Design**: A descriptive correlational research design was utilized in this study. **Setting**: The study was conducted at outpatient clinic of Dermatology and Andrology at El Demerdash Hospital as affiliated at ain shams uniiversity. **Subjects**: A purposive randomly sample (270) adult males from mentioned setting were included. **Data collection tools**: Structured interviewing questionnaires were used for the data collection which include four parts: Socio-demographic characteristics, adult male Knowledge, practices, and attitude regarding testicular self-examination. **Results**: 67.0% of the studied adult male achieved satisfactory level of knowledge about testicular self-examination, 80.4 % of the studied subjects have done above 60% of the practice related to testicular self-examination, which is considered satisfactory level of practice, and38.5% of the studied adult males have positive attitude toward testicular self-examination. **Conclusion**: this study concluded that more than two thirds of adult male had satisfactory level of total knowledge and satisfactory level of practice, whereas more than half of them had negative attitude toward testicular self-examination for early detection of testicular cancer. **Recommendations:** Creating effective National Public Awareness Campaigns, interactive social media and internet tools to educate young people who are most at risk. And develop audiovisuals and pamphlets as supportive materials.

Keywords: **Testicular cancer, Awareness, & testicular self-examination, attitude**

Introduction:

Nowadays, there is a rapid change in the world and the health and quality life expectancy of individual's increases. Men's health refers to a state of complete physical, mental, and social well-being, as experienced by men, and not merely the absence of disease or infirmity. these often relate to structures such as male genitalia or to conditions caused by hormones specific to, or most notable in males. Moreover, The literature shows that many men are unaware of testicular cancer, disease symptoms, and TSE in order to diagnose symptoms or early diagnosis ***(AJMH, 2019)***

The testicles are part of the male reproductive system. They are also called testes (or a testis, if referring to one). Testicles are two small, egg-shaped glands that sit behind the penis in a pouch of skin known as the scrotum.

The job of the testicles is to produce and store sperm. They also produce the male hormone called testosterone, which is responsible for the development of male characteristics such as facial hair growth, a deep voice, muscle development, sexual drive (libido), and the ability to have an erection ***(Yurt, et al., 2020).***

Testicular cancer is the most common type of cancer in the urogenital system in men aged 15-34, Testicular cancer is a highly treatable disease when diagnosed at an early stage and become more common around the world and especially in white race. In addition, the etiology of testicular cancer is not known exactly, it can occur in both testicles. It is reported that the most important risk factor is past cryptorchidism undescended testicle, Klinefelter's syndrome, infertility, history of testicular cancer in a first-degree relative, and inguinal hernia are among the risk factors ***(Sayar et al., 2021).***

Nowadays, there is no primary method to prevent Testicular cancer (TC). TC is the most common malignancy and the third leading cause

of cancer deaths in male adolescents and young adults. Early detection of testicular cancer can be achieved by testicular self-examination (TSE). Testicular self-exam (T.S.E) is the practice in which a man checks himself (scrotum) for any abnormalities in his testicles for signs and symptoms of testicular cancer (T.C) ***(Pietrzyk et al., 2020).***

Therefore, the primary purpose of strategies to prevent TC should be implementation of educational programs designed to increase awareness and knowledge. Also, efforts should be made to develop educational programs that can increase knowledge related to testicular cancer as well as the practice of testicular self-examination. Additionally, For men, monthly self-examination of the testicles, starting at puberty, is also an effective way of detecting testicular cancer at an early, and potentially curable, stage. It is best to carry out testicular self-examination after a warm bath or shower. Warmth relaxes your scrotum, making it easier to feel anything abnormal ***(British Association of Urological Surgeons (BAUS) 2017; American Cancer Society, 2018).***

Significance of the study

Testicular torsion, infection trauma, and tumors are frequently discussed in the literature on testicular disorders. Testicular cancer predominantly affects men aged 18 to 35 years. It constitutes 0.5% of all cancer cases and accounts for 0.1% of all cancer mortalities ***(National Cancer Institute, 2014).*** Standardized incidence rate for testicular cancer, ranging from as low as 0.5/100 000 in Egypt to as high as 9.2/100 000 in Denmark ***(Zawam H et al., 2021).***

In the past two decades, numerous research efforts have been made to explore and improve males' awareness of testicular cancer and its screening. In addition, three systematic reviews have been conducted to pool and analyze findings from these studies in order to inform research; practice, and education ***(Pietrzyk et al., 2020)***. So, it is necessity to assess the adult male awareness regarding testicular self-examination for early detection of testicular cancer

Aim of the study:

The aim of this study was to assess the adult male awareness regarding testicular self-examination for early detection of testicular cancer.

Research Questions:-

1- Is there a relation between adult male's socio- Demographic status and their knowledge?

2- Is there relation between adult male's knowledge and their practice?

3- Is there relation between adult male's attitude and their practice?

SUBJECTS AND METHODS

Research Design: A descriptive exploratory research design was utilized in this study.

Study Location: The study was conducted at outpatient clinic of Dermatology and Andrology at El Demerdash Hospital at Ain Shams University.

Study Subjects: The study subjects included a purposive randomly sample (270) adult males from mentioned setting, A sample calculated by power 8 sample for calculation purpose to give power of 80 % ***(Jones et al., 2003)***. from beginning of July 2022 to the end of December 2022.

Inclusion criteria:

-Only Adult males

-Age from18-45 year's old

Tools of Data Collection

Data for this study was collected by using the following tools.

Tool: Structured interviewing questionnaires were used for the data collection:

This tool was developed by the researcher based on related literature ***(Ibitoye et al., 2022)*** and consisted of four parts as the following:

Part I: Socio-demographic characteristics about adult male including age, sex, education level, social status, occupation (job), residence, smoker, health problem, medication for this disease, and monthly income

Part II: Knowledge adult male regarding testicular self-examination: This part used to assess adult male's knowledge regarding testicular self-examination & testicular cancer which include (17 item) as: structure of testes, function of testes, types of testicular tumors, treatment for testicles tumors the source of your information about testicular cancer and testicular self-examination .

Scoring system: adult male responses were measured on a 2-point 1= Complete" and 0 = Incomplete". The knowledge level was considered:

- Satisfactory >50%
- Unsatisfactory <50%

Part III: Adult males practices toward testicular self-examination:

This part used to assess adult male's practice regarding testicular self-examination which include (13 item) as: Examine each testicle gently with both hands, …etc

Scoring system: adult male responses were measured on a 2-point 1= done" and 0 = not done". The practice level was considered:

- Done >60%
- Not done <60%

Part IV: Adult males attitude towards testicular self-examination:

This part used to assess adult's male's attitude regarding testicular self-examination as which include (10 item) as: feel comfortable during a testicular self-exam, All men should do a testicular self-examination for testicle, discussing with my friends about testicular self-examination,….etc

Scoring system: adult male attitude level was considered:

- Positive attitude >60%
- Negative attitude <60%

Face and Content Validity

Validity of the tools were done namely face validity and content validity. It was translated into Arabic and was tested by a jury group of five experts through an opinionnaire tool to measure the validity of the tools

Pilot Study

A pilot study was conducted on 10% of the study subjects (27 adult male). The aim of the pilot study was to determine clarity, applicability of the tools and to estimate the time required for fulfilling the questionnaire tools. Total time needed to complete the total tools by adult male was ranged between (30-45) minutes. Those participants in the pilot study were included in the main study sample. Based on the pilot study, no modifications were done and the final version was prepared for distributing to the adult male.

Fieldwork

The actual fieldwork started at the beginning of July 2022 to the end of December 2022. The researcher met the director of Dermatology and Andrology at El Demerdash Hospital both medical and nursing to explain the aim of the study to gain their approval for data collection. The researcher collected data by himself through meeting the study subjects and explaining the purpose of the study to them in the study settings.

The questionnaire tools were distributed and completed by the study subjects. The researcher was present all the time during fulfilling the forms to answer any questions. Total time needed to complete the total tools by adult male was ranged between (30-45) minutes. The researcher was present all the time during fulfilling the forms to answer any questions. Also, the researcher checked the completeness of each filled sheet after the study subjects completed it to ensure the absence of any missing data.

Ethical considerations informal and legal consent

Prior study conduction, the research approval was obtained from the Scientific Research Ethical Committee in Faculty of Nursing, Ain Shams University. In addition, an approval was obtained from the director of Dermatology and Andrology at El Demerdash Hospital either medical or nursing before starting the study. The researcher was assure anonymity and confidentiality of the study subject data and informed them about research purposes. All participant were informed about the study aim, process, and they allowed to choose to participate or not in the study and they have the right to withdraw from the study at any time. Ethics, values, culture and beliefs was respected.

Statistical analysis

Recorded data were analyzed using the statistical package for social sciences, version 22.0 (SPSS Inc., Chicago, Illinois, USA). Quantitative data were expressed as mean± standard deviation (SD). Qualitative data were expressed as frequency and percentage. The following tests were done: Chi-square (x^2) test of significance was used in order to compare proportions between qualitative parameters, One-sample t-test was used to determine the significance of the difference between the average responses, Pearson's correlation coefficient (r) test was used to assess the degree of association between two sets of variables. The confidence interval was set to 95% and the margin of error accepted was set to 5%. So, the p-value was considered significant as the following:, Probability ***(P-value)***

P-value <0.05 was considered significant.

P-value <0.001 was considered as highly significant.

P-value >0.05 was considered insignificant.

Cronbach's alpha coefficient was used to determine the reliability of the tool

Results:

Table (1): shows the studied adult male socio-demographic data and age of 28.1% of the studied are in the age range from 30- 35 years with mean age of 30.49 and SD ±5.63. regarding the educational level, 75.6% of the studied adult males with high education while 1.3% of them were illiterate. As regard to marital status, 63.0% of the studied adult males were married, while only 3.0% of them were divorced.

Regarding the occupation, 68.5% of the studied adult male were employees and only 1.9% of them were without work. As regard to monthly income, 57.4% of the studied adult males reported income rage from 2500: 3500, while 10.0% of them reported income more than 3500 LE. Considering the residence, 57.0% of the studied adult males were living in cities, while 43.0 of them live in Villages or countryside. lastly 50% of the studied adult males were smokers and 50% were non smokers.

Table (2): shows the frequency and distribution of studied adult male according to their health problems and medication and illustrated that 92.25 % of them have no health problems, while only 3.0% of the studied males were hypertensive, and 4.8% were diabetics.

Figure (1): shows that total knowledge about testicular self-examination and illustrated that 67.0% of the studied adult male achieved satisfactory level of knowledge about testicular self-examination with score above 50%, while 33.0% of them achieved unsatisfactory level of knowledge about testicular self-examination with score less than 50%.

Figure (2): illustrating that 80.4 % of the studied subjects have done above 60% of the practice related to testicular self-examination, which is considered satisfactory level of practice, while only 19.6 % of them have done practice lower than 60% which is represented unsatisfactory.

Figure (3): shows total number and percentage of the studied adult male according to their attitude regarding testicular self-examination and indicated that 38.5% of the studied adult males have positive attitude toward testicular self-examination, while 61.5% of the studied adult males have negative attitude toward testicular self-examination.

Table (3): shows Correlations matrix between total scores of knowledge, total scores of practice, and total scores of attitude regarding testicular self-examination and indicated that, there was highly statistical significant correlation between total score of knowledge and total score of practice with p value 0.001, also there is statistically significant correlation with total score of attitude and p value is 0.027.

Regarding correlations between total score of practice and total score of knowledge, there is highly statistically significant correlation with p value 0.001. on the other hand, there is statistically significant correlation between total score of practice and total score of attitude with p value 0.048. As regard to correlation between total score of attitude and total score of knowledge, there statistically significant correlation with p value 0.027. On the other hand, there was statistically significant correlation between total score of attitude and total score of practice with p value 0.048.

Table (1): Number and percentage distribution of the studied adult male according to their socio-demographic data (N=270).

Socio-demographic data	No.	%
Age (years)		
≥18-25 years	75	27.8
>25-30 years	54	20.0
>30-35 years	76	28.1
>35-45 years	65	24.1
Mean±SD	**30.49±5.63**	
Education level:		
Neither read nor write	4	1.5
Reads and writes	5	1.9
Basic education	10	3.7
Secondary education	47	17.4
University education	204	75.6
Social status:		
Single	92	34.1
Married	170	63.0
Divorced	8	3.0
Widower	0	0.0
Occupation (Job):		
Student	32	11.9
Factor (Worker)	48	17.8
Employee	185	68.5
Not working	5	1.9
Monthly income:		
≤2500 LE	88	32.6
>2500-3500 LE	155	57.4
>3500 LE	27	10.0
Residence:		
The city	154	57.0
Villages or countryside	116	43.0
Smoker:		
Yes	135	50.0
No	135	50.0

Table (1) shows the studied adult male socio-demographic data regarding age, of 28.1% of the studied sample are in the age range from 30- 35 years, with mean age of 30.49±5.63. regarding the educational level, 75.6% of the studied adult males with high education while 1.3% of them were illiterate. As regard to marital status, 63.0% of the studied adult males were married, while only 3.0% of them were divorced **.**

Regarding the occupation, 68.5% of the studied adult male were employees and only 1.9% of them were without work. As regard to monthly income, 57.4% of the studied adult males reported income rage from 2500: 3500, while 10.0% of them reported income more than 3500 LE. Considering the residence, 57.0% of the studied adult males were living in cities, while 43.0 of them live in Villages or countryside.

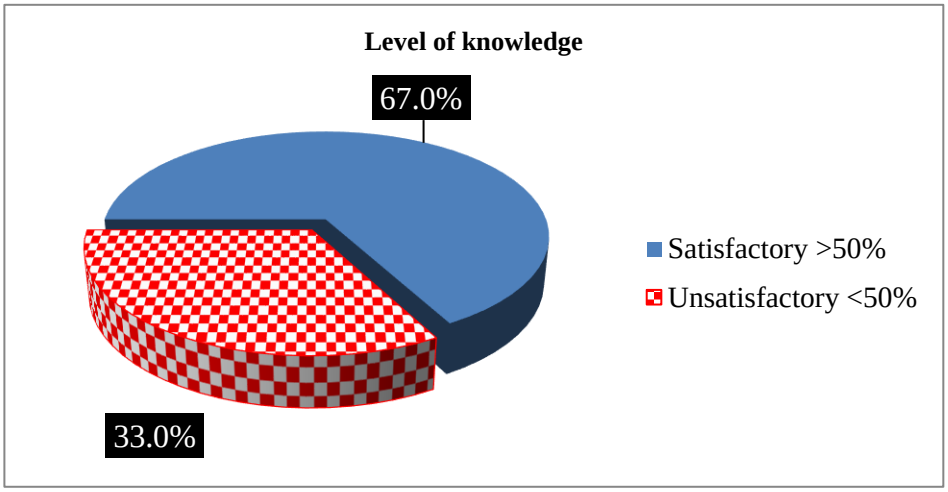

Figure (1): Total knowledge about testicular self-examination of the studied adult males (270).

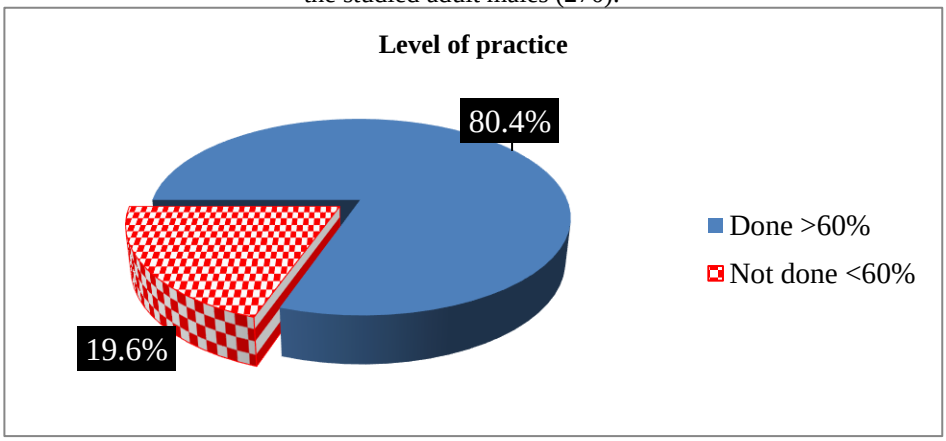

Figure (2): Number and percentage of the studied adult male according to their practices toward testicular self-examination (N=270).

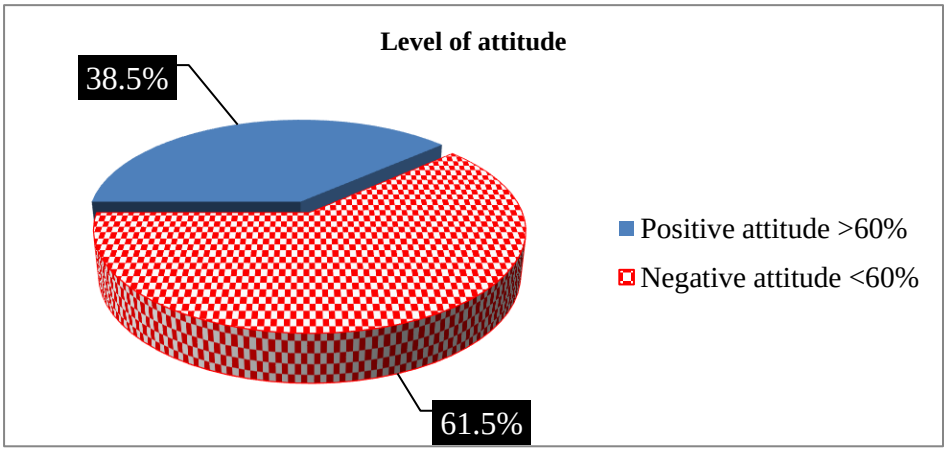

Figure (3): Number and percentage of the studied adult male according to their attitude toward testicular self-examination (N=270).

Table (2): Correlation matrix between total score of knowledge and total score of practice regarding testicular self-examination (N=270):

		Total score of knowledge	Total score of practice	Total score of attitude
Total score of knowledge	r		0.588	0.308
	p-value		<0.001**	0.027*
	N		270	270
Total score of practice	r	0.588		0.121
	p-value	<0.001**		0.048*
	N	270		270
Total score of attitude	r	0.308	0.121	
	p-value	0.027*	0.048*	
	N	270	270	

Table (2) shows Correlations matrix between total scores of knowledge's, total scores of practices, and total scores of attitudes regarding testicular self-examination and indicated that, there was highly statistical significant correlation between total score of knowledge and total score of practice with p value 0.001, also there is statistically significant correlation with total score of attitude and p value is 0.027.

Regarding correlations between total score of practice and total score of knowledge, there is highly statistically significant correlation with p value 0.001. On the other hand, there is statistically significant correlation between total score of practice and total score of attitudes with p value 0.048. As regard to correlation between total score of attitudes and total score of knowledge, there statistically significant correlation with p value 0.027. On the other hand, there was statistically significant correlation between total score of attitudes and total score of practice with p value 0.048.

Discussion:

Testicular cancer occurs rarely in the general population; however, it is the most common type of malign tumor in young males (age between 15 and 35) ***(Albers et al., 2017; American Cancer Society, 2018).*** The current study was formulated to assess the adult male awareness regarding testicular self-examination for early detection of testicular cancer.

The rising increase of testicular cancer (TC), which tends to take an aggressive course in developing countries can be detected by testicular self-examination (TSE). It is a screening technique that involves the inspection and palpation of the testis for early detection of TC ***(Salihu et al., 2021).*** The current study showed that more than two thirds of the study subjects had satisfactory level of knowledge regarding testicular self-examination. This may be due to the majority of the study subjects have high level of education. Teaching TSE remains a considerable task for health education and healthcare providers, especially with regard to resolving the fears that hinder men from practicing it.

This result was in harmony with the result of ***Pietrzyk et al. (2020)*** who studied young males' knowledge and awareness of TC and found it highly relevant, as the rate of the TC incidence exhibits a constant rising tendency worldwide. Increasing awareness of risk factors, TC signs and symptoms, and methods for early diagnosis in young males is a significant part of the strategy for a decrease in TC morbidity and mortality. They used a self-designed questionnaire to compare the knowledge and attitudes of high school and university medical students in order to forward the information about possible knowledge gaps to the appropriate authority and health policy-makers. Moreover, they analyzed the awareness of medical students at remarkably different levels of medical education to identify inadequacies in their knowledge of TC for development of better education curricula

They also reported that, the percentage of participants that had heard about testicular cancer was quite satisfying (70%-100%); nevertheless, the knowledge of the epidemiology and the awareness of risk factors responsible for the TC were low; only 30–50% of the respondents recognized these issues properly. They added that the analysis of the

literature showed that young males' knowledge of TC varied. ***Nagaoka et al. (2021)*** presented data suggesting that even 50% of high school male respondents have never heard about TC.

This result was inconsistent with the results of ***Sayar et al. (2021)*** who determine the awareness, beliefs and behaviors of male university students studying in a department that is not related to health. In this research, it was found the majority (81.6%) had not heard of TSE before, and 11.6% received information about TSE. In a study conducted by Ramim et al. (2014) with 280 students studying in health sciences in Iran, it was reported that 90% of them had never heard of TSE before. In the study of Yurt et al. (2020), it was determined that 88.3% of university students did not hear about TSE, the vast majority of students were not knowledgeable about testicular cancer. In another study by Pour and Cam**,** 72.4% of male nursing students studying university had not heard of TSE before. ***Pour A et al. (2018),*** research determined that 5.9% of university students received information about TSE.

The data from another study by ***Alaradi & Almuqamam (2020).*** suggested that most respondents had never heard of TC or TSE and had limited knowledge of common symptoms. The very few that were knowledgeable of TC/TSE appeared to be those that had some form of testicular anomaly. The results of a study conducted by ***Alexis et al. (2020)*** provide a basis for structuring an intervention aimed at improving TSE awareness and compliance and confirm recently published evidence of a severe lack of knowledge about TC among the most at-risk individuals. It was discussed that although (90.66%) respondents reported visiting healthcare facilities on a regular basis, most of them were not given instruction on TSE.

The suboptimal knowledge of TSE practices in this population suggests that men's health clinics and educational organizations may be more effective in delivering the message than regular healthcare facilities. They completed that, Unfortunately, such clinics and forums are not available to all, and where they do exist, they are present in limited numbers, and teaching is not prioritized. This finding is consistent with other research on early detection of cancer and TSE that shows that knowledge is an important prerequisite for a positive intention and behavior. The knowledge deficit regarding TC found in their study may also explain the very limited importance that respondents attached to TSE. Because most subjects had never heard of TC, they obviously had no knowledge of TSE ***(Naher et al., 2021).***

Studies conducted in different world regions have highlighted a relatively low level of young males 'awareness of TC, epidemiological facts, and risk factors, as well as signs and symptoms ***(Stawińska-Witoszyńska et al., 2016; Roy & Casson, 2017).*** Awareness of epidemiology and perception of risks are very important, as they are usually associated with motivation to reduce a possible danger and reinforce changes in behavior. They can also stimulate actions towards direct prevention and control, i.e. self-examination. Equally important, the consciousness that TC is a curable cancer should encourage young males to attend primary care service at an earlier stage, potentially improving the odds of survival and the financial aspect of health care related to more cost-effective treatment.

Pietrzyk et al. (2020) showed inadequate knowledge of the well-known risk factors for testicular cancer. Regrettably, a high percentage of the participants defined the TC risk factors incorrectly, Similarly, A low level of awareness of young age as a risk factor for TC was revealed, which is particularly disappointing. Various reports have indicated that young male students are unaware of being in the age risk group for TC, which is the most common neoplasm in 15–35-year age group ***(Braga et al., 2017; Roy & Casson, 2017)*** Presumably, young men are not very conscious of cancer and their perception of malignant pathologies is associated only with older people.

Cronholm defined that participant displayed no clear understanding of the signs and symptoms for TC. There was a high recognition of i.e. palpable mass in the testicle, induration of the testicle, or scrotum enlargement. Regrettably, the other crucial TC symptoms were recognized less often. Surveys conducted by various researchers also show that the percentage of correct answers concerning the early symptoms of TC fluctuates and seems to be unsatisfactory. ***Braga et al. (2017)*** found that only about 42% of Portuguese male respondents indicated to the most common TC signs and symptoms correctly. They added that. In general, the literature reports indicate that the state of knowledge and awareness related to

testicular self-examination in the young male population is insufficient.

It is recommended that once in month self-examination of scrotum may also lead to early detection of various testicular anomalies other than cancer like benign tumors, spermatocele, varicoceles and other anomalies, some of which may affect fertility. The current study displayed that the majority of the study subjects had satisfied level of practices toward testicular self-examination. This may be due to reasons such as they can make the examination, not being afraid of the examination result, and they do not feel guilty about the examination were also observed. Also, they can notice any changes go to your health care provider.

This finding was consistent with the finding of Ugboma & Aburoma who noticed that remarkably, despite the very low knowledge of TSE prior to the study, a large proportion of the respondents (83.33%) showed willingness to practice TSE as instructed. In addition, during the course of this investigation, the intervention tools resulted in 15 men reporting the detection of at least one testicular abnormality (e.g., cryptorchidism, orchitis, epididymitis, or testicular lump). Teaching TSE remains a considerable task for health education and healthcare providers, especially with regard to resolving the fears that hinder men from practicing it. This finding is consistent with other research on early detection of cancer and TSE that shows that knowledge is an important prerequisite for a positive intention and behavior. Similar to, the upper mentioned study, a study made by Pinar also 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 ***(Saab, M. 2018)***.

This result was incongruent with the results another research which conducted by **Sayar et al. (2021)**, it was found that 6.5% of the students practiced TSE regularly, When the literature is examined; It was seen that there were results similar to this finding. In the study of ***Gutema et al. (2018)***, of the students 11.8% practiced TSE in the last 12 months and nobody was practiced TSE regularly. In their study, ***Ustundag. (2019)*** found that young men were 8.8% who practiced TSE at least once in their lifetime. In the study of ***Yurt et al. (2020)***, it was determined that, the vast majority of students were not knowledgeable about testicular cancer and did not know how to practice TSE. In another study by ***Seher et al. (2020)***, 89.4% did not know how to practice it, 26.2% were practicing TSE and 90.6% did not have any training related to TSE. ***Roy & Casson. (2017)***, research it was determined that 17.37% practiced TSE. In the study of ***Alexis et al. (2020)***, only 11.6% of them were practicing TSE. According to the literature and research results, it can be concluded that TSE is not widely known and applied among young men.

The reason why more than half of the students (57.7%) did not practice TSE was because they did not know how to perform the examination. Among the reasons for not practicing TSE, reasons such as ignoring the examination, being afraid of the examination result, and feeling guilty about the examination were also observed. Similar to research findings, also in the literature, it was determined that students did not know how to practice TSE, fear that unwanted/bad consequences may occur, feel guilty about TSE and feel embarrassed ***(Cossis K et al., 2021).***

In a study by ***Pour et al. (2018),*** it was determined that the vast majority of those with a family history of cancer applied to the cancer early screening diagnosis and training center. These results suggest that the presence of cancer in the family leads individuals to lead their lives with greater sensitivity and change their perspective on cancer. For this reason, those with testicular cancer in their family feel themselves at risk, and these increases do of caring and performing count health behaviors such as TSE.

In a research conducted by ***Seher et al. (2020),*** 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 ***Sener et al. (2018).*** 94% of the students did not practice TSE because they did not know how to do it. In the study of ***Avci & Altinel. (2018),*** 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. 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.

It is very important for individuals to be conscious of TC and TSE, in order to diagnose TC as early as possible. Ongoing the study results, the present study showed that more than half of the study subjects had negative attitude toward testicular self-examination. This may be due to they not feel comfortable during a testicular self-exam. Also, they may consider testicular self-exam is a waste of time.

This results partially, in harmony with the results of ***Ustundag (2019)*** who describes the role of individual beliefs and values that determine preventive health care attitude. The scores in the study of ***Ustundag (2019)*** were identified at a medium level in the attitude toward TSE. Studies conducted in Turkey determined the level of perceived sensitivity regarding an existing problematic situation should be high in order to change and maintain relevant attitude to fix it ***Pinar et al. (2011).*** Two studies conducted in Turkey reported that students had a low level of perceived sensitivity ***(Avci & Altinel, 2018; Pour et al., 2018).***

The perceived susceptibility/ seriousness refers to the perceived personal risks of getting TC and their attitude toward TSE. This result identifies that the level of students' individual perceived threat of TC is above the average, indicating that they can develop behaviors and attitude for avoiding from TC. As a result, students can develop behaviors for avoiding from TC through knowledge on TSE. According to **Guven, S. D. (2020),** it is obvious that the students have hesitations on the benefits of TSE, therefore they need to be informed about the importance of TSE in the early diagnosis of TC. The perceived barrier refers to the perceived barriers regarding TSE.

The perceived self-efficacy/ confidence refers to the perceived individual competence of performing TSE and the attitude of an individual in being successful when he attempts to engage in a behavior. Self-efficacy/ confidence includes self-confidence, determination, and willingness to engage in a specific behavior in order to achieve expected results. Therefore, self-efficacy/confidence plays an important role in initiating a behavior change and maintaining a behavior ***(Weggemans et al., 2017).*** A high level of self-efficacy/confidence has a motivating effect for engaging in a health behavior and attitude. This result suggests that students' motivation for performing TSE is low and therefore they have inadequate motivation for engaging in TSE behaviors.

Sayar et al. (2021) displayed that mean scores of the TSE seriousness subscale of those with testicular cancer in their family were found to be higher than those without testicular cancer in their family. ***Rovito et al. (2018),*** determined that those with testicular cancer in their family feel themselves at risk, and these increases do of caring and performing count health behaviors such as TSE. ***Park et al. (2018)*** showed that high scores of the informants show that getting information increases the motivation of individuals to perform healthy living behaviors. They added that 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.

Regarding to the correlations between the study subjects socio-demographic and adult men knowledge, practice and attitude toward testicular self-examination, study findings revealed that there was statistically significant correlation between adult men age level of knowledge and educational level, occupation, and place of residence, while there was no significant correlation between adult men marital status and monthly outcome and their knowledge level regarding testicular self-examination. Regarding age in this study, there was highly significant correlation between age and level of knowledge of adult men regarding TSE and this may be related to the accumulation of knowledge over years and the friction with different types and sources of knowledge.

This finding is compatible with the findings of ***Pietrzyk et al., (2020)*** who reported significant correlation between students age and their level of knowledge in the study carried out in Poland and included high education settings. On the other hand, ***Ibitoye et al. (2022)*** reported no significant relation between age of males and their level of knowledge regarding testicular self-examination. As regard to educational level, in the

current study, there is statistically significant correlation between adult males' educational level and their level of knowledge regarding TSE, this may be related to the fact that the higher level of education builds high capacity of knowledge and open minds toward getting knowledge about own body functions, organs and general health condition.

As regard to social and marital status and adult males' knowledge level this study findings indicated that there is no statistically significant relation between marital status and level of knowledge regarding TSE. This may be related to other factors influence the knowledge level rather than marital status that has a little effect on the male level of knowledge. In addition, this study findings indicated that there no significant relation between monthly income and the adult male knowledge level regarding TSE. Regarding the place of residence, the study findings revealed that there is statistically significant correlation between adult males' residence place and their level of knowledge regarding TSE. This may be related to the availability of multiple settings for health education and health services that help them much gain knowledge related to different areas of man health. On the other hand, adult men living in country or countryside have limited access to healthcare services and health education compared to their peers in cities.

As regard to adult male practice related to TSE and its correlations with sociodemographic data of the studied subjects, this study results indicated that, there is statistically significant correlation between the age of adult male and their practice regarding TSE. This may be due to having more knowledge and experience related to different health issues. In addition, there is significant correlation between educational level and the level of practice regarding TSE and this related to higher mentality and seeking higher level of health welfare and caring with own health. According to the current study results there is statistically significant correlation between adult men level of practice regarding TSE and the residence place. This may be due to some sort of shyness to talk about sexual health and reproductive health in country and countryside areas compared to openness to talk about sexual and reproductive health for both males and females.

Relation between level of studied adult male attitude regarding testicular self-examination according to their socio-demographic data this study findings revealed that, there was a statistically significant correlation between age, educational level and occupation and the adult attitude toward TSE. This may be related to the fact that older men almost have more maturity and higher level of sense of responsibility toward their own health generally and sexual reproductive health subsequently.

Regarding correlation between knowledge level, practice level and attitude the current study results suggested that there is significant relation between the three items and the correlation is positive. It is found that the adult males with higher knowledge have higher level of practice and positive attitude when compared to those with lower level of knowledge this may be due to the fact that knowledge is the base from which other practices and attitude comes from and knowledge leads person to search and learn about important and related issues especially when it is related to own health or wellbeing.

This finding is compatible with the results reported by ***Ibitoye et al., (2022)*** that indicated positive correlation between level of knowledge of adult men regarding TSE and their practice and attitude. relevant finding in this study is that the lack of knowledge on TSE is a major factor mitigating the practice of TSE. Similar findings were reported in Turkey and Nigeria among high school and tertiary students who had inadequate education. A possible explanation for these findings could largely be attributed to the lack of practical understanding of TSE in low level of knowledge adult men.

Conclusion:

The current found that more than two thirds of adult male had satisfactory level of total knowledge regarding testicular self-examination. Also, the majority of them had satisfactory level of practice toward testicular self-examination whereas more than half of them had negative attitude toward testicular self-examination for early detection of testicular cancer. It was reported that a statistically significant correlation between total score of knowledge and practice and attitude regarding testicular self-examination.

Recommendations:

Based on the current study finding the following recommendations were proposed:

- Creating effective National Public Awareness Campaigns, interactive social media and internet tools to educate young people who are most at risk.
- Develop audiovisuals and pamphlets as supportive materials.
- Developing TC and TSE awareness educational programs as part of School Health curricula that includes health belief scale assessment to do TSE following information provision. This could be done by trained school nurses, teachers or physical education instructors..
- Study specifically targeting populations for at-risk age bracket of 16–45 years will provide a more focused target population.
- Implement education campaigns, awareness programs, and testicular self-examination trainings among high-risk male groups.

References:

Alaradi, M., & Almuqamam, A. (2020). Awareness of testicular cancer and testicular self-examination among men in Bahrain. Asian Pacific Journal of Cancer Care, 5(4), 259-263.

Albers P, Albrecht W, Algaba F, Bokemeyer C, CohnCedermark G, Fizazi K., Horwich A, Laguna MP, Nicolai N, Oldenburg J. (2017) Guidelines on testicular cancer. European Association of Urology.

Alexis, O., Adeleye, A. O., & Worsley, A. J. (2020). Men's experiences of surviving testicular cancer: an integrated literature review. Journal of Cancer Survivorship, 14(3), 284-293.

American Cancer Society. (2018) What are the key statistics about testicular cancer? How is testicular cancer diagnosed? Retrieved from http://www.cancer.org/cancer/testicularcancer/ deta iledguide/testicular-cancer-keystatistic.

American journal of men's health (2019). testicular cancer and self-examination.

Asgar Pour, H., Kunter, D., Norouzzadeh, R., & Heidari, M. R. (2018). The effect of testicular self-examination education on knowledge, performance, and health beliefs of Turkish men. Journal of Cancer Education, 33(2), 398-403.

Avci, I. A., & Altinel, B. (2018). The validity and reliability of health belief scale for testicular cancer self-examination. American Journal of Men's Health, 12(3), 531-538.

Braga, I. C., Cabral, J., Louro, N., & de Carvalho, J. L. (2017). Testicular cancer awareness and knowledge: is it the same? Exploratory study in a mixed-gender population. Journal of Cancer Education, 32(1), 105-111.

Çaman, Ö. K., Bilir, N., Özcebe, H. (2014). Ailede kanser öyküsü ve algılanan kanser riski, kanserden korunma davranışları ile ilişkili mi?. Fırat Med J, 19(2), 95-100.

Doğan, U., Atay, E., Öztürk, M., Yurdagül, G. (2017). Öğrencilerin kendi kendine testis muayenesi ile ilgili yaklaşımları. Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi, 5(3): 39-45.

Doğan, U., Atay, E., Öztürk, M., Yurdagül, G. (2017). Öğrencilerin kendi kendine testis muayenesi ile ilgili yaklaşımları. Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi, 5(3): 39-45.

Ferlay J, Colombet M, Bray F. (2018). Cancer Incidence in Fiv Continents, CI5plus: IARC CancerBase No. 9. Lyon, France: International Agency for Research on Cancer.

Ibitoye, B. M., Suleiman, E. K., & Ampofo, A. G. (2022). The awareness and practice of testicular self-examination among male undergraduates in Nigeria: a descriptive cross-sectional study. BMC Medical Education, 22(1), 1-6.

Nagaoka, T., Okayama, M., & Sugisaki, K. (2022). Impact of cancer education class for cancer awareness and knowledge among Japanese junior high school students. Niigata Journal of Health and Welfare, 22(1), 51-62.

Naher, S. K., Rincones, O., Smith, A. B., & Stockler, M. R. (2021). Patient-Reported Outcomes Associated with Treatments for Testicular Cancer: A Systematic.

Pietrzyk, Ł., Denisow-Pietrzyk, M., Czeczelewski, M., & Ślizień-Kuczapski, K. (2020). Does cancer education matter? Report

on testicular cancer knowledge, awareness, and self-examination practice among young Polish men.

Pour HA, Kunter D, Norouzzadeh R, Heidari MR. (2018). The Effect of Testicular Self-Examination Education on Knowledge, Performance, and Health Beliefs of Turkish Men. Journal of Cancer Education, 33(2), 398-403.

Rovito, M. J., Leone, J. E., & Cavayero, C. T. (2018). "Off-label" usage of testicular self-examination (TSE): benefits beyond cancer detection. American Journal of Men's Health, 12(3), 505-513.

Roy RK, Casson K. (2017). Attitudes Toward Testicular Cancer and Self-Examination Among Northern Irish Males. Am J Mens Health;11:253–61.

Saab, M. M., Landers, M., & Hegarty, J. (2018). Males' awareness of benign testicular disorders: an integrative review. American journal of men's health, 12(3), 556-566.

Salihu, A. K., Farooq, M. A., Sani, M. S., Yunusa, A., Attahir, I., & Hamza, K. (2021). Testicular Self Examination among Undergraduate Students in a Nigerian Public University. KASU Journal of Health Professions, (1).

Sayar, S., Erdem, M., Göktaş, A., Akalin, A., Çoban, A., Kübra, A. V. C. I., & Ilhan, O.(2021). Examining of University Students' Awareness, Beliefs and Practices About Testicular Self Examination. KTO Karatay Üniversitesi Sağlık Bilimleri Dergisi, 2(1), 9-19.

Seher, Y. U. R. T., Sağlam, R., & Kadioğlu, H. (2020). Knowledge, beliefs and practices of university students regarding testicular cancer and testicular self-examination. Clinical and Experimental Health Sciences, 10(3), 235-240.

Sener A, Aydoğan A, Cebi M, Cınarlı T, Koc Z (2018) The relationship between healthy lifestyle behaviors and body mass indexes of paramedic students. Journal of International Social Research 11(56):1143-1149.

Stawińska-Witoszyńska B, Wojtyła-Buciora P, Więckowska B. (2016). Malignant testicular tumour incidence and mortality trends. Contemp Oncol 20:58.

Ustundag, H. (2019). Assessment of the Testicular Self-Examination Knowledge and Health Belief Model of Health Sciences Students. International Journal of Caring Sciences, 12(2), 972.

Uyar, M., Yıldırım, E. N., Şahin, T. K. (2019). Evaluation of testicular self-examination technique and testis cancer knowledge levels of final-year medical students. Bull Urooncol, 18:10-13.

Weggemans, M. M., Custers, E. J., & ten Cate, O. T. J. (2017). Unprepared retesting of first year knowledge: how much do second year medical students remember?. Medical Science Educator, 27(4), 597-605.

Yurt, S., Sağlam, R., Kadıoğlu, H. (2020). Knowledge, beliefs and practices of university students regarding testicular cancer and testicular self-examination. Clinical and Experimental Health Sciences. 10: 235-240.

Zawam, H. H., Selim, A., Osman, N. O., & Edesa, W. (2021). Factors Influencing the Response Rate and Survival of Testicular Germ Cell Tumors: A Single Institution Experience from Egypt. Research in Oncology, 17(2), 66-72.