



## Knowledge and Awareness on Testicular Cancer and Practice of Testicular Self-Examination among Male Undergraduate Students of Kulliyah of Allied Health Sciences, IIUM Kuantan

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### Abstract:

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**Introduction:** Testicular cancer (TC) commonly occurs among young men aged 20 to 34 years old. However, many young men are not aware of the disease which could cause the disease to metastasize. Early detection of TC is crucial to decrease fatality due to late diagnosis of the disease. Testicular self-examination (TSE) is the easiest and cheapest method that can be performed by oneself whether one is suffering from TC. Currently, the awareness of TC and the practice of TSE is relatively low in Malaysia. **Objective/aim:** This cross-sectional study aimed to ascertain the level of knowledge, awareness and practice of TC and TSE among undergraduate students at the International Islamic University Malaysia (IIUM). **Materials and methods:** Eighty-seven male students from the Kulliyah of Allied Health Sciences were randomly selected to participate in the study. A set of questionnaires was developed and the Cronbach's alpha obtained was 0.7. A Google Form was used to obtain the data which was then analysed using SPSS Version 26. Spearman rho correlation was utilized to determine the correlations between the level of knowledge of TC and level of awareness of TC as well as the practice of TSE. The statistical level of significance was set at  $p < 0.05$ . **Results:** The study indicated that most of the respondents have moderate knowledge and awareness of TC. However, most did not perform TSE perceiving that they were not susceptible to TC. The study indicated that knowledge, awareness and practice of TSE are correlated ( $p$ -value  $< 0.05$ ), although the correlation was weak ( $r$ -value  $< 0.5$ ). **Conclusion:** TC screening should be made compulsory as a routine medical health check-up to aid in early detection of TC and decrease fatality due to late diagnosis.

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**Keywords:** Testicular cancer; Testicular self-examination; Knowledge; Awareness; Practice



## Introduction:

Testicular cancer (TC) is a rare cancer globally accounting for 1% to 2% of all neoplasms in men aged between 15 and 39 (Peltzer & Pengpid, 2015; Park et al., 2018). TC occurrences have shown an increasing trend over the last 30 to 40 years mainly involving Caucasian populations (Park et al, 2018). TC incidence among young men aged 15 to 40 years in the Nordic region were reported to be more than 10 times higher compared to African and Asian men (Park et al, 2018). In Malaysia, 496 TC cases accounted for 1.1% of all cancer cases registered with the National Cancer Registry between 2007 to 2011 (Malaysia National Cancer Registry, 2016). Additionally, it was reported that TC is the third most common cancer accounting for 12.4% of all neoplasms among 15 to 24-year-old males (Malaysia National Cancer Registry, 2019). Even though the incidence of TC is quite low, recent studies have revealed low awareness and practice of testicular self-examination (TSE) among university students (Shallwani et al., 2010; Peltzer & Pengpid, 2015).

Early detection of TC is crucial to decrease fatality due to late diagnosis. Unfortunately, many men delay consulting a physician even though they have the symptoms probably due to lack of awareness of the disease or self-denial (Altunkurek, 2019). Knowledge on the early warning signs can help trigger an individual to seek immediate medical attention which can increase the survival rate (Sacks et al., 2013). TSE is a screening technique for early TC, where a man checks his testicles and scrotum for potential lumps or swelling carried out daily from puberty (Atuhaire et al., 2019).

Nevertheless, most young men are not aware that they are vulnerable to TC and as such, they do not practice TSE (Peltzer & Pengpid, 2015). A study conducted at a university in Ankara, Turkey reported that only one in four male students performed TSE every month. The most common reasons for not doing TSE were mostly "not seen as important" and "not knowing" (Ugurlu et al., 2011). Another study carried out among Nigerian men revealed poor awareness of TC as a major factor in the lack of TSE practices. This could be because they have never been taught or heard of this disease (Ugboma & Aburoma, 2011). Similarly, low level of TSE practice was also reported in a study in Uganda where only 23.6% of secondary school students regularly performed TSE (Atuhaire et al., 2019).

Even though TC has been on the rise as reported in many western countries (Peltzer & Pengpid, 2015), research on TC in Malaysia with regards to TC knowledge, awareness and TSE practice, is limited. Thus, the need for research on TC

is much needed in light of the increasing trend of TC cases worldwide. This study seeks to ascertain the level of knowledge, awareness of TC and TSE practice among undergraduate students at the International Islamic University Malaysia (IIUM).

## Materials and Methods:

### Study design and population

This cross-sectional study employed a self-administered questionnaire to obtain the data. This study was conducted among the first, second, third- and fourth-year undergraduate students at the Kulliyah of Allied Health Sciences (KAHS), IIUM, Kuantan from February to April 2020. The inclusion criteria for this study were Malaysian male students aged 20 to 25 years from all programs in KAHS. The respondents must be able to read and write in either Bahasa Malaysia or English. Using Slovin's formula at 95% confidence level and a margin error of 5%, a sample size of 105 students was determined and the questionnaire was distributed via Google Form.

### Questionnaire development

A questionnaire consisting of close-ended multiple-choice items was developed and modified from questionnaires obtained from previous studies (Barling & Lehmann, 1999; Sacks et al., 2013; Uyar et al., 2019; Noor, 2019) to determine the population's knowledge and awareness on TC and their practice on TSE. The questionnaire, developed in English and Bahasa Malaysia, consisted of four parts: demographic data, knowledge of TC, awareness on TC and TSE practice.

### Pilot study

The pilot study was conducted on 50 subjects who met the inclusion criteria using Google Form. The data obtained was analysed for internal consistency using IBM SPSS Version 26. The initial result of the Cronbach's alpha was 0.593. A total of eight items with low inter correlation value were removed. The questions were further refined by adding an "unsure" option for knowledge and awareness instead of only "yes" and "no". The Cronbach's alpha after deletion of the low inter correlated items was 0.704.

### Data analysis

The data from the questionnaire were analysed using IBM SPSS Version 26. Descriptive data were used to describe the demographic characteristics of the

participants and Spearman rho correlation was utilized to determine the correlations between the knowledge level of TC and the awareness of TC as well as the practice of TSE. The statistical level of significance was set at  $p < 0.05$ .

**Ethical consideration**

Before answering the questionnaire, the respondents were given the study information sheet to read and their consent obtained. The identity of the respondents in this study was kept private and confidential. Their identity and information were also not included in any report or publication. The study was approved by the Kulliyyah Postgraduate and Research Committee (KPGRC) (KAHS 133). Bulk IREC approval reference number IIUM/504/14/11/2/IREC2020-KAHS (DDIR) was obtained before the study was conducted.

**Result:**

**Demographic data**

Out of the 105 students from KAHS that were invited to participate in the study, 87 students consented (82.9% response rate) to participate in the survey. Most respondents (23%) were from the Department of Biomedical Sciences whilst the least number of respondents (9.2%) were from the Department of Audiology and Speech Therapy. Most of the respondents (28.7%) were Year 1 students. Table 1 shows the demographic characteristics of the respondents.

**Knowledge of testicular cancer**

The first section of the questionnaire is on knowledge of TC with three options given; true, false or unsure. The overall knowledge of the participants was classified into three levels using Bloom's cut-off point; high if the score is between 80 and 100% (8-10 points), moderate if the score is between 60 and 79% (6-7 points) and low if the score is less than 60% (< 5 points) (Seid & Hussen, 2018). The results indicated that most respondents (47.1%) had a moderate level of TC knowledge whilst 29.9% of respondents indicated having a low level of TC knowledge. However, 23% of respondents had a high-level of TC knowledge. The results obtained are presented in Table 2 and Figure 1.

**Awareness of testicular cancer**

The respondents have three options to choose either yes, no or unsure. For the score, yes answers were

given a score of 1 while no and unsure answers were not awarded any score. The overall level of awareness was categorized using modified Bloom's cut-off point; high if the score was 80 to 100% (5-6 points), moderate if the score was 50 to 79% (3-4 points) and low if the score was less than 50% (< 3 points). Most respondents (59.8%) had a moderate level while 27.6% of respondents had a low level of awareness. 12.6% of respondents had a high level of awareness of TC. Table 3 shows the questions and answer frequencies and Figure 2 tabulates the total score obtained into three levels of awareness.

Table 1: Demographic characteristics of the

Characteristic	Frequency	Percentage (%)	
Department	Diagnostic Imaging and Radiotherapy	16	18.4
	Audiology and Speech Therapy	8	9.2
		11	12.6
		15	17.2
		20	23.0
		17	19.5
	Nutritional Science		
	Physical Rehabilitation Science		
	Biomedical Science		
	Optometry and Visual Science		
Year of study	1	25	28.7
	2	20	23.0
	3	17	19.5
	4	25	28.7
Age	20	24	27.6
	21	15	17.3
	22	9	10.3
	23	17	19.5
	24	17	19.5
	25	5	5.8

respondents (n=87)

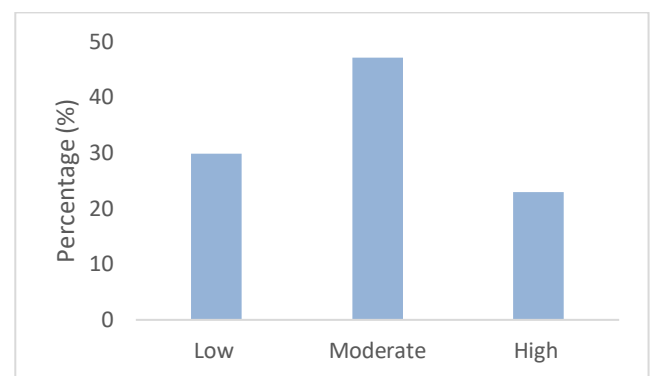


Figure 1: Respondents level of knowledge on TC

Table 2: Respondents knowledge on TC

No	Questions	True Frequency (%)	False Frequency (%)	Unsure Frequency (%)
Q1	Older men are more likely to get testicular cancer than younger men.	43 (49.4)	<b>12 (13.8)</b>	32 (36.8)
Q2	If testicular cancer is found in one testicle, the doctor will remove both testicles.	10 (11.5)	<b>41 (47.1)</b>	36 (41.4)
Q3	Family history increases your risk of getting testicular cancer.	<b>75 (86.2)</b>	1 (1.2)	11 (12.6)
Q4	Getting older increases your risk of getting testicular cancer.	<b>56 (64.4)</b>	9 (10.3)	22 (25.3)
Q5	An undescended testicle in childhood increases your risk of getting testicular cancer.	<b>25 (28.7)</b>	14 (16.1)	48 (55.2)
Q6	X- radiation (Radiotherapy) can be used for testicular cancer.	<b>40 (46.0)</b>	7 (8.0)	40 (46.0)
Q7	Surgical removal of the testicle that contains the cancer is an option for the treatment of testicular cancer.	<b>64 (73.6)</b>	3 (3.4)	20 (23.0)
Q8a	Below are signs and symptoms related to testicular cancer (Palpable mass/tumour).	<b>75 (86.2)</b>	12 (13.8)	0 (0.0)
Q8b	Below are signs and symptoms related to testicular cancer (Swelling in testes).	<b>80 (92.0)</b>	7 (8.0)	0 (0.0)
Q8c	Below are signs and symptoms related to testicular cancer (Pain or heaviness in the groin).	<b>73 (84.0)</b>	14 (16.0)	0 (0.0)

(\*\*Correct answer is in bold)

Table 3: Respondents awareness of TC

No	Questions	Yes Frequency (%)	No Frequency (%)	Unsure Frequency (%)
Q1	Are you aware of the screening method (TSE) that can be utilized by oneself for detecting testicular cancer?	47 (54.0)	27 (31.0)	13 (15.0)
Q2	Are you aware of the types of treatment that can be utilized for testicular cancer?	16 (18.5)	50 (57.5)	21 (0.0)
Q3	Are you aware that screening can help in the early diagnosis of testicular cancer?	80 (92.0)	5 (5.8)	2 (2.2)
Q4	Are you aware that early diagnosis will improve the outcome of treatment?	83 (95.4)	3 (3.5)	1 (1.1)
Q5	Are you aware that testicular cancer is most common in young men aged 20-34?	11 (12.6)	50 (57.5)	26 (29.9)
Q6	Are you aware that ultrasound can be used to detect testicular cancer?	42 (48.3)	22 (25.3)	23 (26.4)

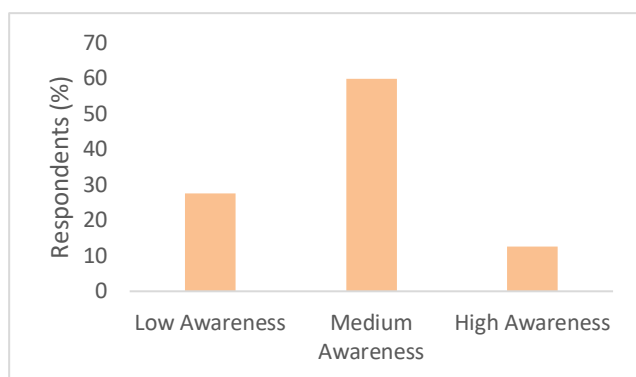


Figure 2: Respondents level of awareness on TC

### The practice of testicular self-examination

The final section of the questionnaire is on the practice of TSE for early TC screening. The full score for this section is 18. The respondents' overall practice score was then categorized using original Bloom's cut-off point, as high if the score was between 80 and 100% (score of 15–18), moderate if the score was between 60

and 79% (score of 11–14, and poor if the score was less than 60% (score of < 10). The majority (57.5%) of respondents have a low level, 33.3% of respondents have a moderate level and 9.2% of the respondents were found to have a high level of TSE practice. Table 4 and Figure 3 show the results obtained for this section.

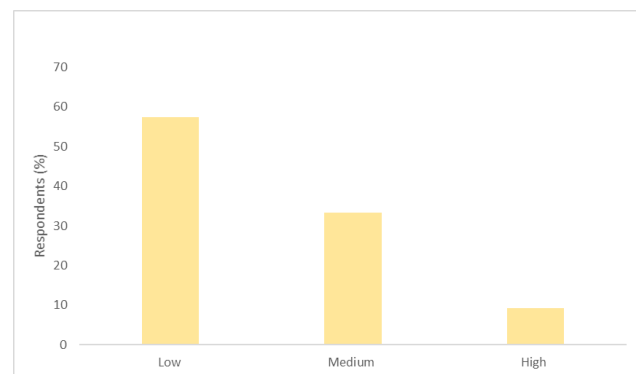


Table 4: Respondents practice of TSE

No	Questions	Yes Frequency (%)	No Frequency (%)
Q1	Have you ever done testicular self-examination?	24 (27.6)	63 (72.4)
Q2	Do you know how to perform testicular self-examination?	21 (24.1)	66 (75.9)
Q3a	The correct method to perform testicular self-examination is [Submerge testes in water and see if they float]	11 (12.6)	76 (87.4)
Q3b	The correct method to perform testicular self-examination is [Palpate (Feel) both testes for unusual lump]	83 (95.4)	4 (4.6)
Q3c	The correct method to perform testicular self-examination is [Smell testes for unusual smell]	17 (19.5)	70 (80.5)
Q3d	The correct method to perform testicular self-examination is [Examine by rolling the testicle between thumb and fingers]	67 (77.0)	20 (23.0)
Q3e	The correct method to perform testicular self-examination is [Flick testes for colour change]	11 (12.6)	76 (87.4)
Q4a	How often do you think a man should have a testicular self-examination? [Once a month]	23 (26.4)	64 (73.6)
Q4b	How often do you think a man should have a testicular self-examination? [Once in two months]	14 (16.0)	73 (84.0)
Q4c	How often do you think a man should have a testicular self-examination? [Three to five times a year]	7 (8.0)	80 (92.0)
Q4d	How often do you think a man should have a testicular self-examination? [Once or twice a year]	23 (26.4)	64 (73.6)
Q4e	How often do you think a man should have a testicular self-examination? [I don't know]	20 (23.0)	67 (77.0)



Q5a	What are your reasons for not practicing testicular self-examination? [Not knowing]	72 (82.8)	15 (17.2)
Q5b	What are your reasons for not practicing testicular self-examination? [Not seen as important]	19 (21.8)	68 (78.2)
Q5c	What are your reasons for not practicing testicular self-examination? [Afraid of having TC]	20 (23.0)	67 (77.0)
Q5d	What are your reasons for not practicing testicular self-examination? [Not aware of my testicular health]	57 (65.5)	30 (34.5)
Q5e	What are your reasons for not practicing testicular self-examination? [I don't care]	12 (13.8)	75 (86.2)
Q6a	When will you go to seek the doctor once you detect abnormalities in your testicle? [Immediately]	51 (58.6)	36 (41.4)
Q6b	When will you go to seek the doctor once you detect abnormalities in your testicle? [Next day]	21 (24.1)	66 (75.9)
Q6c	When will you go to seek the doctor once you detect abnormalities in your testicle? [Next week]	5 (5.7)	82 (94.3)
Q6d	When will you go to seek the doctor once you detect abnormalities in your testicle? [Next month]	1 (1.1)	86 (98.1)
Q6e	When will you go to seek the doctor once you detect abnormalities in your testicle? [Wait until it becomes worse]	7 (8.0)	80 (92.0)
Q6f	When will you go to seek the doctor once you detect abnormalities in your testicle? [I will do nothing]	2 (2.3)	85 (97.7)

**Test of normality**

Shapiro-Wilk test was used for the test of normality. The *p*-value of the Shapiro-Wilk test on knowledge, awareness and practice score were all below 0.05 indicating that the data is not normally distributed and as such a non-parametric test should be used. The result of the test of normality is as shown in Table 5.

Table 5: Tests of normality (Shapiro-Wilk)

	Statistic	df	Sig.
Practice Score	.970	87	<b>.043</b>
Knowledge Score	.955	87	<b>.005</b>
Awareness Score	.924	87	<b>.000</b>

**Correlations between knowledge, awareness and practice of TC and TSE**

Spearman rho test was utilized for the correlation analysis. A *p*-value of less than 0.05 indicates both variables are significantly correlated.

Table 6: Spearman's rho correlations

Items	The correlation coefficient, <i>r</i>	<i>p</i> -value
Knowledge-awareness	.353	.001
Knowledge-practice	.278	.009
Awareness-practice	.253	.018

Based on the result above, the *p*-value between knowledge of TC and practice of TSE is 0.009 indicating that there is a significant correlation between knowledge of TC and the practice of TSE among respondents. However, the *r*-value of 0.278 indicated that the correlation between knowledge of TC and the practice of TSE is weak. Additionally, the *p*-value between awareness of TC and practice of TSE is 0.018. This indicates that there is a significant correlation between awareness of TC and the practice of TSE among respondents. However, the *r*-value of 0.253, indicating that the correlation is weak.

**Discussion:**

The findings of this study indicated that most male students in KAHS IIUM have moderate knowledge and awareness of TC. A relationship existed between knowledge and awareness as awareness is derived from the ability to directly know and perceive which is linked to knowledge. Findings from studies conducted among students in a secondary school in Uganda and university students in Turkey reflected that there is no association between the level of knowledge of TC and TC awareness (Atuhaire et al., 2019; Peltzer & Pengpid, 2015). Furthermore, two studies by Peltzer & Pengpid (2015) and Ugurlu et al. (2011) that compared socio-demographic factors among respondents on TC found no significant association between the level of knowledge and

awareness of TC. These studies found that eagerness to learn is the main contributing factor affecting the level of knowledge of TC. As such, TC awareness could be created by increasing knowledge via instilling the eagerness to learn.

The moderate level of TC knowledge among the respondents could be due to the misconception that TC only affects the older population and as such explains the low practice of TSE among the younger individuals. This perception then leads the young individuals to often be under the illusion that they are invulnerable from harm and have many years of life to enjoy. This indicates that young individuals have poor awareness of TSE as a personal health promotion tool that is important in early detection of TC (Atuhaire et al., 2019). Although the level of knowledge and awareness of TC among respondents is moderate, the practice of TSE is relatively low. What is worrying, even though the respondents will be future health care providers, the rate of TSE practice is poor. It is expected that health care personnel will be knowledgeable about health management in order to promote TSE. In addition, early detection of TC and early treatment can result in positive outcomes (Ugurlu et al., 2011).

Another reason for the low adoption of TSE practices as a screening tool was probably due to respondents' unawareness that TSE can help in early diagnosis of TC. This is not surprising, as equally low levels of awareness have been indicated in a number of studies carried out among highly literate populations in developed countries such as the comparative study of Zimbabwean and British undergraduates which revealed that TSE knowledge was low in both groups of respondents (Atuhaire et al., 2019). Even though respondents were aware that screening can help in early diagnosis of TC, they were not aware of how often to perform TSE. This is because initiatives to educate these individuals were lacking in areas such as risk factors (Shaw, 2008). Hence, to improve TSE practice, the male public should be informed about knowledge on TC risk factors and their susceptibility to the disease as well as the correct steps to conduct TSE.

### Conclusion:

Early detection of TC is crucial since there is no proven evidence or study for the prevention of TC. TC awareness can be disseminated through health campaigns to promote awareness among men in Malaysia and TC risk factors should be made available to participants attending awareness courses as this will enhance the practice of TSE. Furthermore, TC screening could be made compulsory to help in early

detection of TC and decrease fatality due to late diagnosis of the disease.

### Limitations:

The study may be limited due to the following. First, this study is quantitative and as such would not be able to measure affective domains such as feelings and perceptions accurately. Second, the respondents may not be truthful in giving the answers which would result in inaccurate findings. Lastly, the age group was restricted to students' ranging from 20 to 25 years old.

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