

Knowledge, Attitude and Practice of Testicular Self-Examination among Non-Health Sciences Male Undergraduate Students

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ABSTRACT

Background: The incidence and late detection of testicular cancer in Malaysia are increasing with young adult as susceptible population. Testicular self-examination is a tool that can detect testicular cancer early. The practice of testicular self-examination among university students worldwide is disappointing. In Malaysia, the awareness on testicular cancer and testicular self-examination among university students is underreported. This study aimed to identify the level of knowledge, attitude and practice, and their associations among non-health sciences male undergraduate students in a university in Malaysia.

Methods: A cross-sectional study was conducted among 253 eligible respondents who were recruited using stratified random sampling. A self-administered questionnaire was used to collect the knowledge, attitude and practice data on testicular cancer and testicular self-examination. The descriptive data were presented in frequency and percentage. The associations between the variables were analyzed using Chi-square test.

Results: Majority of respondents have poor knowledge (53.4%), unfavorable attitude (53%) and not practicing testicular self-examination (76.7%). Chi-square test showed that these variables were significantly associated with each other ($p < 0.05$). The analysis also showed a significant association between knowledge and history of testicular abnormalities ($p < 0.05$), as well as practice and source of information ($p < 0.05$).

Conclusion: The study found unsatisfactory level of knowledge, attitude and practice on testicular cancer and testicular self-examination, and significant associations between these variables among non-health sciences male undergraduate students at the university. This study provides a preliminary result on the importance of promoting testicular self-examination among university students in reducing the incidence of testicular cancer.

Keywords: Testicular; Cancer; Self-examination; Students; Universities

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INTRODUCTION

Testicular cancer (TCa) is a rare cancer worldwide but has been reported to increase among young men, especially in developed countries, including Malaysia (1,2). Furthermore, the diagnosis record was not good as cases diagnosed at early stage were decreased while late-stage cases were increased (2). Given the fact that detection of cancer at early stage could improve survival rate and treatment outcomes, detecting TCa at early stage is therefore important to ensure the successful treatment and quality of life (3,4).

Testicular self-examination (TSE) is a simple, free and effective method for early detection of TCa (5). TSE can be practiced regularly at least once a month to check for abnormalities around the testicles (6). However, men mostly have a low level of health conscious that associated with certain attitudes, such as health illiteracy and delayed treatment-seeking (7,8). These attitudes cause men to not practice the simple and free TSE, which in turn lead to late detection of TCa.

Even though TSE is easy to practice, the knowledge and practice of TSE among men are very disappointing, including male university students. The awareness of TCa and TSE among health science male students was reported at similar level as non-health sciences male students, where they were supposed to have better awareness in this matter (9,10). In Malaysia, studies reporting the level of knowledge, attitude and practice (KAP) on TCa and TSE among university students are scarce. The similar phenomenon may be observed in Malaysia since a previous study reported the low health conscious among Malaysian adults, though no evidence showed this behavior among Malaysian teenagers (8). So, identifying the level of KAP among this population is important to understand this issue, so that appropriate efforts can be planned and implemented to ensure fruitful outcomes. Thus, the current study was conducted to measure the levels of KAP on TCa and TSE among non-health sciences male students in a public university in Pahang state of Malaysia as a kick-off for a larger study.

METHODS

Study Design

This study is a cross-sectional study conducted among male undergraduate students who enrolled non-health sciences programmes in International Islamic University Malaysia (IIUM) of Gombak and Pagoh campuses. The participants were recruited using stratified random sampling method from April until June 2022 in the IIUM Gombak and Pagoh campuses. Male undergraduate students who actively enrolled the semester in which the study was conducted and have no self- and family history of TCa, were invited to join the study. The recruited participants were given a link to an online questionnaire (<https://forms.gle/KWWCU4krzPrA3iQY7>) created using Google Forms through their faculty's representatives. The data was accessed from Google Forms after the data collection period ended.

Sample Size

The sample size was calculated using Raosoft® (Raosoft Inc., Washington, United States) with 5% margin error, 95% confidence interval, 6010 population size, which based on data provided by Academic Management and Admission Division of IIUM, and 50% response distribution. This resulted in a sample size of 362 participants.

Instruments

A questionnaire adopted from Dhakal et al. (10) was used in this study. The questionnaire consists of four parts, which are Part A, B, C and D. Part A is socio-demographic data that consists of age, marital status, Kulliyah (faculty), year of study, sources of information, family history of TCa and testicular abnormality. Part B consists of eight questions on knowledge of TCa and TSE, which are definition, risk factors, symptoms, treatment and complication of TCa, and methods of TSE. Part C consists of eight questions on attitudes toward TCa and TSE. The categorization on level of KAP is based on the study by Dhakal et al. (10). A pilot study comprised of 10% of actual sample size ($n = 36$) was conducted to assess the internal consistency of the questionnaire. Cronbach's α of the questionnaire was 0.806.

Data Analysis

Categorical data were presented using frequency and percentage for descriptive analysis. Meanwhile, the Chi-square test was used to find the association between independent and dependent variables.

Ethical Considerations

The protocol of this study was reviewed by the IIUM Research Ethics Committee (IREC 2022-KON/11). Informed consents were obtained from the respondents prior to their participation in this study. Personal information about the respondents was kept confidential and was not revealed to any stakeholders other than the researchers who were involved directly with the study. Their names were substituted with a label for identification purposes.

RESULTS

Sociodemographic Characteristics

This study was able to recruit 253 respondents with a response rate of 69.9%. As illustrated in Table 1, most of the respondents were aged between 21 and 23 years old (67.2%). The Kulliyyah of Engineering had the highest participation rate in this study (29.2%) due to their high population in the university. Meanwhile, year 3 students had the highest number of participations in this study (28.5%). Mass media has been the most used source of information about TCa among the students. Furthermore, **Table 1** also shows that most of the respondents (97.6%) did not have a history of testicular abnormalities.

Table 1: Sociodemographic Characteristics of Respondents (N=253)

Variables		Frequency (f)	Percentage (%)
Age	18-20	55	21.7
	21-23	170	67.2
	>23	28	11.1
Marital status	Single	250	98.8
	Married	3	1.2
Kulliyyah	AIKOL	18	7.1
	KAED	16	6.3
	KENMS	27	10.7
	KOED	10	4.0
	KOE	74	29.2
	KICT	35	13.8
	KIRKHS	59	23.3
	KLM	14	5.5
Year of study	1	60	23.7
	2	70	27.7
	3	72	28.5
	4	46	18.2
	5	5	2.0
Sources of information	Mass media	171	67.6
	Health/sex education	40	15.8
	Parents/teacher	6	2.4
	Health professional	17	6.7
	Others	19	7.5
History of testicular abnormalities	Yes	6	2.4
	No	247	97.6

AIKOL: Ahmad Ibrahim Kulliyyah of Laws, **KAED:** Kulliyyah of Architecture and Environmental Design, **KENMS:** Kulliyyah of Economics and Management Sciences, **KOED:** Kulliyyah of Education, **KOE:** Kulliyyah of Engineering, **KICT:** Kulliyyah of Information and Communication Technology, **KIRKHS:** Kulliyyah of Islamic Revealed Knowledge and Human Sciences, **KLM:** Kulliyyah of Languages and Management

Level of Knowledge on TCa and TSE

Analysis on level of knowledge of TCa and TSE showed that more than half of respondents have poor levels of knowledge, indicated by 169 (53.4%) of the respondents obtaining less than mean score of 5.77 ± 1.75 . **Table 2** shows that almost half of the participants did not know the meaning of TCa, age groups at risk for TCa, the most common symptoms, some risk factors which were age and prior trauma to testis, most common complications and frequency of performing TSE. This is indicated by less than half of the respondents answering these questions correctly.

Level of Attitude Towards TCa and TSE

Analysis on level of attitude towards TCa and TSE showed that more than half of respondents have unfavorable attitude on TCa and TSE, indicated by 134 (53.0%) of the respondents obtaining less than mean score of 27.38 ± 3.34 . **Table 3** showed that at least 30% of the respondents displayed neutral attitudes towards most statements regarding TCa and TSE, except for item 1 and 5. Although the percentage of neutral attitudes was considerably low, the percentage of favorable attitudes towards almost all statements regarding TCa was less than 50%, which cumulatively could contribute to low attitude scores.

Level of Practice on TSE

Table 4 shows that the level of practice of TSE is poor, which indicated by 76.7% of the respondents were not practicing TSE. The main reason for not practicing TSE was due to not knowing how to perform TSE. Furthermore, among the respondents who were practicing TSE, only 11.1% of them practiced it correctly, which was once a month.

Association Between Sociodemographic Characteristics and Level of KAP on TCa and TSE

Based on **Table 5**, low level of knowledge was significantly associated with history of testicular abnormalities ($p < 0.05$). Meanwhile, level of practice was significantly associated with sources of knowledge ($p < 0.05$). However, there was no association between the level of attitude and any of the socio-demographic characteristics.

Association Between Level of Knowledge, Attitude and Practice of TCa and TSE

The Chi-square test showed that knowledge, attitude and practice of TCa and TSE in this study were significantly associated ($p < 0.05$) with each other. Among the respondents, 31.6% of them with good knowledge have favorable attitudes. However, the analysis also showed that the respondents who have good knowledge (36.8%) and favorable attitudes (29.6%) were not performing TSE.

Table 2: Level of Knowledge of Respondents on Testicular Cancer and Testicular Self-Examination (N=253)

Items	Knowledge items	Correct response	f (%)
1	Meaning of TCa	Painless lump in testicles	60 (23.7)
2	Age group at risk for TCa	16-40 years old	120 (47.4)
3	Most common symptom	Painless lump in testicles	42 (16.6)
4	Risk factors of TCa	Family history (yes)	192 (75.9)
5		Age (yes)	77 (30.4)
6		Multiple children (no)	230 (90.0)
7		Prior trauma to testis (yes)	93 (36.8)
8		Multiple sex partner (no)	163 (64.4)
9	Best way to treat TCa	Early detection	195 (77.1)
10	Most common complication of TCa	Spread to other organs	33 (13.0)
11	Best way to prevent TCa	Regular TSE	180 (71.1)
12	Frequency of doing TSE	Once in a month	73 (28.9)

TCa: testicular cancer, TSE: testicular self-examination

Table 3: Level of Attitude of Respondents on Testicular Cancer and Testicular Self-Examination (N=253)

Items	Statements	f (%)				
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	TCa has no cure	37 (14.6)	107 (42.3)	72 (28.5)	23 (9.1)	14 (5.5)
2	Men having TCa are completely infertile	7 (2.8)	95 (37.5)	86 (34.0)	59 (23.3)	6 (2.8)
3	TCa is a common cancer	8 (3.2)	63 (24.9)	96 (37.9)	78 (30.8)	8 (3.2)
4	Many men go through it	6 (2.4)	80 (31.6)	87 (34.4)	66 (26.1)	14 (5.5)
5	TCa often strikes men at my age	2 (0.8)	23 (9.1)	38 (15.0)	95 (37.5)	95 (37.5)
6	TSE helps in the early detection of TCa	58 (22.9)	78 (30.8)	88 (34.8)	23 (9.1)	6 (2.4)
7	TSE is a form of masturbation	3 (1.2)	32 (12.6)	89 (35.2)	93 (36.8)	36 (14.2)
8	TSE should be done once a month regularly	2 (0.8)	26 (10.3)	100 (39.5)	90 (35.6)	35 (13.8)
	TSE should be done in a shower or shortly after shower					

TCa: testicular cancer, TSE: testicular self-examination

Table 4: Level of practice of respondents on testicular self-examination (N=253)

Practice items	Frequency (f)	Percentage (%)
Testicular examination		
Performed	59	23.3
Not performed	194	76.7
How frequent do you perform TSE?		
Once a month	28	11.1
Once in three months	7	2.8
Once in six months	12	4.7
Feel discomfort	12	4.7
Reason for not performing		
Fear of result	22	8.7
Not complaining	17	6.7
Not knowing	121	47.8
Not caring	19	7.5
Feeling sinful	11	4.3
Feel discomfort	4	1.6

Table 5. P-values of Association Between Socio-Demographic Characteristics with Level of Knowledge, Attitude and Practice on Testicular Cancer and Testicular Self-Examination (N=253)

Socio-demographic characteristics	Level of knowledge	Level of attitude	Level of practice
Age	0.629	0.108	0.259
Marital status	0.600	1.000	0.137
Kulliyah	0.195	0.084	0.290
Year of study	0.260	0.179	0.324
Sources of information	0.363	0.568	0.003*
History of testicular abnormality	0.031*	1.000	0.141

*Significant based on Chi-square test, significant value <0.05

DISCUSSION

Knowledge of TCa and TSE among Non-Health Sciences Male Undergraduate Students

Being knowledgeable about TCa and TSE would help men in detecting the cancer early. However, the current study has showed that majority of the male undergraduate students from non-health sciences programmes in IIUM have poor knowledge of TCa and TSE, especially on risk factors and the most common symptoms of TCa, which may predispose them to the TCa at late stage. Similar findings have been reported among non-health sciences male university students in universities and colleges from other countries where their knowledge on risk factors and the most common symptoms of TCa were very poor (10-14). Age as a risk factor is a remarkable finding to be highlighted as a few studies, including the current study, found that the university students have poor knowledge about age as a risk factor for TCa (10,11,14,15). This finding indicates that the university students are not aware that they are among the population at risk of getting TCa. Znaor et al. reported that the TCa was a common cancer in men aged between 15 and 44 years old (16).

These studies showed that the level of knowledge among university students is at a worryingly low level as they are among the population at risk. With the current incidence trend of TCa in Malaysia, neglecting this issue would aggravating the number of TCa cases in the future. The educational interventions, such as slide presentations, pamphlets, videos and university campaigns, that evidently worked in increasing the level of knowledge on TCa and TSE among university students should be utilized and implemented to improve the situation (5,17,18).

Attitudes among Non-Health Sciences Male Undergraduate Students towards TCa and TSE

Attitude is an important driving factor for patients to seek information and health services. In the current study, most of the respondents had unfavorable attitudes towards TCa, which partly contributed by their neutral attitude towards most statements regarding TCa. This may indicate their ignorance in giving serious concern about the risk of TCa. The poor attitude of university students towards TCa and TSE

were also described in previous studies (10,14). The neutral attitude in the current study may be a result of the poor knowledge among the respondents. This can be seen by the agreement between neutral attitude among the respondents towards the age of men at risk of TCa and their poor knowledge on age as a risk factor of TCa. This was further supported by the significant association between knowledge and attitude ($p < 0.001$). Less exposure to information on TCa and TSE may influence the way respondents perceive the issue. A study by Getie (19) found that peer group was among the factors that influence the attitude of students towards certain issues. In the current study, the respondents were living in the campuses that have no health sciences programmes. This reduces the likeliness of them to be exposed to health information and familiarity with certain health issues. Thus, organizing an educational intervention in non-health campuses may improve their attitude towards TCa and TSE, as evinced by Serret-Montoya et al. in their study (20).

Even though the overall attitude of respondents in the current study was at an unfavorable level, their attitude towards early detection of diseases was not disappointing, as shown by item 5 in **Table 3**. A high percentage of respondents (75%) agreed that TSE can help in early detection of TCa, which indicated a good treatment-seeking behavior among them. This may relate with the result of their knowledge that early detection is the best way to prevent TCa, as illustrated in **Table 2**.

Practice of TSE among Non-Health Sciences Male Undergraduate Students In IIUM

In this study, the percentage of respondents who practiced TSE was low. Consistently, the poor practice of TSE among university students has also been reported in previous studies, especially among non-health sciences students (9,10,12-14). The poor practice of TSE among the respondents in the current study could be mainly attributed to not knowing in performing TSE (47.8%), as illustrated in **Table 4**. A similar response was reported in previous studies where the students were not performing the TSE due to not knowing the method (9,10,14). Disappointingly, among those who were practicing TSE, only 11.1% of them practiced it correctly, which was once a month (21). This indicates an insufficient knowledge of TSE among the respondents.

The current study found that there were significant associations between practice and knowledge ($p < 0.05$), as well as practice and attitude ($p < 0.001$). These significant associations also have been reported in previous studies (10,12,14). Dhakal et al. (10) also found a poor trend of KAP on TCa and TSE, but the significant association was observed between practice and attitude only ($p < 0.001$). Ilo et al. (14) also found a poor trend of practice and knowledge of TSE with significant association between these variables ($p < 0.05$). Meanwhile, Etita et al. (12) reported a good level of knowledge and attitude towards TSE but poor levels of practicing it, and the significant association was observed between practice and knowledge only ($p < 0.05$).

Based on this body of evidence, disseminating the information on TCa and TSE among the university students, especially non-health sciences students, would be suggested to improve the level of attitude towards TCa and TSE, and eventually increase the percentage of them in practicing TSE.

Association Between KAP and Sociodemographic Characteristics

The current study revealed that there was a significant association between knowledge and history of testicular abnormalities ($p < 0.05$), which consistent with the finding by Dhakal et al. (10). The studies that discuss the association between knowledge and history of testicular abnormalities are deficient compared to the association between knowledge and family history of TCa. In this study, the family history of TCa was an exclusion criterion as it aimed to observe the level of KAP on TCa and TSE among university students without historical influence of TCa on them and their family members. The association between level of KAP on TCa and TSE with family history of TCa have been reported in the previous studies (22-24). However, these studies reported that men with a history of testicular abnormality still have low awareness of TCa and TSE.

Meanwhile, the analysis also showed a significant association between practice and source of information ($p < 0.05$), which consistent with finding by Dhakal et al. (10). Previous studies reported that the preferential sources of information about TCa and TSE among university students were mass media and health professionals, nevertheless no

association analysis has been performed in these studies (9,15,24). Thus, it can be suggested that mass media could be a method to disseminate the knowledge of TCa and TSE in order to increase the level of practice of TSE among university students.

CONCLUSION

The current study found that the level of KAP of TCa and TSE among the non-health sciences male undergraduate students in IIUM Gombak and Pagoh Campus was not at satisfactory level. Further analysis showed that knowledge, attitude and practice of TCa and TSE were significantly associated with each other. This suggests that knowledge of TCa and TSE should be primarily addressed in order to improve the practice of TSE. Furthermore, the analysis also showed a significant association between knowledge and history of testicular abnormalities, as well as practice and source of information. This might further help in identifying some causal factors that could have led to the current situation.

However, the current study was conducted on male undergraduate students in one institution only, which was IIUM. Thus, it cannot be generalized for the university student population in Malaysia. Besides, since the data collection was performed self-administratively, self-reporting bias may be occurring and affecting the accuracy of results. Thus, future research is required to identify the level of KAP in other universities in Malaysia and using face-to-face interview may be considered in order to gain a more comprehensive and accurate understanding on the issues about TCa and TSE among Malaysian male university students.

CONFLICT OF INTEREST

The authors declared that there is no conflict of interest.

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AUTHOR CONTRIBUTIONS

AFAM: Data collection, data analysis and manuscript writing.

IJ: Data analysis and proofreading.

AA: Data analysis and result interpretation.

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