

Knowledge of Testicular Cancer and Practice of Testicular Self-Examination Among Undergraduate Male Students During Pre and Post Intervention

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ABSTRACT

Background: The less promotion on testicular self-examination (TSE) among men may contribute to the increase in testicular cancer cases (TC). While TSE could contribute to early detection of TC, its practice is disappointing among young adults. This study aimed to compare the level of knowledge and practice of TC and TSE, respectively, among IIUM Kuantan undergraduate male students at pre-test and post-test of educational intervention.

Methods: Data collection for pre-test was conducted among 245 male students using a self-administered questionnaire. Videos regarding TC and TSE were given to the respondents as educational intervention. A post-test questionnaire was distributed among the respondents after two weeks of intervention. Knowledge and practice levels at pretest and posttest phases and their association with Kulliyyah background were statistically analyzed.

Results: The score level of knowledge and practice on TC and TSE were 35.31 ± 3.16 and 16.65 ± 3.42 , respectively, at pre-test, indicated borderline level between low and high. The post-test showed a significant improvement ($p < 0.05$) in the level of knowledge and practice on TC and TSE with score level of 36.79 ± 2.63 and 18.98 ± 4.60 , respectively. There was no significant difference between these results and Kulliyyah background.

Conclusion: The study showed a significant improvement in the level of knowledge and practice of TC and TSE, respectively, among undergraduate male students in IIUM Kuantan Campus. Thus, this study provides a preliminary result on importance of promoting TC and TSE among young adults as a preventive measure in curbing the TC cases from increasing.

Keywords: Testicular; Cancer; Self-examination; Knowledge; Practice

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Article History:

Submitted: 6 April 2024

Revised: 17 July 2024

Accepted: 22 July 2024

Published: 31 July 2024

DOI: 10.31436/ijcs.v7i2.364

ISSN: 2600-898X

INTRODUCTION

Testicular cancer (TC) is generally a rare cancer worldwide but commonly reported among males (1). Globally, the incidence of TC was estimated to increase until 2030 and it was prevalent among males aged between 15 to 35 years old (2,3). The same phenomenon also happened in Malaysia where TC was reported as the third cancer that common in males aged between 15 to 24 years old and most cases were detected at late stage (4). Even though TC is not commonly discussed among researchers like breast cancer, reducing the cases of TC is equally important to other cancers in reducing the prevalence of overall cancer cases globally.

The increased detection of TC at late stage in Malaysia may be implicated with ignorance among Malaysian males about this cancer (4). Ignorance on the cancers is among the factors that contribute to late detection of cancers, including TC (1). Bresciani et al. (5) mentioned that the lack of awareness and knowledge on TC exist in most countries. Testicular self-examination (TSE) is vital to detect early changes in testes that could be the TC (3). It is a simple method that should be performed monthly regularly to examine the testicles' size and the skin for any possible alterations (5). However, studies showed that most males have less level of knowledge and practice on TSE (6–8). Since the early detection of TC could improve treatment outcomes and mortality rates, it is important to promote the TSE among men to reduce the incidence of TC in Malaysia and improving its early detection rate. Thus, this study was conducted to compare the level of knowledge on TC and practice on TSE before and after distribution of educational videos on TC among undergraduate male students in International Islamic University Malaysia (IIUM), Kuantan Campus.

METHODS

A quasi-experiment one-group pretest and posttest design was used in this study. The protocol of study was approved by IIUM Research Ethic Committee (IREC 2021-KON/14). The study was able to recruit 245 undergraduate male students of IIUM Kuantan Campus who were Malaysian between age of 19 to 26 with no history of testicular abnormalities through convenience sampling. Informed consent was obtained from the respondents prior to participating in the study. Personal information of the respondents was kept

confidential by substituting them to identification labels.

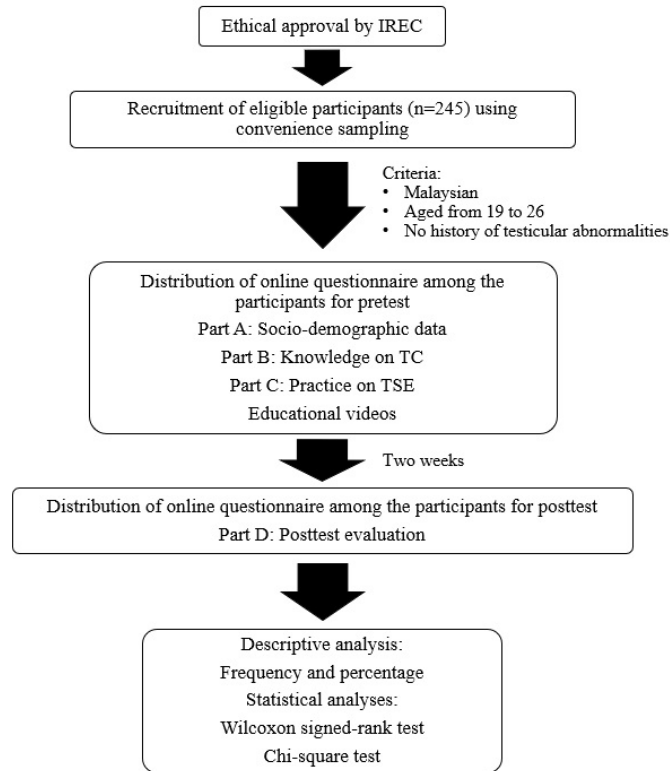
The questionnaire used in this study was developed by Ugurlu et al. (9) for a pretest and posttest study on TSE. The questionnaire consisted of four parts which are i) Part A for demographic data, ii) Part B for knowledge on symptoms of TC, which were palpable mass, swelling in testes, pain or heaviness in groin, weight loss, hematuria, and dysuria or burning sensation during urination, iii) Part C for practice on TSE, which were frequency of practice, and reason for not practicing, and iv) Part D for posttest evaluation. In indicating the level of knowledge either low or high, the score at 50 percentiles of total score was selected as the borderline between low and high level of knowledge. Meanwhile, the level of practice was indicated as either low or high by referring to the score at 50 percentiles of total score. In the pretest phase, the respondents were given online questionnaires that consisted of Part A, Part B and Part C. After the respondents completed answering the pretest questionnaire, they were given with educational videos at the end of the questionnaire. After two weeks from the pretest questionnaire, the respondents were given a posttest questionnaire that consisted of Part D to evaluate their perception on the given educational videos.

The demographic data were illustrated in frequency and percentage. Comparison on level of knowledge and practice on TC and TSE, respectively, at pretest and posttest phases were analysed using Wilcoxon signed-rank test. Meanwhile, association between level of knowledge and practice on TC and TSE, respectively, with Kulliyah (faculty) background were analysed using Chi-squared test. All analyses were performed using Social Package for Social Science version 24 (IBM, New York, United States). **Figure 1** illustrated the summary of methods for the current study.

RESULTS

Sociodemographical Data

Table 1 shows socio-demographical characteristics of respondents in the current study. Most of the respondents were 22 years old (22.4%) coming from Kulliyah of Nursing (25.3%) and in 4 (36.3%) of study. Majority of them were not smoking (82.4%) and have no family history of TC (95.9%).

Figure 1: Flow chart of methods

Table 1: Sociodemographic characteristics of respondents

Sociodemographic characteristics	Frequency (n=245)	Percentage (%)
Age		
20	31	12.7
21	48	19.6
22	55	22.4
23	54	22.0
24	39	15.9
25	17	6.9
26	1	0.4
Kulliyah (faculty)		
Medicine	37	15.1
Dentistry	23	9.4
Nursing	62	25.3
Pharmacy	27	11.0
Allied health sciences	43	17.6
Science	53	21.6
Year of study		
1	32	13.1
2	45	18.4
3	63	25.7
4	89	36.3
5	16	6.5
Smoking status		
Yes	43	17.6
No	202	82.4
Family history of testicular cancer		
Yes	10	95.9
No	235	4.1

Level of Knowledge on TC at Pretest Phase and Its Association with Kulliyah Background

Table 2 illustrated the level of knowledge on TC of the respondents at the pretest phase. Based on the result in Table I, the mean score level of knowledge on TC is 35.31 ± 3.16 , which indicates the borderline level of knowledge between low and high.

Table 2: Level of knowledge on TC

Variables	Score (Mean $\pm$ SD)
Level of knowledge on TC	35.31 ± 3.16

As illustrated in **Table 3**, the analysis using Chi square test showed that there was no significant association between the level of knowledge on TC and Kulliyah background at pretest phase.

Table 3: P-value on association between level of knowledge on TC and Kulliyah background

Variables	Kulliyah background
Level of knowledge on TC	0.95

Level of Practice on TSE at Pretest Phase and Its Association with Kulliyah Background

Table 4 illustrates the level of practice on TSE of the respondents at the pretest phase. Based on the result in Table III, the mean score level of practice on TC is 16.65 ± 3.42 , which indicates that the level of practice was also on the borderline level between low and high.

Table 4: Level of practice on TSE

Variables	Level (Mean $\pm$ SD)
Level of practice on TSE	16.65 ± 3.42

As illustrated in **Table 5**, the analysis using Chi-square test showed the similar association with the level of knowledge and Kulliyah background where there was no significant association between the level of practice on TSE and Kulliyah background at pretest phase.

Table 5: P-value on association between level of practice on TSE and Kulliyah background

Variables	Kulliyah background
Level of knowledge on TC	0.95

Comparison on the Level of Knowledge on TC at Pretest and Posttest Phases

As illustrated in **Table 6**, posttest analysis revealed that the mean score level of knowledge on TC of the respondents significantly increased ($p < 0.05$) at posttest phase as compared to pretest phase, which was 36.80 ± 2.63 .

Comparison on the Level of Practice on TSE at Pretest and Posttest Phases

As illustrated in **Table 7**, posttest analysis revealed that the mean score level of practice on TSE of the respondents significantly increased ($p < 0.05$) as compared to pretest phase, which was 18.98 ± 4.60 .

Table 6: Comparison on the mean score level of knowledge on TC between pretest and posttest phases

Variables	Score at pretest phase (Mean $\pm$ SD)	Score at posttest phase (Mean $\pm$ SD)	p-value*
Level of knowledge on TC	35.31 ± 3.16	36.80 ± 2.63	0.00

*Based on Wilcoxon signed-rank test.

Table 7: Comparison on the mean score level of practice on TSE between and pre and post test phase

Variables	Score at pretest phase (Mean $\pm$ SD)	Score at posttest phase (Mean $\pm$ SD)	p-value*
Level of practice on TC	16.65 ± 3.42	18.98 ± 4.60	0.00

*Based on Wilcoxon signed-rank test.

DISCUSSION

Majority of studies on awareness of TSE among male university students in different countries showed an unsatisfactory level of knowledge and practice (10-12). The same phenomenon was generally shown among Malaysian men (13). The study to observe the level of awareness on TSE among Malaysian university students is lacking, although this population is at risk of having TC.

The current study found that the level of knowledge on TC and practice on TSE among the IIUM male students before educational intervention were not at satisfactory level, which was consistent with previous studies (10-12). Even so, the level of knowledge on TC and practice on TSE among male students of IIUM were not very disappointing, where they were at borderline or moderate level. Furthermore, the non-significant association between the level of knowledge on TC and practice on TSE with Kulliyah background in this study may indicate that the exposure on knowledge of TC and TSE may occurs among the students across Kulliyah and make the students sharing the common knowledge. Thus, the moderate level of knowledge on TC and practice on TSE in this study could be contributed by the common environment among the respondents who live in the same campus. A further study that includes the non-health science students of IIUM who live in different campus might give a better insight on the association between the level of knowledge on TC and practice on TSE with educational background.

The inadequacy of knowledge on TC and practice on TSE among undergraduate male students of IIUM was portrayed by the poor level of knowledge on TC and practice of TSE. The similar finding was reported in previous studies on the ignorance of university students on knowledge of TC and practice of TSE (10-12). In worst case, the poor level of knowledge on TC and practice on TSE were also reported among medical students, where they supposed to be competent in this matter (14,15). This may indicate the importance of reviewing the syllabus of medical programmes in highlighting more about TC and TSE for future application in public health. The fact of low global incidence of TC as compared to other cancers could be the reason that TC is not stressed much in medical teaching. Ironically, the same trend was also observed in breast cancer, a high-prevalence cancer in Malaysia, where the knowledge and practice on breast cancer and breast self-examination were at an unsatisfactory level among Malaysian university students (16-19).

Thus, future studies are suggested to investigate the underlying factors that contribute to the unsatisfactory level of knowledge and practice on cancers, including TC.

After the educational materials on TC and TSE were distributed among the respondents, there was a significant improvement ($p < 0.05$) in the level of knowledge on TC and practice on TSE. Previous studies also showed that various intervention strategies were able to significantly improve the knowledge and practice on TC and TSE, respectively, among university male students (6,14,20). This body of evidence showed that the awareness of university male students on TC and TSE can be improved by interventions as simple as distribution of pamphlets that consist of essential information on TC and TSE. However, a study to find the most effective form of intervention would be worthwhile to undertake.

Among the educational interventions that have been used in previous studies were lecture sessions and guidelines consisting of essential information on TC and TSE, which is about the same as the intervention used in the current study (6,14). A systematic review by Saab et al. (21) found various forms of educational intervention that were successfully undertaken in previous TC awareness studies that include dissemination of information on TC and TSE in the forms of pamphlets and videos, where these methods were implemented in the current study. Studies that compare the effectiveness of different forms of educational intervention for TC are lacking. Thus, future studies to compare different forms of educational intervention for TC or develop a more structured intervention with high effectiveness and can be used across the world populations would be useful in ensuring the impact and effectiveness of awareness campaigns on TC.

CONCLUSION

The study showed that the level of knowledge and practice on TC and TSE, respectively, among undergraduate male students of IIUM Kuantan Campus before the educational intervention. The level of knowledge on TC and practice on TSE were not significantly associated with Kulliyah background. After the educational intervention, the level of knowledge and practice on TC and TSE, respectively, were significantly improved ($p < 0.05$).

Although the study successfully achieved its objectives, there were several limitations that need to be considered for improvement in the future

studies. Among the limitations was the use of convenience sampling, which may introduce bias and limit the statistical validity by not representing the target population adequately (22,23). Despite these drawbacks, the findings can still guide future research in developing hypotheses and objectives, emphasizing the need for probability sampling to ensure higher quality results and broader generalizability. Additionally, the relatively short intervention period of two weeks for students to comprehend and apply the content might have impacted the study's outcomes, as longer periods in previous studies have shown potential benefits in understanding and practicing the subject matter more effectively (6, 20).

Thus, this study provided the preliminary results regarding knowledge on TC and practice on TSE among undergraduate male students at a university which can be further studied with a larger university student population.

CONFLICT OF INTEREST

The authors declare there is no conflict of interest.

ETHICAL MATTERS

The protocol of study was reviewed and approved by IIUM Research Ethic Committee (IREC 2021-KON/14). Informed consent was obtained from the respondents prior to embarkment into the study.

ACKNOWLEDGEMENT

The authors would like to express our gratitude to all IIUM students and Kulliyyah of Nursing staff who participated in making this study complete successfully.

AUTHOR CONTRIBUTIONS

MYZ: writing the manuscript, data collection and data analysis.

AA: involved in drafting the manuscript, data collection, support with literature content and finalizing and editing the manuscript.

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