

## RESEARCH ARTICLE

# Knowledge, Attitudes and Practice of Testicular Self-examination among Male University Students from Bangladesh, Madagascar, Singapore, South Africa and Turkey

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## Abstract

The aim of this study was to investigate the knowledge, attitude and practice of testicular self-examination (TSE) among male university students from low income (Bangladesh, Madagascar), middle income (South Africa, Turkey) and emerging economy (Singapore) countries. Using anonymous questionnaires, data were collected from 2,061 male undergraduate university students aged 16-30 (mean age 21.4, SD=2.4) from 5 universities in 5 countries across Asia and Africa. Overall, 17.6% of the male students indicated that they knew how to perform TSE; this knowledge proportion was above 20% in Bangladesh and Singapore, while it was the lowest (12.2%) in Madagascar. Among all men, 86.4% had never practiced TSE in the past 12 months, 7.1% 1-2 times, 3.5% 3-10 times, and monthly TSE was 3.1%. The proportion of past 12 month TSE was the highest (17.6%) among male university students in South Africa and the lowest (7.3%) among students in Singapore. Logistic regression found that TSE importance or positive attitude was highly associated with TSE practice. TSE practices were found to be inadequate and efforts should be made to develop programmes that can increase knowledge related to testicular cancer as well as the practice of testicular self-examination.

**Keywords:** Testicular self-examination - testicular cancer - knowledge - attitude - practice - university students - multi

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## Introduction

“The American Cancer Society (ACS) recommends a testicular exam by a doctor as part of a routine cancer-related check-up. The ACS advises men to be aware of testicular cancer and to see a doctor right away if they find a lump on a testicle. Regular testicular self-exams have not been studied enough to show if they lower the risk of dying from this cancer. This is why the ACS does not have a recommendation about regular testicular self-exams for all men. Still, some doctors recommend that all men examine their testicles monthly after puberty.” (American Cancer Society, 2013) The Singapore Cancer Society (2014) states that: “Regular self-examination of the testicles is important for young men, particularly those at risk of testicular cancer. Being familiar with the size, shape and usual level of lumpiness can help you determine if something is not quite right. A testicular self-examination can help a man find any changes in the testes early, so that if treatment is needed it can start as early as possible.” The Cancer Society of South Africa (2013) states: “The testicular self-examination (TSE) is an easy way for guys to check their own testicles to make sure

there aren't any unusual lumps or bumps, which can be the first sign of testicular cancer. Although testicular cancer is rare in teenage guys, overall it is the most common cancer in males between the ages of 15 and 39. It's important to try to do a TSE every month so you can become familiar with the normal size and shape of your testicles, making it easier to tell if something feels different or abnormal in the future.”

Recent studies seem to show low awareness and practice of TSE (Shallwani et al., 2010), in particular among young populations such as university students, e.g., in Iran 5% had knowledge of TSE and 10% were practicing TSE (Ramim et al., 2014). In Turkey 88%-93.8% had no knowledge of TSE (Ozbas et al., 2011; Altinel and Avci, 2013; ), 12% -17.7% performed the practice of TSE before (Ozbas et al., 2011; Ugurlu et al., 2011), and 1% performed testicular self-examination routinely once a month (Kuzgunbay et al., 2013). In Uganda 14% of university students performed TSE regularly (Muliira et al., 2011), in Malaysia 65.0% of male students have never performed (TSE) (Norhaini et al., 2014) and among Hispanic college men in the USA 64% reported never performing TSE (Cooper et al., 2014).

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In an older survey among university students from 13 European countries in 1990 and 2000, 87% and 82% of men reported never having practiced TSE, respectively (Wardle et al., 1994; Evans et al., 2006). Several studies have highlighted the importance of increased knowledge of testicular cancer, positive attitude and self-efficacy in relation to better TSE uptake (Muliira et al., 2011; Cooper et al., 2014; Ramim et al., 2014). The aim of this study was to investigate the knowledge, attitude and practice of TSE among male university students from low income (Bangladesh, Madagascar), middle income (South Africa, Turkey) and emerging economy (Singapore) countries.

## Materials and Methods

### Sample and procedure

This cross-sectional study was carried out with a network of collaborators in participating countries (see Acknowledgments). The anonymous, self-administered questionnaire used for data collection was developed in English, then translated and back-translated into languages (French, Turkish) of the participating countries. The study was initiated through personal, academic contacts of the principal investigators. These collaborators arranged for data to be collected from intended 400 male undergraduate university students aged 16-30 years by trained research assistants in 2013 in 1 university in their respective countries. The universities involved were located in the capital cities or other major cities in the participating countries. Research assistants working in the participating universities asked classes of undergraduate students to complete the questionnaire at the end of a teaching class. Classes of students from all years of study and across multiple faculties were recruited by timetable scheduling using stratified random sampling. Informed consent was obtained from participating students, and the study was conducted in 2013. Participation rates were in most countries over 90%. Ethics approvals were obtained from all participating institutions.

## Measures

### TSE knowledge, practice, attitude

Men were asked, "Do you know how to examine your own testicles for lumps?" The response option was "yes" or "no". Those who responded with "yes" were asked, "about how many times a year do you examine your testicles for lumps?" Response options ranged from 1=never to 4=More than 10 times a year. Further, they were asked about how important it is "for men to examine their testicles at least once a month for possible signs of cancer." Response options ranged from 1=of very low importance to 10=of very high importance (Wardle et al., 1994).

### Data analysis

The data were analysed using IBM SPSS (version 20.0). The proportion of TSE knowledge, practice and attitude were calculated as a percentage and means and standard deviations, respectively. Logistic regression analysis was done with STATA to calculate the crude odds ratio (OR) with 95% confidence interval (CI) to determine

**Table 1. TSE Awareness, Practice and Attitude by Country**

Country	Sample	TSE Awareness	TSE frequency in		TSE Importance
			Never	past 12 months	
			1-2 to	>10 times	(range 1-10)
		N	%	%	M (SD)
All	2061	17.6	86.4	13.6	5.6 (3.3)
Bangladesh	448	20.3	83.7	16.3	6.3 (3.1)
Madagascar	400	12.2	86.0	14.0	5.2 (3.4)
Singapore	449	21.4	92.7	7.3	6.6 (2.4)
South Africa	364	17.2	82.4	17.6	6.2 (3.5)
Turkey	400	17.7	86.3	13.8	3.8 (3.2)

the associations between BSE attitude and BSE practice (any practice coded as 1, and no practice coded as 0) and age was adjusted for. The country was entered as the primary sampling unit for survey analysis in STATA in order to achieve accurate CIs, given the clustered nature of the data.

## Results

The final sample included 2061 male undergraduate university students aged 16-30 years (mean age 21.4, SD=2.4). Overall, 17.6% of the male students indicated that they knew how to perform TSE; this knowledge proportion was above 20% in Bangladesh and Singapore, while it was the lowest (12.2%) in Madagascar. Among all men, 86.4% had never practiced TSE in the past 12 months, 7.1% 1-2 times, 3.5% 3-10 times, and monthly TSE was 3.1%. The proportion of past 12 month TSE was the highest (17.6%) among male university students in South Africa and the lowest (7.3%) among students in Singapore. The rating of the importance for TSE was overall on average 5.6, ranging from 1-10 (10 being the highest). There were also country variations in relation to BSE importance ratings, with the lowest ratings (3.8) among male university students in Turkey and the highest (6.6) in Singapore (see Table 1).

## Discussion

The study found, among a sample of male university students across 5 low, middle and high income countries low levels of TSE, with 13.6% practicing TSE in the past 12 months, which compares with most previous surveys among male university students (Wardle et al., 1994; Evans et al., 2006; Muliira et al., 2011; Ozbas et al., 2011; Ugurlu et al., 2011; Kuzgunbay et al., 2013; Ramim et al., 2014).

As found in previous studies (Muliira et al., 2011; Cooper et al., 2014; Ramim et al., 2014), this study also found that lack of awareness of TSE and poor attitudes towards TSE were identified as barriers to TSE. Overall, male students gave an average importance rating (5.6, from 1-10) of TSE, and yet the prevalence of TSE practice was low. This could be because the study sample beliefs that TSE is important in general, but may be not for them at their young age.

This study had several limitations. The study was

cross-sectional, so causal conclusions cannot be drawn. The investigation was carried out with students from one university in each country, and inclusion of other centres could have resulted in different results. University students are not representative of young adults in general, and the TSE knowledge, attitude and practice may be different in other sectors of the population.

In conclusion, results show that TSE practices among this sample of male undergraduate university students were inadequate. Efforts should be made to develop educational programmes that can increase knowledge related to testicular cancer as well as the practice of testicular self-examination.

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