

RESEARCH ARTICLE

Testicular Cancer and Testicular Self-Examination; Knowledge, Attitudes and Practice in Final Year Medical Students in Nigeria

Fred O Ugwumba^{1*}, Osa Eloka C Ekwueme², Agharighom D Okoh¹

Abstract

The testicular cancer (TCa) incidence is increasing in many countries, with age-standardized incidence rates up to 7.8/100,000 men in the Western world, although reductions in mortality and increasingly high cure rates are being witnessed at the same time. In Africa, where rates are lower, presentation is often late and morbidity and mortality high. Given this scenario, awareness of testicular cancer and practice of testicular self-examination among future first response doctors is very important. This study was conducted to determine knowledge and attitude to testicular cancer, and practice of testicular self-examination (TSE) among final (6th) year medical students. In addition, the effect of an intervention in the form of a single PowerPoint® lecture, lasting 40 minutes with image content on testicular cancer and testicular self examination was assessed. Pre and post intervention administration of a self-administered structured pre tested questionnaire was performed on 151 medical students, 101 of whom returned answers (response rate of 66.8%). In the TC domain, there was a high level of awareness of testicular cancer, but poor knowledge of the age group most affected, with significant improvement post intervention ($p < 0.001$). Notable also was the poor awareness of the potential curability of TC, this also being improved following the intervention ($p < 0.001$). A poor level of awareness and practice of testicular self-examination pre-intervention was found considering the nature of the study group. Respondents had surprisingly weak/poor responses to the question “How important to men’s health is regular testicular self-examination?” Answers to the questions “Do you think it is worthwhile to examine your testis regularly?” and “Would you be interested in more information on testicular cancer and testicular self-examination?” were also suboptimal, but improved post intervention $p < 0.001$, $p < 0.001$ and $p = 0.037$. Age, gender and marital status were without specific influence. In conclusion, this study showed poor levels of knowledge regarding epidemiology of TCa and its potential curability when detected early. There was also a poor awareness of, practice of, and poor attitudes to TSE. The significant improvement in these parameters post intervention indicates value in educational intervention. We recommend inclusion of TCa coverage and TSE teaching in the secondary school curriculum (targeting adolescents). Greater emphasis should also be given to testicular cancer in the curricula of medical schools and other training institutions for health care personnel.

Keywords: Testicular cancer- testicular self-examination- knowledge- attitudes- practice- medical students

Asian Pac J Cancer Prev, **17 (11)**, 4999-5003

Introduction

Testicular cancer (TCa) incidence is increasing in many countries with age-standardized incidence rates as high as 5.2 and 7.8/100,000 men in the UK and New Zealand respectively (Shanmugalingam et al., 2013).

Lower rates were observed in India, China, and Colombia (0.5, 1.3, and 2.2, respectively) per 100,000 men (Shanmugalingam et al., 2013). These increases are associated with reductions in annual overall testicular cancer mortality rates in the study populations, with the greatest decline observed in Sweden -4.2%, (-4.8; -3.6) and China -4.9%, (-6.5; -3.3). These reductions in mortality and high cure rates are attributable in developed countries to availability of specialized centres offering a

multidisciplinary approach to cancer care, improvements in tumour staging, systemic treatment, and surgery (Bray et al. 2006). Africa is reported to have an age standardized incidence rate of $< 1/100,000$ men (Shanmugalingam et al., 2013; Ferlay et al., 2010). This tends to diminish the size of the problem, but studies have consistently shown that this disease which has excellent cure rates in the western world, is often attended in Africa, by late presentation, poor prognosis and significant mortality (Ugwumba and Aghaji, 2010; Chalya et al. 2014).

Indeed in West Africa, the ratio of age standardized incidence rate (ASIR) to age standardized mortality rate (ASMR), ASIR/ASMR [an index of treatment efficacy and survival] is as low as 1% compared to 65% in Australia (Rosen, 2011).

¹Urology Unit, Department of Surgery, ²Department of Community Medicine, University of Nigeria Teaching Hospital, Enugu, Enugu State, Nigeria. *For Correspondence: fredugwumba@gmail.com

Considering the associated excellent cure rates when TCa is detected and treated early, it would appear that measures geared towards improving awareness of TCa and the practice of testicular self-examination as is being widely practiced widely for breast cancer may be beneficial (Akhtari-Zavare, 2016).

Previous studies have demonstrated low awareness of testicular cancer and TSE in populations of young men, despite an appreciation that the knowledge would be of benefit (Peltzer, 2015; McMaster, 1994; Ugboma, 2011). In Nigeria, majority of patients often present initially to junior / non specialist doctors in primary and secondary health care facilities.

The ability of these doctors to make a diagnosis may be related to their knowledge of this condition and may enhance timely referral (Ugwumba and Aghaji, 2010).

Other workers in Turkey had shown low levels of knowledge among medical students for testicular cancer and recommended the need to emphasise it in the curriculum and increase public awareness of it (Kuzgunbay, 2013).

This paper aims to determine the knowledge, attitude to testicular cancer, and practice of testicular self-examination (TSE) among final (6th) year medical students.

It also aims to assess the effect of a single intervention in the form of an hour long image supported lecture on the previously mentioned parameters. This category of students was chosen because they would shortly be in the forefront of primary medical care in the community and their level of knowledge could be a possible indicator of their ability to recognize, diagnose and refer TCa promptly.

Materials and Methods

Study population. Final year medical students of the University of Nigeria were the focus of the study. The faculty of medical sciences is located in Enugu, which is the capital of Enugu State in South East Nigeria

Both male and female students were invited to attend a lecture/sensitization on testicular cancer. Both male and female students were invited to complete an anonymous self-administered structured questionnaire pre and post lecture.

All students were informed that the exercise was voluntary and questionnaire administration was done by a research assistant in the absence of academic staff, in order to avoid any suggestion of coercion. Ethical principles as stated in the Declaration of Helsinki were complied with.

Study instrument was a questionnaire adapted from that of Ugboma, 2011. It covered the following domains; A. Biodata (age, gender, marital status, year of study, faculty), B. Awareness of testicular cancer, C. Awareness and practice of testicular self-examination (TSE), D. Attitude towards (TSE)

This was pretested on a focus group of students in another medical college in order to assess for construct validity before administration.

After initial explanations, 151, agreed to complete the questionnaires and were each given one to complete.

A total of 101 were returned and deemed fit for analysis, (response rate; 66.8%). The remainder were either not returned or were insufficiently completed.

Results

101 students participated. Mean age was 23.22yrs. 68% were <25 years old. 93.1% were single. 69.3% (70) were male and 30.7% (31) female. Awareness of TC domain, (Table 1) showed a high level of awareness of TC, but poor knowledge of the age group most affected and this improved significantly after the intervention ($p=0.001$). Notable, also was the poor level of awareness of the potential curability of TC and the associated curability percentages when detected early. These parameters also improved following the intervention to the level of statistical significance ($p=0.001$). Awareness of TSE (Table 2), showed a poor level of awareness and practice of testicular self-examination pre intervention considering the nature of the study group. Post intervention responses showed a statistically significant response ($p=0.001$).

Concerning attitude to testicular self-examination, (Table 3), respondents had surprisingly weak/poor responses to the question "How important to men's health is regular testicular self-examination?" These responses improved very significantly post intervention ($p=0.001$). Responses to the questions "Do you think it is worthwhile to examine your testis regularly?" and "Would you be interested in more information on testicular cancer and testicular self-examination?" were also suboptimal considering the study population and improved post intervention ($p<0.001$) and ($p=0.037$).

Age, gender and marital status were assessed, and there was no statistically significant difference in the responses given in all the domains, pre and post intervention.

Discussion

This study showed a high level of awareness of TCa than was found in a previous study (Kuzgunbay, 2013), and is not surprising, given their year / course of study and the associated clinical exposure they had. This tends to be confirmed by the respondents indicating in > 75% of cases that they got their information from hospitals and clinics.

Of concern is the weak knowledge regarding the age incidence of testicular cancer (33% correct), potential curability (79% correct) and associated cure rates when detected early (8% correct). This is similar to the findings of earlier workers (Ramim et al., 2014; Ugurlu et al., 2011) who noted similar levels of poor knowledge across similar domains.

This is of concern considering the leadership role these persons would play in the health care system, given the already observed trends of late referral or misdiagnosis as infective or inflammatory lesions in the cases that do present early to primary care centres (Ugwumba and Aghaji, 2010; Chalya et al. 2014).

Regarding testicular self-examination, despite a high level of awareness (73%), only 23% had ever practiced testicular self-examination, this rate, though higher than that of other workers who studied student populations,

13.3%, (Muliira, 2012; Wardle, 1994). was still poor and may be explained by the fact that these were medical students with possibly greater awareness. Of these only 23.5% performed these examinations monthly as has been recommended previously (Cancer Society of South Africa, 2016).

This is of great concern considering the immense

benefits of testicular cancer survival and early detection that have been attributed to increase in testicular self-examination due to improved disease awareness as a result of education (Evans, 2006).

Concerning attitudes to testicular self-examination, only 58.9% of respondents felt that TSE was very important for men's health, this was similar to the 5.6

Table 1. Awareness and Knowledge of Testicular Cancer

Items	Groups		χ^2	P value
	Pre n (%)	Post n (%)		
Have you heard about testicular cancer?				
Yes	101 (100.0)	101 (100.0)	*NA	*NA
No	0 (0.0)	0 (0.0)		
What is your source of information?				
Hospital/clinics	75 (74.3)	75 (74.3)	7.359	0.061
Health talks	12 (11.9)	21 (20.8)		
Electronic media	8 (7.9)	4 (4.0)		
Friends/school mates	6 (5.9)	1 (1.0)		
Do you know that males can get cancer of the testis?				
Yes	101 (100.0)	101 (100.0)	*NA	*NA
No	0 (0.0)	0 (0.0)		
What age group might be most affected?				
15 years	0 (0.0)	2 (2.0)	99.349	< 0.001
15 – 40 years	33 (32.7)	98 (97.0)		
40 – 65 years	40 (39.6)	1 (1.0)		
>65 years	28 (27.7)	0 (0.0)		
Signs and symptoms of testicular cancers				
Lump/testicular swelling	95 (94.1)	101 (100.0)	6.184	0.013
Testicular pains	59 (58.4)	71 (70.3)	3.108	0.078
Lower abdominal pains	33 (32.7)	39 (38.6)	0.777	0.378
Scrotal heaviness	73 (72.3)	82 (81.2)	2.246	0.134
Is testicular cancer curable?				
Yes	79 (78.2)	101 (100.0)	24.689	< 0.001
No	22 (21.8)	0 (0.0)		
What percentage of testicular cancer can be cured if detected earlier?				
0 – 25%	9 (11.4)	4 (4.0)	87.721	< 0.001
25 – 50%	15 (19.0)	3 (3.0)		
50 – 75%	10 (12.7)	20 (19.8)		
75 – 100%	8 (10.1%)	70 (69.3)		
Don't know	37 (46.8)	4 (4.0)		

NA, Not applicable

Table 2. Awareness and Practice of Testicular Self-Examination

Items	Groups		χ^2	P value
	Pre n (%)	Post n (%)		
Have you heard about testicular self examination?				
Yes	73 (72.3)	101 (100.0)	32.506	< 0.001
No	28 (27.7)	0 (0.0)		
If you have examined your testis before, how often do you do that?				
Regularly (monthly)	12 (23.5)	13 (27.7)	0.388	0.824
Occasionally (1 – 12 months)	27 (52.9)	22 (46.8)		
After a long time (>12 months)	12 (23.5)	12 (23.5)		

Table 3. Attitude to Testicular Self Examination

Items	Groups		χ^2	P value
	Pre n (%)	Post n (%)		
How important to men's health is regular testicular self examination?				
Not at all important	1 (1.4)	0 (0.0)	24.128	< 0.001
Somehow important	10 (13.7)	2 (2.0)		
Important	19 (26.0)	8 (7.9)		
Very important	43 (58.9)	91 (90.1)		
How important is testicular self examination (TSE) for men in relation to breast self examination and cervical smear exam for women?				
TSE not at all important compared to breast self exam and cervical smear	2 (2.7)	0 (0.0)	8.495	0.037
breast self exam and cervical smear more important than TSE	8 (11.0)	3 (3.0)		
TSE is as important as breast self exam and cervical smear	60 (82.2)	96 (95.0)		
TSE is much more important than breast self exam and cervical smear	3 (4.1)	2 (2.0)		
Do you think it is worthwhile to examine your testis regularly?				
Yes	66 (90.4)	100 (99.0)	7.143	0.008
No	7 (9.6)	1 (1.0)		
Would you be interested in more information on testicular cancer and testicular self examination?				
Yes	92 (91.1)	97 (96.0)	9.532	0.009
No	0 (0.0)	3 (3.0)		
Not sure	9 (8.9)	1 (1.0)		

rating (56%) found previously (Peltzer,2015), who like us,(33%) also noted a surprising low prevalence of TSE in their study population. The reasons for these low rates of performance of TSE are unclear but may be due to poor knowledge of the most affected age group to which they happen to belong and cultural/religious beliefs (Ugurlu, 2011; Muliira, 2012).

Foster and co-authors in the United Kingdom had established that 17% of patients referred to a specialist by their general practitioners were found to have testicular cancer. Given these high rates, it may be argued that an increase in the performance of TSE may help to improve early presentation rates (Foster, 2006).

On posing the question "How important is testicular self-examination (TSE) for men in relation to breast self-examination and cervical smear exam for women?" 82.2% noted that TSE was at least as important as breast self-examination. This could be a potential tool in the attempts to enlighten the public, as drawing the parallel between TCa and a better known disease, breast cancer, could help in attaining the benefits that have been derived from BSE (Smith, 1999).

Post intervention, there was a statistically significant improvement in the knowledge of the age incidence of testicular cancer and its curability and percentage survival ($p < 0.001$). Similar findings have been reported by other workers, (Akar, 2014; Shallwani, 2010; McCullagh, 2005) and clearly indicate the potential benefit of such educational interventions.

In the attitude domain there was a statistically significant improvement in the respondents attitude towards the questions; "How important to men's health is regular testicular self-examination?" $p < 0.001$ and "How important is testicular self-examination (TSE) for

men in relation to breast self-examination and cervical smear exam for women?" $p = 0.037$. This is similar to the findings of other workers who carried out similar intervention studies and may indicate the positive value of such interventions in improving the attitude to TSE (Shallwani, 2010).

In conclusion, this study surprisingly, has shown poor levels of knowledge regarding epidemiology of TCa, its potential curability when detected early and high cure rates. There was also a poor awareness of and practice of TSE, as well as poor attitudes to TSE. There was a significant improvement in all these parameter post intervention.

These findings tends to suggest some value in the educational intervention done which may improve the detection of TCa and possibly improve cure rates.

We recommend the inclusion of TCa enlightenment and TSE teaching in the secondary school curriculum (targeting adolescents) as it would probably be of benefit in the secondary prevention of testicular cancer. Greater emphasis should be given to this condition in the curriculums of medical schools and other training institutions for health care personnel.

Limitations; this study had some limitations and these include; 1. The fact that it was done in a single institution. 2. Also of note was the fact that the post intervention assessment was done immediately after, and as such one may expect some differences if some greater time had elapsed before conducting the post intervention assessment. Despite the foregoing which may limit generalizability, we believe that our findings can form the basis for multicentre studies in the future.

References

- Akar SZ, Bebiş H (2014). Evaluation of the effectiveness of testicular cancer and testicular self-examination training for patient care personnel: intervention study. *Health Educ Res*, **29**, 966-76.
- Akhtari-Zavare M, Juni MH, Said SM, et al (2016). Result of randomized control trial to increase breast health awareness among young females in Malaysia. *BMC Public Health*, **16**, 738.
- Bray F, Richiardi L, Ekbom A, et al (2006). Trends in testicular cancer incidence and mortality in 22 European countries: continuing increases in incidence and declines in mortality. *Int J Cancer*, **118**, 3099-111.
- Cancer Society of South Africa (2016). Fact sheet on testicular cancer. Retrieved from <http://www.cansa.org.za/files/2016/01/Fact-Sheet-Testicular-Cancer-Jan-2016.pdf>
- Chalya PL, Simbila S, Rambau PF (2014). Ten-year experience with testicular cancer at a tertiary care hospital in a resource-limited setting: a single centre experience in Tanzania. *World J Surg Oncol*, **12**, 356.
- Evans REC, Steptoe A, Wardle J (2006). Testicular self examination: change in rates of practice in European university students, from 13 countries, over a 10-year period. *J Mens Health Gend*, **3**, 368-72.
- Foster PW, Ritchie AW, Jones DJ (2006). Prospective analysis of scrotal pathology referrals - are referrals appropriate and accurate? *Ann R Coll Surg Engl*, **88**, 363-6.
- Ferlay J, Shin HR, Bray F, et al (2010). Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *Int J Cancer*, **127**, 2893-917.
- Kuzgunbay B, Yaycioglu O, Soyupak B, et al (2013). Public awareness of testicular cancer and self-examination in Turkey: a multicenter study of turkish urooncology society. *Urol Oncol*, **3**, 386-91.
- McMaster J, Pitts M, Wilson P (1994). The practice of testicular self-examination: a comparative study of British and Zimbabwean undergraduates. *Cent Afr J Med*, **40**, 154-8.
- McCullagh J, Lewis G, Warlow C (2005). Promoting awareness and practice of testicular self-examination. *Nurs Stand*, **19**, 41-9.
- Muliira JK, Nalwanga PB, Muliira RS, et al (2012). Knowledge, perceived risk and barriers to testicular selfexamination among male university students in Uganda. *J Mens Health*, **9**, 36-44.
- Peltzer K, Pengpid S (2015). Knowledge, Attitudes and Practice of Testicular Self- examination among Male University Students from Bangladesh, Madagascar, Singapore, South Africa and Turkey. *Asian Pac J Cancer Prev*, **16**, 4741-3.
- Rosen A, Jayram G, Drazer M (2011). Global trends in testicular cancer incidence and mortality. *Eur Urol*, **60**, 374-9.
- Ramim T, Mousavi SQ, Rosatmnia L (2014). Student knowledge of testicular cancer and selfexamination in a medical sciences university in Iran. *Basic Clin Cancer Res*, **6**, 1-5.
- Smith TJ, Davidson NE, Schapira DV (1999). American Society of Clinical Oncology 1998 update of recommended breast cancer surveillance guidelines. *J Clin Oncol*, **17**, 1080-2.
- Shallwani K, Ramji R, Ali TS (2010). Self examination for breast and testicular cancers: a community-based intervention study. *Asian Pac J Cancer Prev*, **11**, 383-6.
- Shanmugalingam T, Soultati A, Chowdhury S (2013). Global incidence and outcome of testicular cancer. *Clin Epidemiol*, **17**, 417-27.
- Ugboma HA, Aburoma HL (2011). Public awareness of testicular cancer and testicular self-examination in academic environments: a lost opportunity. *Clinics (Sao Paulo)*, **66**, 1125-8.
- Ugurlu Z, Akkuzu G, Karahan A (2011). Testicular cancer awareness and testicular self-examination among university students. *Asian Pac J Cancer Prev*, **12**, 695-8.
- Ugwumba FO, Aghaji AE (2010). Testicular cancer: Management challenges in an African developing country. *S Afr Med J*, **100**, 452-5.
- Wardle J, Steptoe A, Burckhardt R (1994). Testicular self-examination: attitudes and practices among young men in Europe. *Prev Med*, **23**, 206-10.