Original Article:

Awareness About Testicular Cancer and Testicular Self-Examination (TSE) in Indian Expatriates in the Middle East

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Abstract: Objective: The study was conducted to assess the level of awareness about testicular cancer and the prevalence of the practice of testicular self-examination (TSE) in the Indian expatriates in the Middle East and thereby propose appropriate interventions. Methods: A cross-sectional survey was conducted in a random sample of Indian subjects aged 15-35 years and working in various sectors in Al-Qassim region of the Kingdom of Saudi Arabia. A questionnaire was self-designed and filled during interviews to study the awareness levels related to testicular cancer and testicular self-examination. Results: Overall awareness level related to testicular cancer was found to be poor in 89%, fair in 10% and good in 1% of the participants of the study. The practice of correct monthly testicular self-examination was virtually non-existent. Conclusion: Awareness regarding testicular cancer and testicular self-examination in Indian men aged 15-35 years, working in Saudi Arabia is low. Dedicated efforts are required in order to educate this large segment of at-risk population. Healthcare providers of Indian origin working in the Middle East can play effective role on this front.

Key Words: Testicular cancer, testicular self-examination (TSE), awareness, health education, social media

Introduction:
Testicular cancer is the most frequent cancer and the third leading cause of cancer deaths in men aged 15-35 years in spite of the advent of effective chemotherapeutic agents and radiation therapy. Early detection by testicular self-examination (TSE) is stressed upon in literature as effective means to improve prognosis but various studies have reported that as high as 89% of adult men below age 35 never perform TSE (1). Studies from India also point towards presentation of testicular cancer patients in late stages and overall lack of awareness about this disease (2). Indians in the Middle East form a vast community and there is no specific data related to their awareness levels about testicular cancer and TSE. This study was attempted as a pilot project to gain insight into this important health related issue.

Materials and Methods
The target group for this study was males of Indian origin, aged 15-35 years living in Al Qassim region of Saudi Arabia. Al Qassim is one of the thirteen administrative regions of Saudi Arabia and has a significant Indian expatriate population employed in various sectors including agriculture, municipality, transport, healthcare, education and chemical industry. Located at the heart of the country, and almost in the center of the Arabian Peninsula, Al Qassim is known to be the “alimental basket” of the country, for its agricultural assets.

Study Design
A descriptive cross-sectional survey with purposive sampling was conducted on 1000 consecutive male expatriates of Indian origin, working in various sectors in the towns of Buraidah and Unaizah of Al Qassim region of Saudi Arabia from July 2019-September 2019. A random sample was taken for study and the sample size was estimated by using a single proportion formula with an acceptable margin error (d) at 5%. Analyses of data were done with SPSS (Statistical Package for Social Sciences) for Windows version 11.5 and Microsoft Excel-2017 and the data were expressed as mean, range and numbers (with percentages). For the analyses, the significance level was set at p-value less than 0.05, with a confidence interval of 95%. The questionnaire had three sections and was filled in English language in MS Excel 2017 format but the interview was held in English, Arabic, Urdu or Hindi as per the ease and preference of the participants.

The Section 1 contained demographic data (age, educational qualifications, and nature of work). The Section 2 had nine questions related to basic epidemiology (question 1-2), possible symptoms of localized (question 3-6) and metastatic (7-9) testicular cancer and all the questions had affirmative as the correct response. Accordingly, one mark was awarded for ‘Yes’ response and no mark was awarded for ‘No’ and ‘Not sure’ responses. On the basis of score attained in this section, the awareness levels in subjects was categorized as Good awareness (Score 7-9), Average awareness (Score 4-6) and Poor awareness (Score 0-3).

Section 3 had three questions related to the technique of performing TSE. The participants registering ‘Yes’ responses in first question were advanced in the interview to second and third questions. Responses were analyzed as percentages in this section.
After the interview, the participants were briefly informed about the:
1. Presenting features of testicular cancer
2. Simple technique of monthly TSE.
At the end, a brief feedback was sought from the participants.

Exclusion criteria
The exclusion criteria included:
1. Working in health care sector
2. History of any testicular disorder in the past
These groups were excluded on the presumption of possibly having acquired some extra information about testicular disorders and hence having potential to bias the results.

Ethical approval and consent
The study was duly approved by the surgical department research committee.
The goals of the study and data usage were explained to the participants as per the ethical guidelines of Helsinki and verbal consent was secured. The participants were requested to answer a questionnaire after assuring them of confidentiality. Participants were free to decline participation, not respond to any question or completely opt out at any time during the interview without any sort of reprimand.

Results
The results obtained after analysis of the data obtained in the study are as shown in Table 1-3 and Fig 1. A total of 1000 consecutive subjects in the age group of 15-35 years were approached and interviewed; 468 opted out without completing the interview session and hence their responses were excluded from the final data analysis and 532 participants stayed till the completion of the survey.

Table 1: Demographic data of the participants

<table>
<thead>
<tr>
<th>Socio-Demographic data (532)</th>
<th>Number (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (in years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-25</td>
<td>113</td>
<td>21.24%</td>
</tr>
<tr>
<td>25-35</td>
<td>419</td>
<td>78.76%</td>
</tr>
<tr>
<td><strong>Profession</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office goers/Professionals /Teachers</td>
<td>24</td>
<td>4.5 %</td>
</tr>
<tr>
<td>Construction workers (masons, labor etc.)</td>
<td>89</td>
<td>16.8 %</td>
</tr>
<tr>
<td>Farm workers</td>
<td>144</td>
<td>27.1%</td>
</tr>
<tr>
<td>Cleaners</td>
<td>48</td>
<td>9%</td>
</tr>
<tr>
<td>Transport (Drivers, helpers)</td>
<td>65</td>
<td>12.2%</td>
</tr>
<tr>
<td>Mechanics (vehicle, machine)</td>
<td>57</td>
<td>10.7%</td>
</tr>
<tr>
<td>Shopkeepers/salespersons</td>
<td>96</td>
<td>18%</td>
</tr>
<tr>
<td>Unemployed (currently)/ Students</td>
<td>9</td>
<td>1.7%</td>
</tr>
<tr>
<td><strong>Education level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to High school</td>
<td>314</td>
<td>59%</td>
</tr>
<tr>
<td>Secondary school</td>
<td>137</td>
<td>25.8%</td>
</tr>
<tr>
<td>Graduate/Diploma</td>
<td>68</td>
<td>12.8%</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>13</td>
<td>2.4%</td>
</tr>
</tbody>
</table>

The scores attained by the participants ranged from 1-7 (mean 2.22) as shown in Figure 1. On the basis of these scores, 472 (89%) of the participants got categorized in poor awareness group, 54 (10%) in fair awareness and only 6 (1%) in good awareness group as shown in Figure 2.

Figure 1: Score obtained by the participants in the questionnaire used in the study
As far as the TSE is concerned, 495 (93%) had never heard about the concept. And hence only 37 (7%) were advanced further and asked about the proper technique and practices. Only 3 out 37 (9%) were aware of the correct technique and practicing it on monthly basis as is evident in Table 3.

Table 3: Level of awareness related about male testicular self-examination

<table>
<thead>
<tr>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have you heard about Testicular self-examination</td>
<td>37</td>
<td>495</td>
<td>-</td>
</tr>
</tbody>
</table>

For participants who record Yes to Q 1 (n=37)

<table>
<thead>
<tr>
<th>Questions</th>
<th>Correct</th>
<th>Not correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please briefly explain how to do the testicular self-examination</td>
<td>3 (8.1%)</td>
<td>34 (91.9%)</td>
</tr>
</tbody>
</table>

Table 4: Awareness as per the educational level

<table>
<thead>
<tr>
<th>Level of education</th>
<th>Participants (n)</th>
<th>Poor awareness</th>
<th>Fair awareness</th>
<th>Good awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upto High school</td>
<td>314</td>
<td>305 (97%)</td>
<td>8 (2.6%)</td>
<td>1 (0.4%)</td>
</tr>
<tr>
<td>Secondary school</td>
<td>137</td>
<td>112 (81.7%)</td>
<td>23 (16.8%)</td>
<td>2 (1.5%)</td>
</tr>
<tr>
<td>Graduate/Diploma</td>
<td>68</td>
<td>48 (70.6%)</td>
<td>19 (27.9%)</td>
<td>1 (1.5%)</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>13</td>
<td>7 (53.8%)</td>
<td>4 (30.8%)</td>
<td>2 (15.4%)</td>
</tr>
</tbody>
</table>

The impact of the level of education on awareness about testicular cancer is as shown in Table 4 and Figure 3.

Discussion

Testicular cancer is the most common solid tumor among males 15 to 34 years of age, accounting for about 1% of all cancers in men (3-5). The age-adjusted annual incidence in the United States is 5.6 cases per 100,000 persons whereas the incidence in India has been reported to be about 0.5-1 case per 100,000 persons (3, 6).

Furthermore as this disease affects men in the prime of their lives, there is a great potential for adverse impact on the quality of long remaining years of life (7).

The prognosis of the disease has improved considerably during the past few decades due to availability of safer and effective chemotherapeutic agents but even now, the statistics from western literature show that there is a significant delay of 4 to 5 months from initial symptoms to definitive diagnosis by radical orchiectomy (8).
Studies from India have also shown that the patients tend to report in later stages of the disease with bulky tumors. In a series conducted by Sathyanarayana et al., 67% of patients had evidence of metastatic disease at the time of diagnosis (2).

The precise cause of testicular cancer is still unknown, although several risk factors have been associated with the disease including undescended testicles, family history, age, and ethnicity. Without a known way to prevent testicular cancer, studies have stressed upon the healthcare professionals to promote awareness about the risks / warning signs, to achieve early detection and hence reduction in the risk of metastasis and potential exposure to more morbid treatment regimen (8-9).

Kingdom of Saudi Arabia (KSA) is the largest country in the Middle East, with an area of 2.24 million sq. km. (nearly 2/3rd the size of India). It occupies 80% of the Arabian Peninsula and is the 14th largest country in the world. There are about 10.74 million expatriates in the country and Indians are the second largest expatriate community, numbering over 1.54 million (14%) as per the data of recent data (10-11).

In this section of Indian community, no specific study has been undertaken in the past to look into the level of awareness about testicular cancer or the practice of testicular self-examination though such studies are reported widely in literature. The studies related to local Saudi population has shown that the incidence rate is rising with doubling observed during the last decade. The most affected age group was 20–34 years and in general, presentation has been late (12). It is against this background that this study was undertaken as a pilot project in the peninsular gulf.

As is evident from the results, 468 (46.8%) participants opted out of the interview midway due to reluctance to discuss the issue related to health of testes. This depicts the cultural background of Indian society where open discussions about genitalia are still considered a taboo subject. The participants belonged to wide range of professions and 451 (84.8%) had academic qualifications up to secondary school level. 89% of the participants had poor awareness about testicular cancer, 10% had fair awareness and only 1% had good awareness scores. Only 7% had heard about testicular self-examination and most of them either didn’t know the proper method or else did not do it routinely. These figures appear worrying, keeping in view that the study include only 15-35 years age group, which as per the literature, is at the highest risk and hence in greatest need of information. However, the Table 4 and Figure 1 depicts a statistically significant improvement in the awareness scores as the education level improves from high school, through secondary school, graduate/diploma to postgraduate level. This trend creates a hope that efforts at guidance and education of masses can potentially have positive impact on the situation.

Analysis of literature show that awareness levels about testicular cancer have been found to be inadequate in many studies undertaken in higher education students as well as general population and it has been emphasized that efforts be made to develop programmes that can increase knowledge related to testicular cancer as well as the practice of TSE (13). Millon-Underwood and Sanders conducted a study in African-American men and found that most men are unaware of the fact that cancer can develop in the testicles and that among African-American men this lack of knowledge is even greater (14). Pelzer and Pengrind investigated the knowledge, attitude and practice of TSE among 2061 male undergraduate university students aged 16-30 years, from low income (Bangladesh, Madagascar), middle income (South Africa, Turkey) and emerging economy (Singapore) countries. The study found that only 17.6% of the male students indicated that they knew how to perform TSE and that 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 had found that TSE importance or positive attitude was highly associated with TSE practice (15). McCullagh et al evaluated the efficacy of a health promotion initiatives and their study highlighted the potential of using a low-cost initiative which targets innovative venues to improve men’s knowledge of testicular cancer and rates of TSE (16).

Recommendations, about promoting the TSE found in literature vary between professional organizations; and it is recommended that healthcare providers who decide to promote the technique must frame their education in developmentally appropriate ways and base their approach on methods proven to work with the target population (17).

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Conclusions
This study provides some insight into awareness levels regarding testicular cancer and testicular self-examination in the at-risk age-group (15-35 years) Indian expatriates living in the Middle-East. The awareness levels are generally poor and there is strong need to devise strategies to improve this situation to avoid the delayed presentation of cancer patients. Voluntary efforts of Indian expatriate health care providers as well as judicious use of internet can potentially serve as a cost-effective tools in this regard.

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References