RESEARCH ARTICLE

Awareness of General Public Towards Cancer Prostate and Screening Practice in Arabic Communities: a Comparative Multi-Center Study

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Abstract

   The current study aimed at exploring the knowledge and beliefs of men aged forty years and over towards prostate cancer screening and early detection in three Arab countries. The field work was conducted in three countries; Saudi Arabia, Egypt and Jordan, during the period February through December 2011. Our target population were men aged 40 years and over. It was a population-based cross sectional study comprising 400 subjects at each site. In addition to socio-demographic data, history of the present and past medical illness, practice history of prostatic cancer examination, family history of cancer prostate; participants were inquired about their knowledge and attitude towards prostate cancer and screening behavior using two different likert scales. The percentage of participants who practiced regular prostate check up ranged from 8-30%. They had poor knowledge and fair attitude towards prostate cancer screening behavior, where the mean total knowledge score was 10.25±2.5, 10.76±3.39 and 11.24±3.39 whereas the mean total attitude score was 18.3±4.08, 20.68±6.4 and 17.96±5.3 for Saudi Arabia, Egypt and Jordan respectively. The respondents identified the physicians as the main sources of this information (62.4%), though they were not the main motives for regular checkup. Knowledge was the only significant predictor for participants' attitude in the multiple regression models. Participants' attitudes depends mainly on level of knowledge and quantity of information provided to the patients and their families. Such attitudes should rely on a solid background of proper information and motivation from physicians to enhance and empower behaviors towards prostate cancer screening practices.

Keywords: Cancer prostate screening - knowledge - attitude - early detection - Arab countries

Introduction

   Rapid improvements in the field of health care and dramatic socioeconomic changes resulting in modified lifestyles are believed to have contributed to the increased incidence of cancers in Arab populations (Al-Hamdan et al., 2009). Prostate cancer (PC) lies at the other end of the spectrum. The incidence of clinical prostate cancer in Arabs is among the lowest in the world. This is despite the increased prevalence of risk factors, including the intake of high-caloric food rich in animal fat and smoking (Ghafoor et al., 2003). Incapacity of public awareness and national strategies are warranted to reach the threshold level to result in a positive communal engagement and to actively control cancers at early stages (Ghafoor et al., 2003).

   Over the past decade, screening for prostate cancer with serum prostate-specific antigen (PSA) testing and digital rectal examination (DRE) has been the subject of intense investigation in the medical community (Lin et al., 2008; Hamashima et al., 2009; Schröder et al., 2009; Madu and Lu, 2010). Although much has been learned about the performance characteristics of these screening

tests, their ability to detect clinically significant prostate cancer when it is still curable is not completely established (Ilic et al., 2011). Moreover, prostate test screening is controversial at the moment and may lead to unnecessary, even harmful, consequences in some patients (Marilynn, 2011). The association of knowledge about prostate cancer screening with getting prostate cancer screening is not clear due to the inconsistency in the literature. The study of the impact of undergoing prostate carcinoma screening on knowledge done in USA showed that men who chose not to get screened had less knowledge about prostate cancer and a less positive attitude toward screening than men who chose to get screened (Hoffman, 2011). This finding suggests that giving men information about prostate cancer screening would increase screening rates. In other studies, informational interventions actually decreased the interest in prostate screening after the benefits and burdens associated with prostate screening were explained to the participants (Sheridan et al., 2004).

   The motives for men refusing or attending prostate cancer screening are largely unknown. Studies of the public's knowledge, perceptions, or screening practices

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relative to prostate cancer are lacking in our Arabic region, where the prevalence of prostate cancer in our developing countries is much different than that in United States and European countries, besides there is no national program adopted for screening of such cancer in Arabic countries. More insight into the motives for refusing or attending, also in relation to background characteristics is needed to tailor the invitation and screening procedure. The aim of the current study was to assess the knowledge and attitude of men aged 40 years and over, in our region, towards cancer prostate and its detection in order to know the possible factors that contribute to screening practice.

Materials and Methods

A comparative cross sectional study was conducted in three Arab countries; Saudi Arabia, Egypt and Jordan. The field work Started in Riyadh City, the capital of Saudi Arabia during the period February through July 2011. Six months later two additional cities were added, Alexandria, Egypt and Amman, Jordan. Our target population were men aged 40 years and over, with no history of prostate cancer. The three countries were selected not only because of the different culture, habits, tradition and life style, but also because of the rapprochement of the incidence of PC in each one. While the age standardized incidence rate of prostate cancer in Saudi Arabia is (5.7/100,000) (Saudi Cancer Registry, 2007), it was (5.5/100,000) in Jordan (Jordan cancer registry, 2009) and 6.2/100,000 in Egypt (Ferlay et al., 2008).

Sample size and selection:
Knowledge, attitudes and screening practices of general population in Saudi Arabia towards PC were never studied before. Based on the assumption that the prevalence of the impaired knowledge, attitude and/or poor screening practice in the general population is 50%, The sample size using (95%) confidence interval and at a degree of precision of (5%) was determined to be 400 subjects. The population-based sample was selected randomly from worksites, Malls, and waiting areas of outpatient clinics of University hospitals and coffee shops by trained interviewers. Men fitting the age criteria who volunteered to complete the questionnaire were included in the study after explaining the objectives of the study and obtaining their verbal consent.

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Study tools:
A structured questionnaire was developed from literatures review, it was translated to Arabic and pre-tested within the priority population (n=20), its internal consistency was examined using the Cronbacks Alpha. After review and final changes were approved, it was used as the instrument for data collection for the present study The questionnaire included questions with several items to ascertain the respondents' information, attitude and beliefs towards prostate cancer screening. In addition to socio-demographic data, history of the present and past medical illness, history of prostatic diseases and examination, family history of cancer prostate, participants were inquired about their knowledge and attitude towards prostate cancer and screening behavior. Two scales were developed through extensive literature review. The knowledge scale comprised 20 questions concerned with the function of the prostate, signs and symptoms of cancer prostate, risk factors, diagnosis and management. For each question the correct answer was given a score of one and incorrect answer was given zero. Blank and don't know responses were coded as wrong responses.

The three point attitude Likert scale (agree, undetermined, don't agree) comprised 14 questions for assessing the attitude of participants towards the importance of early diagnosis and detection, cure rate and significance of different diagnostic and therapeutic procedures. For each item the response was scored from 0-2 with a higher score for more favorable attitude toward PC screening and early detection. Scores were summed up to attain the total knowledge score, which ranged from 0-20 and total attitude score which ranged from 0-28.

Statistical analysis:
Data was entered and analyzed using the Statistical Packages for the Social Sciences (SPSS/PC) version 17. The data set was investigated for missing values. Descriptive information was calculated for all variables. Correlations were done on all major variables of interest for the present study. Analysis of variance test and t test were used as tests of significance. The level of significance used was at p value <0.05. A pilot study was conducted for testing our tools and internal consistency of different scales, where Chronbach Alpha was 0.62 for attitude scale, and 0.85 for knowledge scale. Logistic regression was

Table 1. General Characteristics of Study Population in the Three Countries

	Saudi Arabia	Egypt	Jordan
Age	40-63 years, x^-=48.1+6.1	40-88 years, x^-=52.1+9.9	40-92 years x^-=53.7+11.1
Education:			
Illiterate & read and write	33 (8.3%)	25 (6.2%)	20 (5%)
Primary - secondary	221 (55%)	103 (25.8%)	100 (25%)
University & Above	146 (37%)	272 (68%)	280 (70%)
Marital status: Married	296 (74%)	301 (75.3%)	316 (79%)
Family history	Yes	Yes	Yes
of cancer prostate	40 (10%)	16 (4%)	32 (8%)
Regular examination	Yes	Yes	Yes
for cancer prostate	40 (10%)	33 (8.3%)	120 (30%)

used to explore the effect of different factors predicting the participants' attitude behavior of participants towards prostate cancer screening, the dependent variable was participants' attitude.

Results

Most of our participants (74-79%) were married, the age range was higher in Jordan, Most of them in Egypt and Jordan had a university degree, while nearly half of the Saudi participants were in the preparatory of secondary level of education. The percentage of participants who practiced regular prostate examination was 30% in Jordan followed by 10% and 8.3% in Saudi Arabia and Egypt respectively, most of them (67-82%) were in the age group 50 years and over, Table 1.

The most frequent motives mentioned by those who have done regular prostate examination in the three countries were nearly in the same order, i.e. assurance and routine checkup (44.6%, 38.3%, 55%), physicians' medical advice (22.2%, 29%, 17%), and appearance of symptoms (6.7%, 16%, 33%). Whereas the main motives for non doing prostate examination in the three countries, Saudi Arabia, Egypt and Jordan respectively were; absence of urological complaints (60.4%, 63%, 71%), no request from physicians (10%, 6.2%, 17%), while embarrassment, anxiety and fear from pain and results constituted 17.4%, 11% and 11.3%.

The mean of total correct knowledge score was 10.25+ 2.5(51.2%), 10.76+3.39 (53.8%)and 11.24+3.39(56.2%) for Saudi Arabia, Egypt and Jordan respectively with an actual range 0-20. Regarding Saudi Arabia, the correct answers exceeded 60% in five knowledge statements i.e function of the prostate, effect of age predisposition for PC, PSA could be normal with PC and surgery is the only treatment for PC. While the percentage of correct answers ranged from 30 % to less than 45% in eight statements which are mainly pertinent to symptoms & management of PC and that smoking is a predisposing factor. Over 50% to less than 60% knew about genetic predisposition of PC, mortality statistics of PC, DRE and PSA as diagnostic tools. The least correct statements percentages were about the incontinence of urine which accompanies cancer prostate surgery (30%) and false positive results of high PSA level (29.2%) , while the highest correct percent (69.3%) was about the statement that "any enlargement of the prostate is considered a cancer". As for Egypt, the highest correct percentages ranged from 74% to 88.7% and were related to statements about any "enlargement of the prostate is considered a cancer", symptomless PC and surgical treatment. On the other hand, the recorded percentages (20% - 33%) were observed for statements about function of the prostate, false positive results, incontinence as a complication of surgical treatment and different management procedures other than surgery. In Jordan, the mean percentage of correct knowledge score was to some extent higher, were most of the correct answers ranged from over 40% to more than 60%, Table 2. The respondents identified the physicians and medical staff as the main sources of this information, followed by friends and family then TV, brochures and magazines, yet the percentage varied from one country to another.

Table 2. Distribution of some Knowledge Statements in the Three Countries, 400 Participants at Each Site

Knowledge statement	Saudi Arabia Correct answer	Egypt Correct answer	Jordan Correct answer
Prostate is a gland responsible for testosterone excretion	267 (67%)	132 (33%)	248 (62%)
PC has the second highest mortality rate among men	233 (58%)	270 (67%)	186 (46%)
Incidence rate is increasing by aging	248 (62%)	178 (44%)	252 (63%)
Genetic element is an important predisposing factor	207 (58%)	239 (60%)	194 (48%)
Any prostatic enlargement is cancer	277 (70%)	355 (89%)	320 (80%)
There is a possibility of having PC without symptoms		308 (77%)	244 (61%)
Physicians can discover PC through DRE	221 (55%)	176 (44%)	54 (38%)
PSA could be normal with PC	256 (64%)	296 (74%)	268 (67%)
PSA could be high in normal men without PC (false positive results)	117 (29%)	88 (22%)	117 (29%)
Weak and intermittent urination is a symptom of PC	172 (43%)	176 (44%)	195 (49%)
Low back pain is a symptom of PC	128 (32%)	176 (44%)	156 (39%)
Nocturia is a symptom of PC	144 (36%)	178 (44%)	164 (41%)
Surgery in the only treatment for PC	252 (63%)	320 (80%)	259 (65%)
Surgical treatment leads to incontinence	120 (30%)	135 (34%)	213 (53%)
Irradiation is one of the treatment measurements	164 (41%)	80 (20%)	266 (66%)

Table 3. Distribution of Some Attitude Statements in the Three Countries, 400 Participants at Each Site

Statement	Saudi Arabia Agree	Saudi Arabia Don't	Egypt Agree	Egypt Don't	Jordan Agree	Jordan Don't
It is Useful for men above 45 years to do regular checkup for PC	279 (70%)	40 (10%)	324 (81%)	37 (10%)	216 (54%)	56 (14%)
Early detection of PC decreases complications	256 (64%)	61 (15%)	292 (73%)	33 (9%)	240 (60%)	74 (19%)
I feel that DRE is important	207 (52%)	80 (20%)	207 (52%)	68 (17%)	168 (42%)	80 (20%)
DRE is unacceptable	180 (45%)	119 (30%)	195 (49%)	76 (19%)	148 (37%)	109 (28%)
I feel nervous and embarrassed if the physician asked for DRE	183 (46%)	127 (32%)	212 (53%)	83 (21%)	158 (40%)	114 (29%)
I believe that PSA is an effective measure for early detection of PC	232 (58%)	65 (17%)	191 (48%)	77 (20%)	220 (55%)	72 (18%)
No need for PSA because it is not a confirmatory test	123 (31%)	148 (37%)	264 (66%)	43 (11%)	148 (11%)	124 (31%)
Regular examinations for PC are expensive	165 (41%)	97 (24%)	177 (44%)	44 (11%)	182 (46%)	109 (27%)
I don't prefer doing PC examination as they would increase my anxiety and fear	196 (49%)	79 (19%)	184 (46%)	111 (28%)	181 (45%)	89 (22%)
I'm committed to do PC examination if required, what so ever.	255 (64%)	66 (17%)	284 (71%)	46 (12%)	266 (67%)	64 (16%)

Table 4. Multiple Regression Analysis Results, Determinants of Participants' Attitude Towards PC Examination Practice

	Saudi Arabia			Egypt			Jordan		
	β	t	p	β	t	p	β	t	p
Age	0.023	0.56	0.52	0.11	1.79	0.7	0.095	1.49	0.13
Total knowledge	0.36	3.7	0	0.34	5.44	0	0.35	5.34	0
Education	0.54	0.97	0.51	0.13	1.08	0.06	0.016	0.23	0.81
Family history	0.36	0.37	0.78	0.12	1.66	0.2	0.024	0.44	0.13

The mean total attitude score was 18.3±4.08, 20.68±6.4 for Saudi Arabia and Egypt respectively with an actual range 0-28. The only attitude statement that attained the highest percent of agreement (70%) was "it is useful for men above 45 years to do regular checkup for prostate cancer". Other statements like "early detection of cancer is accompanied by reduced complications and increased odds of cure" in addition to the importance of prostate cancer screening for relatives of PC patients have got an agreement between 63% and 67%. Participants had a negative attitude towards "effectiveness of DRE and its importance" where the percent agreement was less than 50%, in the same context; their beliefs about the importance and effectiveness of PSA as an important diagnostic tool ranged from 30-58%. Quite percentage of the participants don't prefer doing PC examination tests as they believe it is expensive (41.4%) or might increase their anxiety and worries (489%). Over fifty percent (51.3%) to nearly 64% confirmed that they are committed to do the required diagnostic procedures and committed to the physician's advices. Regarding Egypt, Participants had a positive attitude towards significance and importance of early detection and diagnosis of PC while their negative impression was mainly directed towards DRE, and laboratory diagnostic tests that might incur irritability, fear and anxiety. Respondents in Jordan had the least mean total attitude score (17.96±5.3), they had a favorable attitude towards only three statement i.e. importance of early detection of PC and their commitment to stick to physician's advice and to do regular PC examination, Table 3.

Multiple regression was used to explore the factors that could play a determinant role for participants' attitude towards PC screening behavior, the model included age, knowledge, family history of PC, and education. The only significant variable that was detected was total knowledge score; p=0.00 in the three models, Table 4.

Discussion

The countries of the Arab Middle-east share a great deal in terms of culture while markedly differing in their levels of economic development. The variation between and within populations is reflected in different disease profiles, although in all cases the burden of cancer is already appreciable. The available data indicate that incidence rates are rising and with aging as well as continued population growth this means that the problem will loom larger in the future (Elsayed et al., 2009).

In many of the countries of the Middle-east, prostate cancer is already a problem, yet the extent of which is much lower than developed countries. Screening is opportunistic. However, data should be interpreted with caution because public awareness campaigns have led to large numbers of individuals being found positive (Elsayed et al., 2009).

In terms of awareness, different barriers may prevent men from seeking early detection and diagnosis of cancer prostate, i.e. mistrust of physicians, fear of diagnosis, fear of testing procedures, DRE threatens sexuality and others, all of them should be identified for adequate prevention and screening program (Roberts et al., 2010).

The first community-based field trial study conducted in Saudi Arabia revealed a prevalence rate of PC among the studied cohorts, 2.5% which was higher than expected, in addition more than one fourth had advanced disease and beyond cure which delineate that reported figures are underestimating the actual situation in our region (Rabah and Arafa 2010).

The percentage of participants who practiced PC examination and regular checkup within the last year in the current study ranged from 8-30% in the three samples. An interesting finding was that Egypt had the least practice activities despite the highest attitude percentage of their participants towards screening and examination of PC. Physicians' advice was not the main motive for such regular checkup. On the other hand, for those who have not been engaged in a regular checkup, the main reason were absence of urological complaints followed by lack of physicians' advise and fear and anxiety in the three countries. The study of Naomi in California (Naomi et al., 2003), and in Juiz de For, Brazil, (Pereira et al., 2010) reported that a little more than half of the sample (54%) reported that they had a prostate test within the last year. Three quarters of the cohort studied in Western Australia, 2006, had undergone one or more previous prostate-related examinations (Arnold-Reed et al., 2008), more than 60% of them reported that a physician had already informed them they should do the prostate examination as a preventive routine.

If cancer patients avoid seeking care until their disease is undeniably extensive, they create a self-fulfilling prophecy by virtue of the fact that the disease is truly incurable at that point. Moreover, advanced cancer requires aggressive treatment that results in side-effects further adding to the fears and barriers that keep patients from seeking care. In the worst-case scenario, the public comes to believe that the treatment, rather than the cancer, causes death. These beliefs, which are difficult to overcome once established in the social network, can undermine, if not shut down any ministry efforts toward early detection programs (Boyle and Levin, 2008).

Such reported figures of prostate cancer examination and screening practice was mainly attributed to poor knowledge and attitude among participants towards PC examination in addition to lack of physicians' advise where doctors plays a crucial role in the diagnosis of this problem. Earlier studies identified that the main reason given for not attending screening services for cancer patients was that it was not suggested by the doctor (Ravichandran et al., 2011). The results of Conola et al could also reflect the influence of medical providers, as

physician advice for screening and reported screening were highly correlated (Conola et al., 2000).

Therefore, patients should be invited to discuss the issue on their regular checkups and care should be taken to educate men about this problem. The study of Arafa et al. in Saudi Arabia reported that only 54% of the physicians were practicing PC counseling and screening with their patients and their knowledge and attitude towards this issue is not good (Arafa et al., 2010). It was found that physicians who were influence by scientific evidence were more likely to practice informed decision making with their patients particularly primary health care physicians (Purvis et al., 2004). Media represents an important strategic tool in the dissemination of health information. Public knowledge and information on cancer prevention now seems influenced largely by television/ radio rather than by information provided directly by health professionals. As the public spends considerably more time in front of the television / radio, than with their healthcare providers (Ravichandran et al., 2011).

Participants in the current study were characterized by having poor knowledge and fair attitude towards prostate cancer screening and detection in the three countries, the highest mean total knowledge score was reported from Jordan (11.24±3.39), which was barely above the midpoint (56.2%) while the highest mean total attitude score was reported from Egypt (20.68±6.4, 73.8%). An interesting finding was the lack of knowledge of men about symptoms and management of PC and its complications. While knowledge about some predisposing factors of PC and diagnostic procedures was fair, other knowledge statements related to the function of the prostate, Benign prostate hyperplasia exceeded a little. More than two thirds referred the proper age for prostate cancer screening as being from 45 onwards and agreed upon the importance of early detection except for Jordan which had the lowest mean total attitude score. Their attitude towards DRE and cost of diagnostic procedures was negative, probably as they believe that these tests are expensive and would increase their anxiety and fear. It was found that nearly two thirds of the men in the sample did not find it difficult to obtain screening for prostate cancer. However, far too many did not avail themselves of this vital screening. That finding showed that while they have the sense that the screening is important, knowledge alone did not offer sufficient motivation to take decisive action to engage in health-seeking behaviors.

Deficits in knowledge and attitude about PC among cohorts in the present study was also reported in Australia study (Arnold-Reed et al., 2008). On the other hand, the results of Brazil study reported that 63.8% of men presented proper knowledge regarding prostate cancer; 40.6% had a proper attitude, and 28.1% a proper practice and those participants with adequate attitudes reported almost twice adequate practice for the detection of prostate cancer (Pereira et al., 2010).

Knowledge was the only significant determinant of participants' attitude in regression analysis. knowledge seems to have been a decisive factor in the adoption of proper attitudes towards the recommended examination and in turn a proper practice. This aspect of our results confirms the logic of the KAP model, which assumes that health behaviors are linked to a sequential process; the acquisition of a correct knowledge leads to a favorable attitude that can also lead to healthy practices. Therefore, we expect that the appropriate knowledge is one of the features that favor positive behavioral changes, though we recognize that this is not the only determinant factor of health practices (Pereira et al., 2010). Our results suggest that people in our developing countries would benefit from partnerships between public health educators and the media, to speed up the dissemination of cancer information. The participation of non-governmental and charitable organizations in creating awareness about cancer will also be helpful in solving these problems.

In conclusion, participants in the three countries shared a common characteristics of poor knowledge and fair attitude towards prostate cancer examination and screening practice. Despite the great difference between the Arab countries and Western world which could be attributed to many factors especially life style, beliefs and attitudes that have a great impact, at every stage of the cancer continuum, from prevention and early detection to access and response to treatment, rehabilitation, and survivorship/palliative care, and end-of-life care, this attitudes depends mainly on level of knowledge and quantity of information provided to the patients and their families. Such attitudes should rely on a solid background of proper information and motivation from physicians to enhance and empower attitudes towards PC screening behavior. Limitations, this study is not without its limitations. In the present study, there was a sole dependence on self-report measures to gather data. Also, the cross-sectional design disallows any allusion to causality. While there are some limitations, some of the strengths of the study should be noted as well. This present study sheds important light on the topic health behavior and motivation analysis. Because of the importance of the subject, this study has implications for health promotion and education of men in general. We therefore recommend further studies with a larger group of men at different geographic areas which could include more cultural factors and their impact on early prostate screening. In addition, well-designed health education program should be adopted to tackle the observed knowledge deficits, in order to raise awareness toward PC, with emphasis on the role of prevention and screening

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