RESEARCH COMMUNICATION

Public Knowledge on Cancer and its Determinants among Saudis in the Riyadh Region of Saudi Arabia

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Abstract

Background: Earlier studies on cancer knowledge/awareness from Saudi Arabia have been few and mostly limited to knowledge of and attitude towards breast cancer. The objectives of the present cross sectional study were to determine the levels of knowledge concerning cancer and to identify associated factors. Methods: This study was carried out among 1,407 Saudis who were either patients or their escorts, attending selected hospitals in Riyadh region and aged 15 years or more. Required information was obtained by interview using a piloted Arabic questionnaire. Associations between different variables and respondents knowledge were evaluated by Chi square test. Multiple logistic regression analyses were performed to examine the potential impact of the variables. Results: This study population consisted of 688 males and 719 females. Approximately two thirds of participants (67.6%) had never heard of any cancer warning signals, but 80.7% believed some cancers can be cured if detected early, 27.1% believed cancer means end of life and 74.2% believed cancer will appear overnight. The majority of the respondents (65.1%) received information about cancer from television/radio. Although 1,159 had high level knowledge (scored 50.0% and more), only 233 individuals scored 75.0% and more. Significant differences in the knowledge level across age groups, educational levels and marital status were observed. Females had higher level knowledge than males. Odds of having high level knowledge about cancer was 5.27 times higher among those who had undergone any of the tests (breast self examination, mammography, occult blood, Papanicolau smear) compared to those who had none of those tests (95% CI: 1.87-14.84). Those who had heard about any cancer warning signal were more knowledgeable (OR=1.55; 95% CI: 1.10-2.19) than those who hadn't. The other most important determinants of knowledge level included age, and attending a primary health care centre. Conclusions: Our results suggest that the knowledge of cancer is poor among the public and greater attempts should be made to increase public awareness.

Keywords: public knowledge - awareness - cancer - risk factors - Riyadh - Saudi Arabia

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Introduction

Based on the most recently available international data, it has been estimated that 12.4 million new cases and 7.6 million deaths were occurred due to cancer in 2008 (Boyle and Levin, 2008). Although the disease has often been regarded as a problem principally of the developed world, in fact 53% of the total number of new cancer cases and 60% of the total number of deaths occurred in the less developed countries. The current information at hand could prevent up to one third of new cancers and increase survival for another one third of cancers detected at an early stage (Boyle and Levin, 2008). However, to achieve this, awareness of cancer signs and symptoms and attitude towards detection methods are an important part of this strategy. Non-economic barriers such as cultural, ethnic beliefs and taboos impede early detection and effective management of cancer. Failure to recognize these internal obstacles can doom the success of any cancer care programme, even when adequate resources are provided (Boyle and Levin, 2008).

The basic level of cancer knowledge of the population is as important in controlling cancer as diagnostic tools, screening, and new approaches to prevention, early diagnosis and treatment. Further, on the basis of association between response variable and selected predictor variables (for e.g. educational status) it can be developed an appropriate cancer literacy programme (Ray and Mandal, 2004). Little is known about cancer awareness in Saudi Arabia. Earlier studies conducted were few (Milaat, 2000; Alsaif, 2004; Alam, 2006; Jahan et al., 2006; Amin et al., 2009; Sait, 2009) and mostly on knowledge of and attitude towards breast cancer only with inherent limitations. All the studies mentioned above were based on females only and two of the studies were based on female students. The purpose of this study is to objectively assess the

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knowledge and awareness concerning cancer, and its early detection methods among Saudis; to evaluate the factors associated with this knowledge/awareness. It is important to understand what Saudis know about the disease and its early detection and treatment before planning for any cancer control programme. It is anticipated that the results would be of benefit when developing future health promotion interventions.

Materials and Methods

This is an observational, cross sectional study carried out in the form of a survey. The participants in this study were patients or their escorts, aged 15 or more, who attended one of the selected 20 Primary Health Care (PHC) centre or one of the four major private hospitals, both located in the Riyadh region. To ensure participation of residents from each area, we randomly selected 20 out of the 80 PHC centres scattered in the Riyadh region. Four PHC from each of East, West, North, South and Central area was selected. The private hospitals were also selected in a similar method. The patients seen at these centres consisted of both new and follow-up patients. The individuals were identified randomly from the outpatient clinics reception and a care was taken to obtain equal number of subjects in each gender and across all five year age categories (15-19, 20-24, 25-29, etc.) from each PHC and private hospitals. The sample size that would be sufficient to show that 40% of the Riyadh population has the knowledge about cancer with a 95% confidence limit and a precision level of ± 4% was 1260 individuals. This number was arrived taking into account the design effect.

The questionnaire was designed based on a comprehensive review of literature. The questionnaire used to collect the required information from the respondent consists of four broad categories as below: 1) demographics and personal information; 2) knowledge on cancer; 3) knowledge on cancer screening; and 4) attitude towards early detection/screening programme. Open-ended and prompted questions were incorporated into all the sections. For all the questions that involved prompted answers, the option "do not know" was included. The first section focused on personal characteristics of respondents, such as age, sex, marital status, educational level, occupational position and details on knowing anyone with cancer. The second section dealt with perception about cancer, lifestyle choices that may increase/reduce the risk, diagnosis, treatment and the early warning signs of cancer. The questions were based on available information from various studies and local myths about cancer in our environment. This section contained mixture of open-ended questions, recognition items (e.g. yes/no) and a four point scale response (1. Definitely does not increase the risk, 2. Probably does not increase the risk, 3. Probably increase the risk and 4. Definitely increase the risk), especially in assessing knowledge on risk factors. Later, in the analysis stage, these responses were dichotomized as 'increase the risk' and 'not increase the risk'. The third section evaluating the respondents' specific understanding of cancer screening tests includes also questions about where the respondents had obtained the information and knowledge in these matters (e.g., broadcast, print media, physicians etc.). The final section has questions about expectations; behaviours and attitude related to prevention and early detection programmes.

Data was collected by interviewing the participant using a pre-tested Arabic questionnaire. This questionnaire does not have any personally identifiable information such as name, date of birth, national identity number or address details. Eligible persons were advised that the interview would last for 20 minutes and made clear the confidentiality of research. Data was then collected from those who verbally consented to participate and no incentive was given to the participants. Interviews were conducted by research assistants specifically trained for this study. All the interviewers in the 20 PHC were centrally trained and the interviewers in the private hospitals were trained individually by the same trainer. This is to ensure that the survey was carried out according to the protocol and that operative procedures were identical across the centres. The study was approved by the institutional review board at King Faisal Specialist Hospital & Research Centre, Riyadh, prior to its initiation.

Completed questionnaires were coded and entered into a database using SIR software (SIR Relational Database Management System 2002, SIR Pty Ltd, Australia). Quality was assured by using double time data entry procedures and a system for detecting data entry errors. Any potential errors were verified against the original questionnaire. All the knowledge questions were then scored, incorrect or uncertain (don't know) responses were given a zero score, while 1 point was given to each correct answer; a correct response being that based on current literature. The knowledge score was computed by totalling the number of correct answers. The expected maximum total score was 24. Then the score was recoded on to a dichotomous variable, low and high, by an arbitrary cut off point of 50% or more correct answers as the cut off value, to evaluate different variables associated with the knowledge levels. Continuous variables were grouped in to ordinal categories to facilitate inclusion in the multiple logistic regression analysis. Sociodemographic variables examined include age (15-29, 30-44, 45+ years), education (illiterate, medium level, higher level), and marital status (unmarried, married, divorce/widower). Up to secondary level (12 years of education) was classified as medium level and any education beyond secondary level was defined as higher level. Characteristics of the study population were summarized as frequencies, mean and standard deviation (SD). The association between demographic parameters and respondents knowledge was evaluated by Chi square test. Multiple logistic regression analyses, using a backward stepwise elimination procedure, were performed to examine the potential impact of the variables that were identified as being significant with $p < 0.1$ in the Chi square analyses. All the explanatory variables were progressively removed and only statistically significant coefficients remained in the final model. All of the tests for significance were two-sided and p values < 0.05 were considered statistically significant. All analyses were done using SPSS 16.0 (SPSS Inc., Chicago, USA) software program.

Results

The total study population consisted of 1,407 individuals aged 15-87 years with a male to female ratio of 1:1.04. The mean age of respondent was 38.5 (S.D. 14.4) years. Out of the total 1,407 individuals, 1,217 (86.5%) were interviewed from PHC. While 26.2% were unmarried, 11.4% were divorcee/widower. Majorities (60.4%) were medium level educated and only 6.3% had no formal education. A fair proportion (42.5%) knows someone with cancer. Approximately two third of participants had not heard of any cancer warning signal. Majority of the respondents (65.1%) received cancer information from television/radio. Friend/relatives were the next commonest source of information (55.4%) provider closely followed by news paper/magazine (52.9%). Other sources include physician (29.4%) and primary health care worker (7.9%) (Table 1).

Knowledge on cancer

There were 67 who scored the maximum 6 and only seven who scored zero. The mean score was 3.8 (S.D. 1.2). Though 60.8% believed cancer is preventable, and more than three quarter (1135; 80.7%) believed some cancers can be cured if detected early, a sizable proportion (381; 27.1%) believed cancer means end of life. Add to it, 1,044 individuals believe cancer will appear overnight. Those who scored 3 or more, out of the six questions in this section, were classified in to 'high' score category and the results were presented in Table 2.

Table 1. Demographic Characteristics and Selected Information about the Study Population

Variable	N	%
Gender		
Male	688	48.9
Female	719	51.1
Age group (in years)		
15-29	453	32.2
30-44	443	31.5
45+	511	36.3
Marital status		
Unmarried	368	26.2
Married	878	62.4
Widower/Divorcee	161	11.4
Educational level		
Illiterate	89	6.3
Medium level(up to 12 years of education)	850	60.4
Higher level	468	33.3
Source of subjects		
Primary health care centre	1217	86.5
Private hospital	190	13.5
Knowing any one with cancer		
Yes	598	42.5
No	809	57.5
Heard about any cancer warning signal		
Yes	456	32.4
No	951	67.6
Source of cancer information*		
News paper/Magazine	745	52.9
TV/Radio	916	65.1
Primary health care worker	111	7.9
Doctors	414	29.4
Friends/Relatives	780	55.4

*Total will be more than 1,407 as the participants gained information from multiple sources.

Knowledge on risk factor

Out of the 13 questions in this section only two scored the maximum 13 and three scored zero. The mean knowledge score on risk factor was 8.3 (S.D. 2.2). Respondent's knowledge on this topic is divided in to low (scored 6 and less) and high (scored 7 and more) levels for selected variables, and given in Table 2. Majority of respondents (94.3%) agreed that tobacco, the well established risk factor, increases the risk of cancer. Similarly, 80.4% knows that alcohol increases the risk of cancer. Further, 86.7%, 86.2%, and 84.2% knows that intake of fruit and vegetables, breast feeding and physical activity, respectively, will not increase the risk of cancer. However, 1,057 (75.1%) and 904 (64.3%) participant believed that fate and curse, respectively, to be responsible for causing cancer. While approximately 47% of participants believed oral contraceptive will increase the risk of cancer another 40% believed it will not increase the risk of cancer and the remaining 13% did not answer to this. Similarly, 44% of participants believed occupation will increase the risk of cancer, another 47% believed it will not increase the risk of cancer and the remaining 8% did not answered to this.

Knowledge on screening of cancer

Respondent's knowledge on cancer screening was assessed by five questions. The responses were classified in to low (scored 2 and less) and high (scored 3 and more) and given in Table 2 for selected variables. More individuals (258) scored zero than the maximum score of five (180). The mean knowledge score was 2.3 (S.D. 1.7). Though 977 (69.4%) said cancer can be detected early, only 699 and 577 said mammography is done to detect breast cancer and cervical smear is done to detect cervical cancer. Though 456 individuals said occult blood stool exam is done to detect colorectal cancer, majority (848; 60.3%) opted for 'don't know'.

Overall knowledge on cancer

The total knowledge score, maximum of 24, was computed by adding the score of knowledge on cancer, knowledge on risk factor and knowledge on screening of cancer. The total mean knowledge score was 14.3 (S.D. 3.6) and has range of 2-23. Those who scored 12 or more classified in to 'high' knowledge group. Overall assessment of knowledge revealed that 248 (17.6%) had low level knowledge and 1,159 (82.4%) had high level knowledge. There is statistically significant difference in the total knowledge level across age groups ($p<0.01$), educational levels ($p<0.01$) and marital status ($p=0.01$) (Table 2). Females had more knowledge ($p=0.04$) than males and the mean knowledge score was higher among individuals attending PHC centre (14.8) than individuals attending private hospitals (11.2). Knowing anyone with cancer ($p=0.03$) and having under gone any of the (BSE, mammography, occult blood, Papanicolau (PAP) smear) test ($p<0.01$) associated with high level knowledge (Table 2).

Factors associated with overall knowledge on cancer

Females had significantly higher knowledge than

Table 2. Distribution of Knowledge Level by Demographic and Selected Personal Characteristic of the Study Population

Variable	Cancer score			Risk factor score*			Screening score			Total score		
	Low (%)	High (%)	p	Low (%)	High (%)	p	Low (%)	High (%)	p	Low (%)	High (%)	p
Gender												
Male	82(11.9)	606(88.1)	0.16	86(12.8)	588(87.2)	0.25	469(68.2)	219(31.8)	<0.01	136(19.8)	552(80.2)	0.04
Female	104(14.5)	615(85.5)		106(14.9)	605(85.1)		314(43.7)	405(56.3)		112(15.6)	607(84.4)	
Age group (in years)												
15-29	59(13.0)	394(87.0)	0.02	59(13.1)	390(86.9)	0.85	243(53.6)	210(46.4)	0.002	52(11.5)	401(88.5)	<0.01
30-44	44 (9.9)	399(90.1)		63(14.4)	374(85.6)		225(50.8)	218(49.2)		77(17.4)	366(82.6)	
45+	83(16.2)	428(83.8)		70(14.0)	429(86.0)		315(61.6)	196(38.4)		119(23.3)	392(76.7)	
Educational level												
Illiterate	11(12.4)	78(87.6)	<0.01	6 (6.7)	83(93.3)	0.06	51(57.3)	38(42.7)	<0.01	11(12.4)	78(87.6)	<0.01
Medium level (up to 12 years of education)	142(16.7)	708(83.3)		127(15.3)	705(84.7)		519(61.1)	331(38.9)		183(21.5)	667(78.5)	
Higher level	33 (7.1)	435(92.9)		59(12.7)	405(87.3)		213(45.5)	255(54.5)		54(11.5)	414(88.5)	
Marital status												
Unmarried	49(13.3)	319(86.7)	0.08	51(14.1)	311(85.9)	0.97	214(58.2)	154(41.8)	0.17	53(14.4)	315(85.6)	0.01
Married	107(12.2)	771(87.8)		118(13.7)	744(86.3)		472(53.8)	406(46.2)		154(17.5)	724(82.5)	
Widower/ Divorcee	30(18.6)	131(81.4)		23(14.3)	138(85.7)		97(60.2)	64(39.8)		41(25.5)	120(74.5)	
Source of subjects												
Primary health care centre	156(12.8)	1061(87.2)	0.26	108 (8.9)	1099(91.1)	<0.01	655(53.8)	562(46.2)	<0.01	160(13.1)	1057(86.9)	<0.01
Private hospital	30(15.8)	160(84.2)		84(47.2)	94(52.8)		128(67.4)	62(32.6)		88(46.3)	102(53.7)	
Knowing any one with cancer												
Yes	80(13.4)	518(86.6)	0.88	66(11.2)	525(88.8)	0.01	266(44.5)	332(55.5)	<0.01	90(15.1)	508(84.9)	0.03
No	106(13.1)	703(86.9)		126(15.9)	668(84.1)		517(63.9)	292(36.1)		158(19.5)	651(80.5)	
Heard about any cancer warning signal												
Yes	50(11.0)	406(89.0)	0.08	60(13.2)	393(86.8)	0.64	207(45.4)	249(54.6)	<0.01	62(13.6)	394(86.4)	0.01
No	136(14.3)	815(85.7)		132(14.2)	800(85.8)		576(60.6)	375(39.4)		186(19.6)	765(80.4)	
Ever under gone any of the test**												
Yes	5 (4.9)	98(95.1)	0.01	13(12.6)	90(87.4)	0.70	18(17.5)	85(82.5)	<0.01	4 (3.9)	99(96.1)	<0.01
No	181(13.9)	1123(86.1)		179(14.0)	1103(86.0)		765(58.7)	539(41.3)		244(18.7)	1060(81.3)	

*: 22 respondents did not answer to any of the 13 questions.; **: any of the following test/procedure - breast self examination, mammography, occult blood, Papanicolau smear.

Table 3. Variables Associated with Total Knowledge

Variable	Univariate			Multiple logistic regression*		
	OR	95% CI	p - value	OR	95% CI	p - value
Age group (in years)			<0.0001			<0.0001
15-29 (reference)	1.0	-	-	1.0	-	-
30-44	0.62	0.42-0.90	0.01	0.52	0.35-0.79	0.002
45+	0.43	0.30-0.61	<0.0001	0.32	0.21-0.47	<0.0001
Source of subjects						
Private hospital (reference)	1.0	-	-	1.0	-	-
Primary health care centre	5.70	4.10-7.93	<0.0001	7.69	5.32-11.12	<0.0001
Heard about any cancer warning signal						
No (reference)	1.0	-	-	1.0	-	-
Yes	1.55	1.13-2.11	0.006	1.55	1.10-2.19	0.01
Ever under gone any test**						
No (reference)	1.0	-	-	1.0	-	-
Yes	5.70	2.08-15.33	0.001	5.27	1.87-14.84	0.002

*: adjusted for each other variable. ; **: any of the following test/procedure - breast self examination, mammography, occult blood, Papanicolau smear.

male (OR=1.33; 95% CI: 1.01-1.75; p=0.04). Married (OR=0.79; 95% CI: 0.56-1.11; p=0.18) and widower/ divorce (OR=0.49; 95% CI: 0.31-0.78; p=0.003) had lower level knowledge compared to single. Knowing any one with cancer also showed a statistically significant relation with higher level knowledge (OR=1.37; 95% CI: 1.03-1.82; p=0.03). Only age, those who undergone any of the test (BSE, mammography, occult blood, PAP smear), those who heard about any cancer warning signal and source from where subjects selected were remained significant predictors of knowledge as revealed by the multiple logistic regression model. Although factors such as gender, education, marital status and knowing any one with cancer were associated with total knowledge in the univariate analysis, these did not attain significance level at the final model. As the final model revealed, odds of having high level knowledge about cancer was higher among those who undergone any of the test (BSE, mammography, occult blood, PAP smear) compared to those who had had no test (OR=5.27; 95% CI: 1.87-

14.84, p=0.002). Those who heard about any cancer warning signal were more knowledgeable (OR=1.55; 95% CI: 1.10-2.19; p=0.01) than who have not heard anything. Having high level knowledge about cancer was significantly lower among 45+ years old (OR=0.32; 95% CI: 0.21-0.47; p<0.0001), and among 30-44 years old (OR=0.52; 95% CI: 0.35-0.79; p≤0.002) than 15-29 years old (Table 3).

Discussion

To implement/improve cancer control programme in Saudi Arabia, it is important to understand what Saudis know about cancer and its early detection methods. This study provided the most comprehensive evaluation of cancer related knowledge among Saudis ever published. In our study, closed to and more than 60% (14 and more out of 24) was scored by 916 (65.1%) individuals. But only 233 (16.6%) individuals scored 75.0% and more (18 and more out of 24). The earlier study on knowledge of breast cancer and breast self-examination among secondary-school female students in Jeddah found over 80% of students failed to answer 50% of the questions correctly (Milaat, 2000). Even among adult Saudi women, knowledge regarding risk factors and appropriate screening method for breast cancer was low (Amin et al., 2009). A study from Al-Madinah Al-Munawara in assessing the knowledge of doctors, nurses, patients and public about the causes of gastrointestinal cancers found majority of doctors and nurses had good knowledge while the knowledge of patients and general public was low. Out of all four groups, it was poorest in the patient's group (Parvez et al., 2004). Another study assessing the knowledge, attitude, and practices related to cervical cancer screening, and its underlying aetiology and preventive measures among women living in Jeddah concluded that the awareness on cervical cancer was far behind that in the developed countries (Sait, 2009). A study from UK suggests that the public knowledge (based on their awareness on risk factors, presenting symptoms, treatments and support services) of cancer was poor and greater attempts should be made to raise awareness (Adlard and Hume, 2003). Thus all the studies conducted in Saudi Arabia so far, including ours, shows moderate to low level knowledge, iterating the need to educate and promote knowledge about cancer.

In our study, the most important determinants of knowledge level includes age, having heard about any cancer warning signal, attending to PHC and having undergone any of the following test/procedure: BSE, mammography, occult blood, PAP smear. Our finding that increasing age associated with poor knowledge, or alternatively, younger age associated with improved cancer awareness is similar to a UK study assessing knowledge of the general public (Adlard and Hume, 2003), a Singapore study assessing knowledge on breast cancer among Asian women (Sim et al., 2009), and an Iran study on patients of gynaecologic cancers (Eftekhar and Yarandi, 2004). In contrast, a higher knowledge level on breast cancer was observed with older age in an earlier study (Milaat, 2000) from Saudi Arabia, but that study was based on secondary school female students. The finding that having undergone any of the test/procedure (BSE, mammography, occult blood, PAP smear) associated with higher level knowledge suggests that these subjects might have acquired their cancer knowledge before they actually underwent these tests. Similarly, attending to PHC can be viewed as a proxy in receiving information about cancer.

Public awareness of risk factors in relation to cancer prevention has been surveyed only in few countries, and results have demonstrated poor awareness (Inoue et al., 2006). In a cross-sectional survey from Birmingham and Melbourne, evaluating the knowledge of common cancers and their risk factors among adult, found that several protective life style choices were incorrectly identified by participants, and concluded that further health education is needed to clarify public awareness of difference between proven, non-proven risk factors and protective life style choices for major cancers (Kaur and Brown, 2009). It was encouraging to note that, in our study, majority of respondents agreed with the well established risk factors such as tobacco and alcohol as well as with the protective life styles such as high intake of fruit and vegetables, longer duration of breast feeding and physical activity. In the current study, breast feeding thought to cause breast cancer by less than 3% whereas in the study by Kaur and Brown, (2009) about 35% in UK and 20% in Australia believed so. However, the findings that three quarter believed fate will increase the risk of cancer, and 64.3% believed curse to be responsible for causing cancer were worrisome. Ray and Mandal, (2004) found 58.3% of the respondent believes most of the cancers are curable in early stages, but in our study, about 76% believed early detection of certain cancers prevents all deaths due to it.

Some limitations of this study should be highlighted. First, the findings of this study cannot be generalized to all of Saudi Arabia, as the data were derived from Riyadh, the capital of Kingdom, and its suburbs. However, the present findings lay the groundwork for further similar studies in other parts of the country. Second, responses to this type of cross sectional survey are subject to social conditions such as information from the mass media and other sources on cancer and its risk factors during the study period. However, to the best of knowledge of investigators, there was no such mass campaign in the study area during that period. Finally, there is no international standardized questionnaire available to evaluate the cancer knowledge and this may serve as a limitation in comparing our findings directly with other studies. Despite these limitations, our study also has several strengths. For the first time, this study reveals levels of comprehensive cancer related knowledge among Saudis. Secondly representativeness of our sample and thirdly, for the first time, it examined factors associated with knowledge on cancer from general public.

Increased public awareness may lead to reduced exposure to risk factors, earlier presentation and greater participation of patients in their own care in the event of cancer being diagnosed. Increased public awareness could be achieved by a number of methods, such as cancer information leaflets, GP well-person clinics and increased Internet access. However, the most likely way to improve

cancer knowledge is via the popular media, particularly television (Adlard and Hume, 2003). Interestingly, 56.7% of our respondents indicated that they would like to know more information about cancer as it will decrease fear about cancer. Consequently, culturally sensitive health education messages should be tailored to fulfil knowledge gap among all population strata. However, greater efforts are required to improve the cancer knowledge of the general public. Participation of non-governmental and charitable organizations in creating awareness about cancer will also be helpful in solving these problems.

In conclusion, this survey conducted in Riyadh provided information about knowledge on cancer at community level. It also provided useful background information for educators and policy makers that are necessary for guidance towards better cancer awareness programme in this region. Our results revealed a poor understanding of the risk factors and screening/ early detection methods, and misconceptions about cancer. Thus, emphasising the need to start continuous, community based cancer literacy programme at national level which aims at creating public awareness about the symptoms of cancer for down staging and to clarify the difference between proven and non-proven risk or protective factors of major cancers, so that public can choose for protective lifestyle. As television/radio was most frequently listed in this study as the best source of cancer information, Saudis will benefit from partnerships between public health educators and media to speed the dissemination of cancer information. A larger scale study and additional questions pertaining to risk factors, e.g. possible engagement in behaviours that increase cancer risk and willingness to alter those behaviours could be conducted in the future.

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