RESEARCH ARTICLE

Predictors of Cancer Awareness among Older Adult Individuals in Jordan

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Abstract

　Background: Older age is associated with an increase in the incidence of cancer cases. Diagnosis and treatment of cancer in older adults can be stressful because of health decline related to age, comorbidities and inadequate treatment for pain and other symptoms of the disease. This survey is one of the unique studies in Jordan and in the Arab world that aimed at exploring the predictors of older adult individuals awareness towards cancer. Materials and Methods: A stratified random sampling technique was followed to reach a representative sample of 753 participants. The questionnaire of the study consisted of parts regarding demographic variables, awareness about screening tests, and signs and symptoms of cancer. In addition, specific questions related to factors linked to cancer were included. Cross-sectional design was adopted with face-to-face interviews at the interviewees' households. Results: The mean age of the participants was about 63 years; around 44% of them are above the age of 65 years. 'Being convinced that having no health problem makes the individual feel safe and not at risk of getting cancer' was the major reason for not doing a routine health check-up. Conclusions: The low levels of awareness about cancer, as well as the low use of the screening methods were crucial outcomes of this study. Thus, raising the awareness among health care providers and policy makers in the country about older adults' perception of cancer is a high priority.

Keywords: Awareness - cancer - older adults - perception - Jordan

Introduction

　Cancer is one of the leading causes of morbidity and mortality in Jordan (Tarawneh et al., 2010; Ahmad, 2014). It is the second cause of death (14.6%) after cardiovascular disease (35.9%) (Ministry of Health, 2011). In 2010, around 4,849 cases were diagnosed with a new cancer in Jordan. The number of cancer cases as reported by Jordan Cancer Registry (JCR, 2010) in males was 2,330 (48.1%), and the number in females was 2,519 (51.9 %). The crude Incidence rate of all cancers among Jordanians was 79.4 per 100,000 population (74.0 for males and 85.1 for females) (JCR, 2010). In specific, older ages are associated with an increase in the incidence of cancer cases (Ahmad et al., 2014). Jordan has 637,795 adults who are older than the age of 50 years (the estimated population of Jordan in 2014 is 6.6 million (DOS, 2014). The overall median age for cases diagnosed with cancer in Jordan was 56 years (60 years for males and 52 years for females). The distribution of cancer cases by age group shows that about 44% of the Jordanian cases occurred in the age group of 60 years old and above, in males the percentage was higher (56.5%) than females (43.5%) in the same age group (JCR, 2010). Furthermore, in the age group of 50 years old and above, breast cancer was the most predisposing type of

cancer (37.4%) among females, while colorectal cancer was the most predisposing type of cancer (14.2%) among Jordanian males (JCR, 2010; Peltzer and Pengpid, 2014; Abu-Helalah et al., 2014).

　The purpose of this study was to examine the predictors of cancer awareness among older adult individuals in Jordan. This study offers information that can be used by health care providers to increase their understanding of older adults' perception of cancer in order to provide relevant information, support and appropriate care. Moreover, this study adds further to the breadth of understanding of the perception in the international literature from the Jordanian population perspective as part from the Arab world.

Perceived factors related to cancer

　Diagnosis and treatment of cancer in older adults can be stressful because of health decline related to age, comorbidities and inadequate treatment for pain and other symptoms of the disease (Ahmad et al., 2010). Awareness of factors that are related to cancer is considered vital to reduce the incidence of cancer diagnosis among such population. Many factors have been perceived by older adults as playing a critical role in cancer development that may include unhealthy food (Choe et al., 2006);

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smoking (Ahmad et al., 2014) and excessive work and stress (Tawalbeh and Ahmad, 2013; Dardas and Ahmad, 2013). Additional factors may include age (Linsell et al., 2008); not attending regular screening (Akhtari-Zavare et al., 2014), not performing regular exercise (Robb, Miles, and Wardle, 2004) and having a family history (Valentinya et al., 2012; Raj et al., 2012). Health information is important for older adults to raise their awareness of factors that could be related to cancer (Kyle et al., 2012). Changing life style such as smoking cessation, eating a well-balanced diet and performing physical activities are recommended (Marmot, 2006).

Screening and early detection of cancer

Early detection and screening of cancer among older adults are considered vital importance. However, Saliemzadeh et al. (2012) reported that 29% of the Iranian older adults had never undergone previous screening test for colorectal cancer. Moreover, Linsell et al. (2008) found in their national study that 31% of British women aged 67-73 had low level of confidence to detect breast cancer and 19% rarely or never checked their breasts. In the previous studies, the most cited perceived reasons for not performing screening tests among older adults may include poor knowledge about performing the screening tests (Ahmad et al., 2011; Dogan and Toprak, 2014); lack of recommendation from the health care providers (Tang, Solomon, and McCracken, 2000) and absence of symptoms (Salimzadeh et al., 2012). Cost of the tests (Yepes-Rios, 2006); fear of discovering cancer from the test (Ahmad, Dardas, and Ahmad, 2014); unlikely to have cancer (Akhtari-Zavare et al., 2014) and feeling of embarrassment (Jonathan, 2006) also contributes to problem. Health-care providers should increase knowledge about the importance of performing the screening tests among older adults. Ugnat and colleagues (2004) reported that women who are diagnosed at the earliest stage of breast cancer as a result of performing the screening test are 26 times more likely to survive than those diagnosed at late stage. Increasing of cancer screening tests' awareness and advocating early detection among older adults are imperative.

Recognition of cancer's signs and symptoms

Being aware and able to recognize potential cancer symptoms among older adults is crucial. This will encourage individuals to seek early medical care. Older adults may perceive their symptoms as a natural consequence of aging rather than as late effects of cancer (Heidrich et al., 2006). Moreover, evidences showed that older adults have poor knowledge of early warning signs and symptoms of cancer (Linsell, Burgess, and Ramirez, 2008). Grunfield et al. (2002) and Linsell et al. (2008) reported that older women had poor levels of breast cancer symptoms' recognition. Moreover, McCaffey et al (2003) reported a considerable proportion of older adults who were unable to identify any warning signs for colorectal cancer. Low level of knowledge about cancer signs and symptoms may be related to lack of professional support and information (Marmot, 2006). Health care providers need to encourage older adults to report symptoms and concerns that may relate to their cancer diagnosis. Health

education and effective communications with older adults could achieve this task (Tawalbeh and Ahmad, 2014).

Research questions

This study, specifically, aims to answer the following research questions: *i*) What are the possible leading factors to cancer from the perspective of older adult individuals in Jordan? *ii*) What are the reasons that prevent older adults in Jordan from doing health check-up? *iii*) What are the signs and symptoms linked to cancer as perceived by the study sample? *iv*) What are the predictors of the awareness level for the signs and symptoms of cancer in Jordan?

Materials and Methods

Sample and data collection

The sample of the study was obtained from all governorates in Jordan. A stratified random sampling technique was followed in the study. The total sample size in this study was 753 participants. The data collection was conducted through interviews. All interviewers attended theoretical and practical training sessions on using the study tool in interview techniques. A pilot study was conducted directly after the training to test the study tool, sampling procedure, and the interviewers' preparedness. Data collection began two days after piloting. Face-to-face interviews were conducted at the interviewees' households. The interview time ranged between 40 and 60 minute.

Instrument

The study tool was developed to evaluate the population knowledge about cancer. Specifically, the questionnaire consists of parts regarding demographic variables and awareness about screening tests, and signs and symptoms of cancer. In addition, specific questions related to factors linked to cancer are included. International references were used to guide the development of the questionnaire. In this study, the awareness scale about signs and symptoms of cancer has established content validity by a panel of 10 experts from different health disciplines. The reliability of the awareness scale in this study has Cronbach's alpha of .90.

Data processing

The Statistical Package for Social Sciences (SPSS) was used to run descriptive and inferential statistical analyses for the study variables (IBM Corporation, 2012). The analyses included multiple linear regression to predict the participants awareness of signs and symptoms of cancer. Data processing was running simultaneously with data collection to figure out any missing issues in data collection at once. Interviewers made several attempts to obtain the responses of eligible respondents who were not available at home at the visit time. This method of following up each eligible participant has led to zero missing in the data.

Ethical considerations

The Institutional Review Board at the University of Jordan has granted the ethical approval of the study. All

participants received full explanation on the purpose, risks, and benefits of the study at their homes and those who agreed to participate were interviewed individually. Participants were assured that their contribution is completely voluntary and that they can withdraw from the study at any time without any penalty. A code number to each participant was issued to assure the confidentiality of the data.

When participants were asked if they ever have been screened for cancer, only 102 (13.6%) answered yes. Interestingly, 59 participants (7.8%) were females who screened for breast cancer. The main other types of screening were for colorectal cancer 11 participants (1.5%), screening for cervical cancer 10 participants (1.3%), and screening for prostate cancer 7 participants (0.9%).

Almost three-quarters of the older adults showed that having "An unusual lump or swelling anywhere on your body" as the highest sign/symptom for cancer. On the other hand, having "A wound that won't heal", and having "heavy night sweating" were the lowest possible sings/symptoms linked to cancer. The most common signs and symptoms that may link to cancer as perceived by older adults in Jordan are presented in Table 3.

Multiple regression analysis revealed that the model significantly predicted variance in the participants awareness of the signs and symptoms of cancer (F=11.65, p<0.001). R for the model was 0.243, and R2 was .059. Table 4 displays the unstandardized regression coefficients (b), standard error (SE b), standardized regression coefficients (B), and t statistics for each variables (t).

Patients' levels of education and income level were found to be significant predictors for participants awareness of signs and symptoms of cancer. Participants with higher level of income (B=0.13, p<0.001), and participants with high level of education (B=0.13, p<0.001) both had better awareness about signs and symptoms of cancer. However, age and gender did not show significant prediction for cancer awareness in Jordan.

Results

Participants

The mean age of the respondents was 63.4 years (SD=9.5; range=50-95). Around 44% of the participants are above the age of 65 years. Almost females' to males ratio are equal, which is also close to the national ratio (female=48.5%). Around three-quarters of the study sample (72.7%) were married. The majority of the participants (87%) had a moderate to low household monthly income, which is less than 600 Jordanian Dinar (JD) (1 JD=1.41 United States Dollar).

Participants were asked to list the possible factors that may lead to cancer (Table 1). The reported answers from all the participants sum up to 1,295 possible causes.

Table 1. The Highest Five Possible Factors Perceived as Causes of Cancer

Perceived causes*	N	%
Active cigarette smoking	544	42.0
Exposure to radiation	303	23.4
Chemical (preservatives in food)	221	17.1
Air pollution	129	9.9
Exposure to nuclear waste	98	7.6
Total	1,295	

* More than one answer apply

Table 2. Breast and Colorectal Cancer Awareness

Participants	Activity	Yes (%)	No
Females (N=387)	Attended any awareness session on breast cancer in the past	84 (21.7)	303
	Performed BSE in the past	158 (40.9)	229
	Had clinical breast exam (CBE) in the past	92 (23.9)	295
	Had mammography	48 (12.4)	339
All sample (N=753)	Informed that you need colorectal cancer screening	42 (5.6)	711
	Family history of colorectal cancer	4 (0.5)	749
	How likely you would perform colorectal cancer tests even though you don't have symptoms?	487 (64.6)	266

Table 3. Awareness of Signs and Symptoms of Cancer

Sings and Symptoms	No	Yes	Don't know
An unusual lump or swelling anywhere on your body	155 (20.5)	564 (74.8)	35 (4.6)
A wound that won't heal	449 (59.7)	234 (31.0)	70 (9.3)
A persisting mouth or tongue ulcer	217 (28.8)	426 (56.6)	110 (14.6)
A change in the size, shape or color of a mole	124 (16.4)	545 (72.3)	85 (11.2)
A persisting cough or croaky voice	234 (31.0)	423 (56.2)	96 (12.7)
Persistent difficulty in swallowing	183 (24.3)	443 (58.9)	127 (16.8)
Persistent indigestion	220 (29.3)	413 (54.9)	120 (15.9)
Problems passing urine	266 (35.4)	367 (48.8)	119 (15.8)
Blood in your urine	225 (29.9)	415 (55.2)	113 (15.0)
Blood in your stool	229 (30.5)	411 (54.6)	112 (14.9)
A change in the bowel motions between diarrhea and constipation that lasts long	273 (36.3)	346 (45.9)	134 (17.8)
Unexplained weight loss or loss of appetite	182 (24.2)	489 (64.9)	82 (10.8)
Heavy night sweating	348 (46.2)	234 (31.1)	171 (22.6)
An unexplained pain or ache that lasts long	275 (36.6)	380 (50.5)	98 (13.0)
Tiredness/fatigue that lasts long	300 (39.8)	359 (47.7)	94 (12.5)

Table 4. Predictors of Awareness of Signs and Symptoms of Cancer (N= 753)

Variable	b	SE b	β†	t
Age	-0.02	0.02	-0.04	-0.94
Income	0.91	0.28	0.13	3.26*
Education	0.74	0.25	0.13	2.97*
Gender	-0.30	0.37	-0.03	-0.83

†R^2= .059; F = 11.65, p<0.001; * p≤0.001

The highest possible causes as perceived by the study participants were "active cigarette smoking" (N=544; 42%), and "exposure to radiation" (N=303; 23.4%).

Being convinced that having no health problem makes the individual feel safe and not at risk of getting cancer was the major reason (59%) for not doing a routine health check-up. Followed by "I don't think it is important" (17.2%). However, factors such as the costs of tests and being afraid from the result were among the lowest reasons that preclude the older adults in Jordan from doing health check-up.

Table 2 presents the female participants awareness about breast cancer as well as all the sample awareness about colorectal cancer. Only one-fifth of women have attended awareness sessions on breast cancer in the past. A moderate ratio (41%) of women have performed breast self-exam (BSE) in the past. However, only 12% of the female participants have performed mammography test in their life. On the other hand, almost two-thirds of the participants reported their willingness to perform colorectal cancer tests in the future even though they do not have symptoms for the disease.

Discussion

The purpose of this study was to reach better understanding of the older adult individuals' perception and the predictor of their awareness about cancer in Jordan. Based on both: the authors' knowledge and on a review of literature, mostly this is the first study to explore the perception of cancer among a sample of older adult individuals in Jordan. In fact, the high percentage of Jordanian cancer cases occurs in the age group older than 60 years. Thus, it was necessary to examine the Jordanian older adults' perception towards cancer in order to provide them with appropriate and focused information that will enable them to confront cancer in a better way. Furthermore, the findings may enable decision makers to take appropriate actions that can increase the awareness of older adult individuals towards cancer. Moreover, this study may inform Jordanian health care providers to improve cancer knowledge, prevention and early detection among older adult individuals. The findings of this study was consistent with others who reported that the participants believed that active cigarette smoking was related to cancer (Akhtari-Zavare, Ghanbari-Baghestan, Latiff, Matinnia, et al., 2014). This indicates that the participants had worthy awareness about one of the highest risk factors to cancer. The result of this study was relatively consistent with Robb et al (2004) study on a national survey in the UK among 18,477 older adults

aged (55- 64) years, and with (Ahmad, Dardas, Dardas, et al., 2014) who investigated the demographic variables and its link to risk factors of colorectal cancer. The results revealed that being smoker was perceived by older adults as a risk factor to cancer. The incidence of certain forms of cancer, particularly lung cancer, is strongly associated with tobacco smoking. Worldwide, smoking is responsible for more than 45% lung cancer in women and about 80% of lung cancer in men (WHO, 2011). Avoiding tobacco use is one of the best methods to prevent cancer. Other researchers suggested that designing a national public health campaign with key psychological principles can increase public awareness about the fatal effects of the smoking and help smokers to quit smoking (Bala, Strzeszynski, and Cahill, 2012; Brown, et al., 2014).

Cancer screening tests are considered vital to reduce the incidence of cancer by early detection of disease and with less aggressive treatment needed (Akhtari-Zavare et al., 2014). The most reported reasons for not conducting the screening tests in Iranian study were "doctor did not recommend the test," "did not think it was needed," "never think of the test," and "no symptoms/problems" (Salimzadeh etal., 2012). In our study, the results indicated that being "free from health problems" was the most stated reason for not performing any cancer screening, followed by "don't think it is important," and "doctors didn't recommend". These findings indicate that it is vital for health care providers to enhance older adults' awareness about the importance of engagement in cancer screening practices in the absence of symptoms. A number of initiatives and programs aiming to raise symptoms' awareness and promote early detection are highly recommended. Media campaigns (Brown, et al., 2014), effective communications between physicians and older adults (Wenchi et al., 2002) and health education (Robb et al., 2004) were considered effective in promoting screening for cancer among older adults. Furthermore, professional education and training programs are needed to ensure that all health care providers able to provide evidence based information about the screening and preventative measures for older adults.

Levels of symptoms' recognition have been found to relate to cancer outcomes (Ahmad et al., 2005; Abu-Helalah et al., 2014). In this study, the results indicate that older adults demonstrate some knowledge of signs and symptoms of cancer. More specifically, the majority of the participants (75%) believed that "an unusual lump or swelling" was a positive sign of cancer. This finding is supported by others who reported that most of older women (over 90%) were aware that a lump in the breast was a sign of breast cancer (Linsell et al., 2008; Ahmad, 2014). On the other hand, in this study, less than half of the older adults recognized that "a change in the bowel motions between diarrhea and constipation that last long" as a sign of cancer. This finding is consistent with Bidouei et al. (2014) who reported that the majority of older men and women had poor knowledge about the colorectal cancer signs and symptoms. Moreover, in our study, the results revealed that older adults with higher level of education and high level of income had better awareness about signs and symptoms of cancer. This finding is

consistent with previous studies (Tasci-Duran et al., 2014). Thus, appropriate educational interventions to increase the older adults' knowledge about signs and symptoms of cancer targeting the less educated older adults with low income are recommended.

The use of screening methods was low among women; only 40% practice BSE, 23% had CBE, and 12% had mammography in the past. The International and national breast cancer screening guidelines are well established. The United States Preventive Services Task Force (USPSTF) suggests annual mammogram with or without CBE as an effective screening tool for breast cancer. In Jordan, the Jordan Breast Cancer Program (JBCP) recommends mammography annually for those who are 50 years and above (Jordan Breast Cancer Program (JBCP), 2012). Jordanian hospitals may need to include support group services for older adults in their policy and to develop a national helpline to offer advice and educate the older adults about the appropriate screening tests, health services, and the importance of early detection.

In conclusion, overall, this study contributes to the understanding of the Jordanian older adults' perception about cancer. The findings add to the literature that although older adults have some knowledge of the signs, symptoms, and factors related to cancer, it was evidenced the low level of awareness about cancer as well as the low use of the screening methods. This study should raise the awareness among health care providers about older adults' perception of cancer. Jordanian hospitals should improve policy by performing health education programs and improving support services for this group. National campaigns toward increasing the awareness about cancer signs and symptoms, risk factors, routine check-up should be launched frequently.

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