

## Original Article

**Running Title:** Public Attitudes toward Cancer and Cancer Patients

Received: June 15, 2020; Accepted: November 10, 2020

## Public Attitudes toward Cancer and Cancer Patients: A Jordanian National Online Survey

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## Abstract

**Background:** Public awareness and attitudes toward cancer and cancer patients are highly important in enhancing the effectiveness of cancer screening and early diagnosis programmes. This study aimed to explore the public attitudes toward cancer and cancer patients in Jordan.

**Method:** A cross-sectional design was used to conduct this online survey study in Jordan between March 20<sup>th</sup> and April 20<sup>th</sup> 2020. The sample was conveniently selected, and 1157 participants were included from the public. The Public Attitudes toward Cancer Questionnaire was employed.

**Results:** Descriptive statistics, unpaired t-test, ANOVA, and multiple linear regression were utilized. The mean age was 44.2 years (SD= 20.1), and 53% were female. The total mean attitude score was 38.2 (SD = 4.3). Based on the results, having a family member or a friend with cancer ( $P=0.003$ ), willingness to be informed about cancer diagnosis ( $P=0.001$ ), informing a friend about cancer diagnosis ( $P=0.021$ ), and willingness to participate in screening and early detection programmes ( $P<0.001$ ) were significant predictive positive attitudes towards cancer and cancer patients. In addition, being married predicted more negative attitudes compared with being single ( $P=0.001$ )

**Conclusion:** This study demonstrated that Jordanians had positive attitudes toward cancer and cancer patients and most were willing to be informed about cancer diagnosis. This calls for healthcare providers to adopt shared decision models when devising health care plans for cancer patients, with more involvement on the parts of both patients and family members rather than adopting a paternal approach. Policy makers and managers should consider positive attitudes when developing healthcare programmes to enhance public participation in early cancer detection and screening programmes so as to reduce cancer mortality and morbidity rates.

**Keywords:** Neoplasm, Attitudes, Patients, Jordan

## Introduction

Cancer is one of the major challenges faced by healthcare systems worldwide.<sup>1</sup> According to the World Health Organization (WHO), the number of cancer incidents in 2040 will be twice that recorded in 2018 (18.1 million); 20% of the global population are expected to develop cancer in their lifetime.<sup>2</sup> In Jordan, 5,999 new cases were diagnosed in 2016, with breast and colorectal cancers as the most prevalent types.<sup>3</sup> Countries around the world have developed national cancer care programmes to improve the patients' care and quality of life.<sup>4</sup> Health promotion and prevention programmes have also been implemented to raise public awareness regarding cancer, its risk factors, and the importance of screening and early diagnosis. Noteworthy, public awareness and attitudes toward cancer and cancer patients can significantly enhance the effectiveness of such programmes.<sup>4</sup> Jordan has a definite national cancer plan; however, the cancer care model is based on treatment, and there is less focus on other elements of the cancer care continuum.<sup>5</sup>

An international survey reported an increasingly positive public attitude toward cancer.<sup>6</sup> They employed a population-based telephone interview survey and used the Awareness and Beliefs about Cancer Measure for a sample of 19,079 men and women aged  $\geq 50$  years to examine the pattern of differences in cancer awareness across people in Australia, Canada, Denmark, Norway, Sweden, and the UK. It was found that 90% of the population believed that cancer was curable, and cancer screening could help early diagnosis. In South Korea, however, negative attitudes and stereotypes toward cancer and cancer patients were reported among the public and the survivors;<sup>7,8,9</sup> Cho et al. conducted a cross-sectional study to evaluate people's attitudes toward cancer and their willingness to disclose their cancer diagnosis. The data

were collected from 1,011 men and women with no history of cancer. According to their findings, 58.5% of the sample held that cancer was incurable regardless of the highly advanced medical care; 71.8% believed that cancer patients could not contribute to society because of their disease, and 23.5% tended to avoid working with cancer patients. 30.2% of the participants would not disclose their diagnosis to their families, 47.0% would hide it from their friends and neighbours, and 50.7% would not inform their co-workers. These authors reported that people unwilling to disclose their diagnosis were those with negative, stereotypical, and discriminatory attitudes toward cancer.<sup>7</sup>

In the UK, public taboos and misconceptions about cancer and cancer patients force Asian women to feel stigmatized by their cancer diagnosis. They try to hide their diagnosis, treatment, and symptoms from friends and relatives. Moreover, these individuals physically and emotionally struggle in silence, seek treatment alone, and refuse chemotherapy to avoid revealing their cancer diagnosis because they know well how society will perceive and deal with them.<sup>10</sup>

Badihian, Choi, Kim, Parnia, Manouchehri, Badihian, Tanha, Guallar, and Cho reported that due to cultural taboos, cancer patients hid their diagnosis and treatment and stayed isolated from their community to avoid problems and discrimination from their families, employers, co-workers, and the public in general.<sup>11</sup> Some people do not feel comfortable interacting and working with cancer patients and show discriminatory behaviours toward them; therefore, many cancer patients isolate themselves from others and decide not to go back to their normal life and work after treatment; this, in turn, has a negative influence on their physical and mental health.<sup>11</sup> A qualitative

study conducted in the UK by Robb, Simon, Miles, Wardle showed that people had both negative and positive attitudes about cancer.<sup>12</sup> For instance, fear, trauma, and death were the first perceptions verbalized by the participants. Nevertheless, these negative attitudes were followed by a more positive one as they acknowledged that the new technology and advanced treatments would increase the chances of survival and returning to normal life. Meanwhile, several studies confirmed the negative attitudes of public towards cancer and cancer patients.<sup>13-16</sup> The source of these attitudes might be the fatalistic beliefs that everything might cause cancer and cancer means definite death.<sup>17</sup>

Most of the previous studies aimed to measure public awareness rather than attitudes toward cancer and cancer patients;<sup>18-21</sup> or they explored the attitudes toward specific types of cancer<sup>21-23</sup> or from the perspective of healthcare providers.<sup>24-27</sup> Only a few studies were specific to attitudes toward cancer in general but they were outdated.<sup>28-31</sup> In Jordan, efforts to reduce the incidence and burden of advanced cancer were focused on improving the public awareness about cancer and increasing engagement in early detection and cancer screening programmes. Positive attitudes toward cancer may increase the benefits of such efforts. The following main gaps were identified in the literature. First, most of the previous studies were conducted on western and non-Islamic eastern cultures; thus, there is a need to explore public attitude toward cancer within the Arabic-Islamic culture. Second, there is no research on the public attitudes of Jordanians towards cancer and cancer patients. Third, the results of the current study may be conducive to developing an intervention that would promote and utilize positive attitudes to enhance cancer prevention behaviours among the public. Finally, previous works in Jordan focused on the awareness of cancer

in general or concerning specific types of cancer,<sup>18,32</sup> disclosure preferences of cancer diagnosis, and the information needs of cancer patients.<sup>33-35</sup> Therefore, to build on the previous work, the objective of this study was to explore public attitudes toward cancer and cancer patients in Jordan.

## Methods

The main purpose of our study was to assess Jordanian public attitudes about cancer and cancer patients via answering the following research questions:

1. What are the attitudes of the public toward cancer and cancer patients in Jordan?
2. What are the predictors of public attitudes toward cancer and cancer patients in Jordan?

## Sample, sampling, and settings

This cross-sectional survey study targeted Jordanians older than 18 years who were willing to take part. This online survey was conducted in Jordan between March 20<sup>th</sup> and April 20<sup>th</sup> 2020. Patients currently suffering from cancer or previously treated for cancer were excluded. An electronic version of the study questionnaire was created using Google Forms. It was posted on the researchers' Facebook pages and then sent to relatives, friends, and colleagues via WhatsApp. All participants who completed the study questionnaire were asked to share it on Facebook and WhatsApp.

## Sample size

The sample size needed for this study was calculated based on the response of 50% and knowing that the Jordanian population is about 10 million.<sup>36</sup> Therefore, a sample of 643 participants was required. An attrition rate of 20% was expected, necessitating another 128 participants; thus, the total sample size had to be  $\geq 771$ . <http://www.raosoft.com/samplesize.html> allowed the attitudes toward cancer and cancer patients to be estimated with a 99%

confidence interval and maximum  $\pm 2\%$  margin of error. However, a total of 1,157 completed questionnaires were collected, which was higher than the calculated sample size and thought to be adequate.

### **Measurements**

#### ***Demographic data sheet (DDS)***

The demographic data sheet was developed (DDS) to collect information about the participants' demographics. It began by asking the participants if they had ever received a cancer diagnosis. Then, it collected general information on their age, job, gender, marital status, education, family's monthly income, region, and whether they were healthcare providers. They were further asked 1) if they had a relative who had cancer or had died of cancer, 2) whether they would like to be informed about their cancer diagnosis and share the information with a friend or co-worker, and 3) if they were willing to participate in early detection and screening programmes.

#### ***Public Attitudes toward Cancer Questionnaire (PACQ)***

The PACQ was developed to measure public attitudes toward cancer and cancer patients.<sup>7</sup> As shown in table 1, it comprises 12 items categorized in three subscales: the impossibility of recovery (items 1-4), stereotypes of cancer patients (items 5-8), and discrimination against cancer patients (items 9-12).<sup>7</sup> For each item, the participants selected their response on a four-point Likert-type scale (1= strongly disagree, 2= disagree, 3= agree, and 4= strongly agree). All information concerning tool development and content validity of the original Korean version was published elsewhere;<sup>7</sup> a Persian version of the questionnaire was also utilized in a study conducted in Iran.<sup>11</sup> The Cronbach's alpha was 0.79 for all items, 0.68 for the impossibility of recovery subscale, 0.60 for cancer stereotypes, and 0.71 for the

discrimination subscale.<sup>11</sup> We found that all items, except item 7, were negatively worded, which was not previously considered and would affect the interpretation of the mean score.

Accordingly, these items were reverse-scored prior to calculating the total mean score and means of the subscales. Total mean score can range from 12 to 48; with the increase in the mean score, positive attitudes toward cancer and cancer patients are to be expected.

The tool is not validated in English or Arabic versions. To establish its validity and reliability in Arabic, the English version was translated into Arabic by the research team. An independent bilingual nursing scholar was then asked to back translate the Arabic version to English to check for accuracy and meaning against the original version. All inconsistencies and differences were worked out until the translation was deemed adequate by a third independent bilingual reviewer. In addition, the content validity and cultural suitability were confirmed by three independent PhD nurses with an oncology background.

#### ***Construct validity and reliability***

To establish the previously untested construct validity, an exploratory factor analysis (EFA) was used; Table 1 depicts the results using the principal component method. In EFA, the KMO index was .93, indicating an adequate sample size for factor analysis; also, the Bartlett test of sphericity was significant ( $P$ -value  $< 0.001$ ). The scree plot illustrates three factors. The three-factor construct explained 52% of the variance in the items. All items (with the exception of item 8) were loaded by subscale, which was included in the impossibility of recovery subscale instead of cancer stereotypes.<sup>7</sup> As observed in table 1, Cronbach's alpha for all items was .081. Of note, the internal consistency for the impossibility of recovery improved: Cronbach's alpha was 0.6 in the

original study and increased to .7 in the current study.

### **Data collection procedure**

Ethical approval to conduct the study was obtained from Al Al-Bayt University (NUR5/2020). An electronic version of the questionnaire was created using Google Forms, posted on the researchers' Facebook pages, and sent to relatives, friends, and colleagues via WhatsApp. A brief introduction was given about the study purpose and requirements, and participants were clearly informed that completing the questionnaire depended on their consent to participate. Furthermore, in the survey settings, they were allowed to edit or remove their responses. Participants who completed the questionnaire were asked to either share it on Facebook and WhatsApp, or complete it on behalf of family members without access to these platforms. Therefore, the tool was shared with a wide range of population. This method (called electronic snowballing sampling) was successful because 1,157 participants completed the survey within 72 hours.

### **Data analysis**

The data were exported as an Excel sheet; they were then imported into the Statistical Package for Social Science (SPSS version 21) that was used for data analysis. Descriptive statistics such as frequencies, percentages, means, and standard deviation were calculated to establish participants' characteristics and responses on the PACQ. In addition, independent t-test and one-way ANOVA were utilized to find any differences in the distribution of the total mean score regarding participants' characteristics. Multiple linear regression analysis was employed to identify the variables able to predict the attitudes toward cancer and cancer patients. The construct validity and reliability of the tool were established using exploratory factor analysis and internal consistency measurements.

## **Results**

### **Characteristics of the participants**

A total of 1,157 participants completed the online survey. The mean age was 44.2 years (SD= 20.1); table 2 presents participants' characteristics, disclosure preferences, and willingness to participate in cancer screening and early detection programmes.

### **Attitudes toward cancer and cancer patients**

The total mean attitude score was 38.2 (SD = 4.3) out of a maximum 48. 18.3% agreed or strongly agreed that cancer was not curable was, and 30% perceived that cancer patients would not regain their health after having cancer. Also, most of the participants (90%) disagreed or strongly disagreed that cancer patients should be socially inactive; 97% believed that cancer patients would contribute to the society. Furthermore, 41.1% agreed or strongly agreed that cancer patients could be identified by their appearance, 50.4% held that they would have sexual issues. Almost all participants (97.8%) disagreed or strongly disagreed that they would not work with cancer patients. Table 3 depicts more details about participants' responses to the attitudes toward cancer. Overall, the participants had positive attitudes toward cancer patients; highest mean score belonged to discrimination against cancer patients (Mean= 3.5, SD= 0.5, out of a maximum possible score of 4), followed by the impossibility of cure (Mean= 3.1, SD= 0.5); the lowest mean score was related to the stereotypes about cancer patients (Mean= 2.9, SD= 0.4).

### **Factors associated with participants' attitudes towards cancer and cancer patients**

At first, independent tests were conducted to determine the differences in the distribution of total mean attitude scores

regarding dichotomous variables, and one-way ANOVA for the region they lived in (three variables). As shown in table 2, unmarried participants, healthcare providers, and those with a family member or friend with cancer were willing to 1) be informed about their cancer diagnosis, 2) inform their friends about their cancer diagnosis, and 3) undergo early screening and detection procedures; these participants had a significantly higher mean attitude score compared to those in other categories ( $P < 0.05$ ). These significant variables were then entered into the multiple linear regression analysis. Based on the results, having a family member or a friend with cancer, willingness to be informed or inform a friend about cancer diagnosis and participate in screening and early detection programmes were significant predictive positive attitudes towards cancer and cancer patients. Additionally, being married predicted more negative attitudes than being single. The results of the regression analysis are presented in table 4.

## Discussion

The findings of this study showed that Jordanians had positive attitudes towards cancer and cancer patients. The mean total attitude score was higher than any previously reported.<sup>28,37</sup> For example, a study conducted in urban Iran found that Iranians had negative attitudes towards cancer patients and discrimination with respect to the difficulty of cancer patients regaining their health after diagnosis (33.9%).<sup>37</sup> A similar study which used the same questionnaire as the current study was conducted in South Korea; they found that participants had negative attitudes, stereotypes, and discrimination towards cancer and cancer patients.<sup>28</sup> More specifically, 58.5% of the participants reported that it was impossible to treat cancer, 71.8% held that cancer patients were

not able to contribute to the society, and 23.5% would avoid working with people diagnosed with cancer. Nevertheless, another study showed that cancer survivors had negative attitudes toward cancer, which might be the result of their previous experience with cancer.<sup>8</sup> However, one study found that most participants (84.8%–88.5%) had optimistic and positive attitudes towards cancer, which is in line with our survey.<sup>38</sup> In addition, a follow-up study observed positive attitudes toward lung cancer, but the participants also reported that lung cancer patients might feel stigmatized.<sup>38</sup> Being discriminated and stigmatized due to cancer is one of the most commonly reported attitudes experienced by patients.<sup>39</sup>

The positive attitudes toward cancer and cancer patients in the present study can be explained by the fact that many Jordanians witnessed cancer in their families, relatives, friends, or neighbours, which in turn encouraged their positive attitudes towards cancer. Moreover, previous studies reported that most of the Jordanian public and cancer patients were motivated and willing to learn about their cancer diagnosis and the related information, possibly enhancing their positive attitudes toward cancer.<sup>33,34</sup> Such positive attitudes are to be combined with structured education about cancer as the latter was found to enhance public knowledge and willingness to attend screening activities.<sup>40</sup> Holding negative attitudes toward cancer may hinder the desire to learn about the disease, thereby reducing the participation in early detection and screening programmes.<sup>41</sup>

Interestingly, our findings also showed that single participants had a significantly more positive attitude than married participants; being married also predicted negative attitudes towards cancer and cancer patients. In contrast to the results

of this study, Badihian, Choi, Kim, Parnia, Manouchehri, Badihian, Tanha, Guallar, and Cho found that married participants in Iran were less likely to have negative attitudes towards cancer patients.<sup>11</sup> Shim, Shin, Kim, Kim, Yang, and Park found that unmarried participants in South Korea had more negative attitudes towards cancer patients and negative acceptance of survivors returning to work.<sup>9</sup> However, consistent with our results, Min, Park, Kim, Yang, and Park reported that single participants were more likely to have positive attitudes towards cancer.<sup>38</sup> The negative or positive attitudes of single and married participants towards cancer were not discussed in the previous studies. Married people are subjected to more emotional, financial, and physical burdens when one family member is diagnosed with cancer. This may end with losing a wife, husband, or child, leaving them with sadness and negative memories associated with cancer. Also, cancer patients perceive their death as desirable as they wish to not increase the burden on their families and patients may want to have their families around when they die.<sup>42</sup> Family members frequently experience burden when caring for their beloved ones with cancer.<sup>42</sup> This might explain why married persons perceive cancer negatively, which needs to be confirmed in any prospective study.

Other factors associated with attitudes towards cancer and cancer patients included being healthcare providers and having a family member or friend with cancer. However, when these factors were entered in the regression analysis, only having a family member or a friend with cancer remained significant and predicted more positive attitudes compared with others. Badihian, Choi, Kim, Parnia, Manouchehri, Badihian, Tanha, Guallar, Cho reached the same results.<sup>11</sup> They found that participants with a family history of cancer were less likely to have negative

attitudes about discrimination in comparison to those without a family history of cancer. On the contrary, the participants with experience of patient care showed more negative attitudes towards cancer survivors returning to work than participants with no experience in that department.<sup>9</sup> LeSeure and Chongkham-Ang explained that the positive attitudes of caregivers towards cancer and cancer patients could be understood by three stages explaining the context of caregiving experience.<sup>44</sup> The first stage is called “balancing my emotions,” where caregivers try to manage their emotions and look at the positive side of the experience after learning about the diagnosis. The second stage, “keeping life as normal as possible,” is applied by caregivers able to adjust and surmount the emotional difficulties. The third stage, “lifting life above the illness”, occurs when caregivers reconcile the burdens of the situation and become adjusted to living with the circumstances of both cancer and caregiving. In Islamic culture, we believe that all = sufferings in life are from Allah, as a kind of affliction to test believers and separate those who show patience and faithfully accept the disease from those who do not.<sup>44</sup> Hence, the positive attitudes of the participants in the current study might be attributed to their reconciliation and acceptance of their fate.

Furthermore, participants willing to be informed or inform their friends about cancer diagnosis and participate in early detection and screening programmes had more positive attitudes. These variables were found to predict positive attitudes among participants. Min, Park, Kim, Yang, Park discussed that individuals’ attitudes towards cancer determined how they behaved in the face of cancer issues.<sup>38</sup> For instance, individuals with negative attitudes towards cancer were less likely to be engaged in preventive health behaviours, seek medical help for early cancer

symptoms, and participate in cancer screening and treatment.<sup>40</sup> Moreover, these individuals were more likely to be unemployed and less educated, have inadequate knowledge, perceive barriers to treatment, be socially frustrated, and have a low self-esteem.<sup>38</sup> In the current study, most of the participants were educated, employed, and young. These demographics may explain their positive attitudes towards cancer and their willingness to share their diagnosis with friends and participate in screening programmes. However, future studies are to focus on exploring the predictors of attitudes toward cancer and cancer patients.

### Limitations

The current study had some limitations. Primarily, convenience sampling was used to recruit the participants using an online survey through social media. Convenience sampling limits the generalizability of the findings, and the use of social media limits the participants to those who can use the internet and social media, in turn influencing the representativeness of the population. However, the participants were encouraged to complete the questionnaire on behalf of those with no social media accounts or internet access. The data were collected during the COVID-19 pandemic home and institutional quarantine period, which may have increased the representativeness of the sample.

### Conclusions

In conclusion, this study demonstrated that Jordanians had positive attitudes toward cancer and cancer patients, as predicted by several variables. This necessitates healthcare providers to adopt shared decision models when planning the care of cancer patients; such a plan should focus on involving both patients and family

members, rather than adopting a paternal approach. In addition, policy makers and managers should consider positive attitudes when developing healthcare programmes to enhance public participation in early cancer detection and screening programmes in order to reduce cancer mortality and morbidity rates.

### Clinical practice points

- People with positive attitudes toward cancer are more likely to participate in cancer early detection programmes.
- Healthcare providers must consider disclosing cancer diagnosis as it is a patient's right and highly correlated with positive attitudes toward cancer.
- People with negative attitudes need extra attention when provided with cancer care.

### Conflicts of Interest

None declared.

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Table 1. Results of exploratory factor analysis using rotated component matrix

Item	Rotated Component Matrix		
	Impossibility of recovery	Stereotypes of cancer patients	Discrimination against cancer patients
1-It is impossible to treat cancer regardless of highly developed medical science.	<b>.734</b>		
2-It is very difficult to be healthy again once diagnosed with cancer.	<b>.721</b>		
3-Cancer patients would not be socially active once diagnosed with cancer.	<b>.611</b>		
4-The ability of cancer patients to perform tasks at workplace may decrease even after successful cancer treatment.	<b>.592</b>		
5-Cancer patients are easily recognized by their looks.		<b>.620</b>	
6-Cancer patients have a difficult time performing sexually.		<b>.536</b>	
7-Cancer patients deserve to be protected in society.		<b>.727</b>	
8-Cancer patients are not able to make any contributions to the society.	<b>.489</b>		
9-I feel uncomfortable around cancer patients.			<b>.715</b>
10-I tend to avoid interacting with neighbors who have cancer.			<b>.808</b>
11-I would avoid marrying people whose family members have cancer.			<b>.644</b>
12-I would avoid working with people who have cancer.			<b>.815</b>
<b>Cronbach's alpha</b>	<b>0.70</b>	<b>0.81.</b>	<b>0.75</b>

Table 2. Demographical characteristics of participants (n= 1157)

Variable	Frequency (%)	Mean (SD)	95% CI	P-value*
<b>Gender</b>				
Male	543 (47.0)	37.9 (4.2)	-0.05 to 0.98	0.079
Female	614 (53.0)	38.4 (4.3)		
<b>Education level</b>				
High ( $\geq$ Bachelors)	904 (78.1)	38.3 (4.2)	-0.99 to 0.19	0.189
Low ( $\leq$ High School)	253 (21.9)	37.9 (4.5)		
<b>Marital status</b>				
Married	607 (52.5)	37.6 (4.3)	0.69 to 1.67	<0.001**
Single	550 (47.5)	38.8 (4.1)		
<b>Family's monthly income</b>				
Low ( $\leq$ 846\$)	527 (45.5)	38.1 (4.4)	-0.25 to 0.73	0.342
High ( $\geq$ 846\$)	630 (54.5)	38.3 (4.1)		
<b>Are you a healthcare provider?</b>				
Yes	467 (40.4)	38.7 (4.1)	-1.33to -0.33	0.001**
No	690 (59.6)	37.8 (4.4)		
<b>Has anyone of your family members or friends had cancer?</b>				
Yes	691 (59.7)	38.5 (4.2)	-1.16to -0.16	0.001**
No	466 (40.3)	37.8 (4.3)		
<b>Do you have a relative or friend who died of cancer?</b>				
Yes	770 (66.6)	38.2 (4.2)	-0.48 to 0.56	0.898
No	387 (33.4)	38.1 (4.2)		
<b>Would you like to be informed about your cancer diagnosis?</b>				
Yes	1068 (92.3)	38.3(4.2)	-2.48 to -0.64	0.001**
No	89 (7.7)	36.7(5.1)		
<b>I would inform my friend of my cancer diagnosis.</b>				
Yes	962 (83.1)	38.4 (4.1)	-1.76 to -0.45	0.001**
No	195 (16.9)	37.3 (4.7)		
<b>I would inform my coworkers of my cancer diagnosis.</b>				
Yes	791 (68.4)	38.2 (4.6)	-0.64 to 0.41	0.677
No	366 (31.6)	245 (4.1)		
<b>I would like to participate in early detection programs.</b>				
Yes	998 (86.3)	38.4 (4.1)	-2.39 to -0.97	<0.001**
No	159 (13.7)	36.7 (4.7)		
<b>Region of living</b>				
North	503 (43.3)	38.2 (4.2)	-	0.572
Middle	497 (43.0)	38.4 (4.3)		
South	157 (13.6)	37.7 (3.8)		

\* Independent t-test was used except for the region of living where one-way ANOVA was used.  
\*\* Significant:  $P \leq 0.005$

Table 3. Attitudes toward cancer and cancer patients (n= 1157)

Item	N (%)				Mean (SD)
	Strongly disagree	Disagree	Agree	Strongly agree	
<b>Impossibility of recovery</b>					
It is impossible to treat cancer regardless of highly developed medical science.	262 (22.6)	684 (59.1)	172 (14.9)	39 (3.4)	3.0 (0.7)
It is very difficult to be healthy again once diagnosed with cancer.	201 (17.4)	606 (52.4)	299 (25.8)	51 (4.4)	2.8 (0.8)
Cancer patients would not be socially active once diagnosed with cancer.	505 (43.6)	537 (46.4)	99 (8.6)	16 (1.4)	3.3 (0.7)
The ability of cancer patients to perform tasks at workplace may decrease even after successful cancer treatment.	235 (20.3)	573 (49.5)	339 (29.3)	10 (0.9)	2.9 (0.7)
Cancer patients are not able to make contributions to the society.	562 (48.6)	560 (48.4)	29 (2.5)	6 (0.5)	3.5 (0.5)
<b>Stereotypes about cancer patients</b>					
Cancer patients are easily recognized by their looks	150 (13.0)	523 (45.2)	449 (38.8)	35 (3.0)	2.7 (0.7)
Cancer patients would have a difficult time performing sexually.	52 (4.1)	521 (45.0)	536 (46.3)	48 (4.1)	2.5 (0.6)
Cancer patients deserve to be protected in the society.	696 (60.2)	420 (36.3)	27 (2.3)	14 (1.2)	3.6 (0.6)
<b>Discrimination against cancer patients</b>					
I feel uncomfortable around cancer patients.	651 (56.3)	383 (33.1)	94 (8.1)	29 (2.5)	3.4 (0.7)
I tend to avoid interacting with neighbors who have cancer.	755 (65.3)	363 (31.4)	31 (2.7)	8 (0.7)	3.6(0.6)
I would avoid marrying people whose family members have cancer.	507 (43.8)	476 (41.1)	142 (12.3)	32 (2.8)	3.3 (0.8)
I would avoid working with people who have cancer.	781 (67.5)	350 (30.3)	21 (1.8)	5 (0.4)	3.7(0.5)

Table 4. Multiple linear regression analysis of variables predicting participants' attitudes toward cancer and cancer patients

	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>	<b>P-value</b>	<b>95.0% Confidence interval for B</b>	
(Constant)	35.6	0.57		0.000	34.49	36.73
Marital status	-1.1	0.26	-0.12	<0.001*	-1.55	-0.53
Having a friend or a family member with cancer	0.74	0.25	0.08	0.003*	0.25	1.23
Informing friends about cancer diagnosis	0.78	0.34	0.06	0.021*	0.12	1.45
Willingness to participate in early cancer detection programmes	1.3	0.36	0.10	<0.001*	0.56	2.0
Disclosure of cancer diagnosis	0.79	0.48	0.05	0.001*	0.15	1.74
Being a healthcare provider or not	0.45	0.26	0.05	0.088	-0.06	0.97

\* Significant *P* value < 0.05;  $R^2 = .44$