

# Attitudes Towards Cancer Patients

## A cross-sectional study of Omani patients and attendees at a university teaching hospital

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**ABSTRACT: Objectives:** Many cancer patients experience social difficulties and feelings of isolation. This study aimed to evaluate patients' and attendees' attitudes towards cancer patients. **Methods:** A cross-sectional study was conducted of patients and attendees attending Sultan Qaboos University Hospital (SQUH), Muscat, Oman, from December 2018 to March 2019. **Results:** A total of 1,190 people participated (response rate: 91.5%). The majority (90.7%) did not express reluctance to help cancer patients. Most agreed that cancer patients were productive (76.2%) and are respected by the public (75.0%). However, many participants (63.1%) felt that cancer patients might face difficulties getting married. Multivariate analysis showed that participants who had a family history of cancer or had previously been a caregiver for cancer patients were more likely to believe that cancer patients could be productive (odds ratio [OR] = 1.92, 95% confidence interval [CI]: 1.31–2.82;  $P < 0.05$ ). Less-educated participants were more likely to believe that cancer patients feared not being productive (OR = 1.49, 95% CI: 1.01–2.19;  $P < 0.05$ ). Male and single participants were more likely to perceive that cancer patients faced difficulties getting married (OR = 1.56, 95% CI: 1.20–2.02 and OR = 1.68, 95% CI: 1.22–2.32, respectively;  $P < 0.05$  each). **Conclusion:** Patients and attendees attending SQUH in Oman appeared to have positive and supportive attitudes towards cancer patients, although some felt that cancer patients might encounter social obstacles. Healthcare professionals should consider reassuring cancer patients of such positive sentiments. Governmental and non-governmental organisations should act to promote a supportive environment for cancer patients in Oman.

**Keywords:** Cancer; Attitudes; Patients; Surveys and Questionnaires; Oman.

### ADVANCES IN KNOWLEDGE

- Patients and attendees to Sultan Qaboos University Hospital (SQUH) in Oman appeared to have positive attitudes towards cancer patients.
- In general, people who had previously been caregivers for cancer patients and whose family had a history of cancer had more positive views of cancer patients and were more supportive.
- Some patients and attendees to SQUH perceived that cancer patients would face certain social obstacles, such as difficulties getting married.

### APPLICATION TO PATIENT CARE

- Healthcare professionals in Oman should reassure cancer patients of the Omani society's positive views of cancer patients, particularly if patients raise concerns regarding this issue.
- Government and non-governmental organisations might take advantage of the positive attitudes of society to help provide a more supportive environment for cancer survivors.

FOR MANY PATIENTS, A CANCER DIAGNOSIS is perceived as a death sentence and is associated with fear and social stigma.<sup>1</sup> Indeed, learning of a cancer diagnosis can be devastating and trigger adverse psychological symptoms in patients such as anxiety, depression, fatigue, difficulties in concentrating, fear of social isolation, concerns regarding sexuality and feelings of guilt and self-blame.<sup>2,3</sup> Imagining the emotional ramifications of this news on their families can also make some patients feel worse.<sup>2</sup> These psychological phenomena can, in turn, lead to a lack of sleep, reduced quality of work and a tendency to stay away from the workplace, potentially resulting in job loss and even suicide.<sup>4,5</sup>

Sociocultural perceptions and stigma play a crucial role in attitudes towards cancer patients.<sup>5</sup> Some societies regard cancer patients as victims, rendering such individuals prone to social isolation and feelings of exclusion from social circles, which can decrease emotional wellbeing and increase mortality risks.<sup>2,3,6</sup> Additionally, cancer survivors sometimes experience negative attitudes, stereotypes, discrimination and problems with coworkers following treatment.<sup>5</sup>

Oman is an Arab country with a population of 4.6 million and is located in the southeastern part of the Arabian Peninsula.<sup>7</sup> In Oman, cancer is one of the most frequent causes of death, with patients often presenting at a younger age and more advanced

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stage at the time of diagnosis.<sup>8,9</sup> The burden of cancer in Oman is expected to increase due to the country's ageing population, rapid socioeconomic changes and the increase in popularity of more Westernised lifestyles, with people smoking and eating diets high in saturated fats, engaging in less physical activity and experiencing increased obesity.<sup>10</sup>

Previous studies in Oman have shown that cancer patients often experience debilitating psychosocial problems, including mental stress and apprehension over how society might view and react to them as cancer patients.<sup>2,3</sup> On the other hand, some patients perceive that members of the public view them in an overly sympathetic manner, thus constraining their social interactions.<sup>2</sup> In reaction to these perceptions, patients may even move abroad to avoid meeting people who know that they have cancer.<sup>3</sup> This study aimed to evaluate attitudes towards cancer patients among patients and attendees of a teaching hospital in Oman. To the best of the authors' knowledge, no previous study has sought to identify attitudes towards cancer patients among this specific group in the Middle East.

## Methods

This cross-sectional study was carried out from December 2018 to March 2019 at Sultan Qaboos University Hospital (SQUH), a tertiary care university hospital located in Muscat, the capital city of Oman. The hospital receives patients from primary healthcare centres and secondary care hospitals in all governorates of Oman.

All Omani individuals >18 years old who were visiting outpatient clinics or various areas of SQUH during the study period were invited to participate. Seriously ill patients or those who were in pain were excluded. The sample size was calculated at 1,067 subjects based on estimated moderate attitudes towards cancer patients (50%) and a precision of 3% and confidence interval (CI) of 95%. A total of 1,300 participants were targeted for inclusion in the study to adjust for missing responses.

A 31-item questionnaire to evaluate attitudes towards cancer patients and willingness to disclose a cancer diagnosis was adapted from a validated English-language tool used in South Korea.<sup>5</sup> Two researchers were trained to distribute the questionnaires and collect data. The original questionnaire is divided into three domains, with the first domain assessing perceptions towards cancer patients including assessment of willingness to help cancer patients

and perceptions of patients' ability to be sociable. The second domain assesses perceptions of personal barriers for cancer patients including fears of negative side-effects of chemotherapy and radiotherapy, death due to cancer and pain associated with advanced stages of the disease. The third domain assesses perceptions of social barriers for cancer patients including difficulties getting married and relating to the community.<sup>5</sup> For each item, participants could choose between strongly agree, agree, neither agree nor disagree, disagree or strongly disagree. During analysis, the agree and strongly agree options were combined, as were the disagree and strongly disagree options.

Participants were required to provide written informed consent before enrolling in the study. Those who consented were given the questionnaire to complete. For illiterate participants, the questionnaire was administered by research assistants.

The internal consistency of the items in the questionnaire was previously validated.<sup>5</sup> In addition, a fourth section was included to collect socio-demographic data relevant to Oman. The final questionnaire was translated into Arabic using forwards-backwards translation methods. A pilot study of 50 participants was conducted to assess the clarity and reliability of the Arabic version. Based on a standardised item analysis, the Cronbach's alpha values of the Arabic version were 0.75, 0.87 and 0.88 for the perceptions of cancer patients, personal barriers for cancer patients and social barriers for cancer patients domains, respectively.

Data were analysed using Statistical Package for the Social Sciences (SPSS), Version 22 (IBM Corp., Armonk, New York, USA). For descriptive purposes, categorised variables were presented as numbers and percentages. A Chi-square test ( $\chi^2$ ) was used to find associations between sociodemographic variables and participants' responses. A univariate analysis was conducted to determine differences between participants' sociodemographic variables and their responses. A multivariate analysis was subsequently conducted for statistically significant variables. During both the univariate and multivariate analysis, the 'agree' responses were coded as 'yes', while the 'neither agree nor disagree' and 'disagree' responses were coded as 'no'. A binary logistic regression model was used to adjust for various factors. A *P* value of <0.05 was considered statistically significant.

This study was approved by the Medical Research and Ethics Committee of the College of Medicine and Health Sciences at Sultan Qaboos University (MREC #1361).

**Table 1: Sociodemographic characteristics of patients and attendees attending a teaching hospital in Oman (N = 1,190)**

Characteristic	n (%)
<b>Gender</b>	
Male	704 (59.2)
Female	486 (40.8)
<b>Mean age in years</b>	<b>32.23 ± 10.18</b>
<b>Origin</b>	
Muscat	407 (34.2)
A'Dhahira	89 (7.5)
Al Batinah	314 (26.4)
A'Dakhilia	230 (19.3)
Al Wusta	17 (1.4)
A'Sharqia	108 (9.1)
Dhofar	23 (1.9)
Musandam	2 (0.2)
<b>Marital status</b>	
Single	368 (30.9)
Married	803 (67.5)
Divorced/widowed	19 (1.6)
<b>Education level*</b>	
None	145 (12.2)
School	547 (46.2)
College and above	492 (41.6)
<b>Chronic diseases</b>	
Diabetes	86 (7.2)
Hypertension	141 (11.8)
Cancer	33 (2.8)
Obesity	43 (3.6)
Other	143 (12.0)
None	744 (62.5)
<b>Smoking status</b>	
Current smoker	39 (3.3)
Non-smoker	1,116 (93.8)
Ex-smoker	35 (2.9)
<b>Alcohol intake</b>	
Yes	8 (0.7)
No	1,182 (99.3)
<b>Monthly income in OMR</b>	
<500	192 (16.1)
500–1,000	541 (45.5)
1,000–2,000	281 (23.6)
>2,000	176 (14.8)
<b>Family history of cancer<sup>†</sup></b>	
Yes	308 (25.9)

No	879 (74.1)
<b>Knowledge of cancer screening facilities</b>	
Yes	149 (12.5)
No	1,041 (87.5)
<b>Plans to undertake cancer screening in future</b>	
Yes	745 (62.6)
No	445 (37.4)
<b>Previously been a caregiver for cancer patients</b>	
Yes	396 (33.3)
No	794 (66.7)
<b>Agreement with the statement that “cancer is common in Oman”</b>	
Agree	276 (23.2)
Disagree	749 (62.9)
Don't know	165 (13.9)

OMR = Omani riyal.

\*The total is calculated out of 1,184 due to missing data from six participants.

<sup>†</sup>The total is calculated out of 1,187 due to missing data from three participants.

## Results

A total of 1,190 individuals participated in the study (response rate: 91.5%). Of this total, 704 (59.2%) were male and 486 (40.8%) were female. The mean age was 32.23 ± 10.18 years (range: 18–78 years). Approximately one-third of the participants (34.2%) lived in Muscat, while the remainder (65.8%) were from other regions of Oman. Most (67.5%) were married and 87.8% had completed school, college or a postgraduate degree. Overall, 25.9% had a family history of cancer, and 33.3% had previously been caregivers for cancer patients [Table 1].

Most participants (n = 1,079; 90.7%) were willing to help cancer patients if needed and believed that cancer patients were able to participate in different occasions (n = 958; 80.5%) and be sociable (n = 946; 79.5%) and productive (n = 907; 76.2%). In addition, most declared that cancer patients were respected (n = 893; 75.0%) and given attention (n = 791; 66.5%) by the public. Regarding the availability of medical facilities, 59.2% (n = 705) felt that cancer patients received good medical services, and 58.9% (n = 701) agreed that the government was attentive to the suffering of cancer patients. However, 55.5% (n = 660) stated that they would not reveal knowledge of a person's cancer diagnosis to others. A minority felt that cancer patients were different from other people (n = 274; 23.0%) and that they should be isolated (n = 140; 11.8%) [Table 2].

Multivariate analysis showed that participants who had a family history of cancer were significantly more likely to believe that cancer patients can be

**Table 2: Attitudes towards cancer and cancer patients among patients and attendees attending a teaching hospital in Oman (N = 1,190)**

Item	n (%)		
	Agree	Neither agree nor disagree	Disagree
<b>Perceptions towards cancer patients</b>			
I will help cancer patients if they need help	1,079 (90.7)	45 (3.8)	66 (5.5)
I think cancer patients can participate on different occasions	958 (80.5)	109 (9.2)	123 (10.3)
I think cancer patients can be sociable with other people	946 (79.5)	129 (10.8)	115 (9.7)
I think cancer patients can be productive	907 (76.2)	171 (14.4)	112 (9.4)
The public respects cancer patients	893 (75.0)	164 (13.8)	133 (11.2)
The public pays attention to cancer patients	791 (66.5)	147 (12.4)	252 (21.2)
Cancer patients receive good medical services	705 (59.2)	292 (24.5)	193 (16.2)
The government pays attention to cancer patients to reduce their suffering	701 (58.9)	293 (24.6)	196 (16.5)
If I knew someone who had cancer, I would not tell other people about them	660 (55.5)	167 (14.0)	363 (30.5)
Cancer patients are different than other people	274 (23.0)	114 (9.6)	802 (67.4)
I think cancer patients should be isolated	140 (11.8)	150 (12.6)	900 (75.6)
<b>Personal barriers for cancer patients</b>			
Fear of the negative side-effects of chemotherapy and radiotherapy	982 (82.5)	119 (10.0)	89 (7.5)
Fear of death due to cancer	970 (81.5)	122 (10.3)	98 (8.2)
Pain associated with advanced stages of the disease	786 (66.1)	297 (25.0)	107 (9.0)
Fear of not finding sufficient care	753 (63.3)	138 (11.6)	299 (25.1)
Fear of the views of society for having cancer	730 (61.3)	183 (15.4)	277 (23.3)
Fear of relying on family and the public	712 (59.8)	239 (20.1)	239 (20.1)
Fear of not being productive in the community	670 (56.3)	239 (20.1)	281 (23.6)
Difficulty in adapting to palliative care to control the pain	558 (46.9)	407 (34.2)	225 (18.9)
Cancer care services are often located far away	517 (43.4)	320 (26.9)	353 (29.7)
Often feeling introverted	489 (41.1)	346 (29.1)	355 (29.8)
Often feeling psychologically unwell	417 (35.0)	422 (35.5)	351 (29.5)
<b>Social barriers for cancer patients</b>			
Lack of knowledge about cancer symptoms, screening, and treatment	763 (64.1)	199 (16.7)	228 (19.2)
Difficulties in getting married	751 (63.1)	209 (17.6)	230 (19.3)
Fear of discovering cancer as there is no treatment	530 (44.5)	109 (9.2)	551 (46.3)
Few community services for cancer patients	530 (44.5)	315 (26.5)	345 (29.0)
I don't trust primary healthcare providers	503 (42.3)	220 (18.5)	467 (39.2)
Fear of dealing with cancer patients due to the incorrect belief that cancer is contagious	471 (39.6)	164 (13.8)	555 (46.6)
Avoiding interacting with cancer patients	245 (20.6)	111 (9.3)	834 (70.1)
I prefer to use herbs for any medical condition (even cancer), instead of radiation and chemicals	190 (16.0)	360 (30.3)	640 (53.8)
Self-care is not my top priority	160 (13.4)	237 (19.9)	793 (66.6)

**Table 3:** Associations between sociodemographic variables and perceptions towards cancer and cancer patients among patients and attendees attending a teaching hospital in Oman (N = 1,190)

Variable	Perceptions towards cancer patients, OR (95% CI)										
	Cancer patients can be sociable with other people	Cancer patients should be isolated	Cancer patients can be productive	Cancer patients can participate in different occasions	If I knew someone who had cancer, I would not tell other people about them	The public pays attention to cancer patients	The public respects cancer patients	Cancer patients are different from other people	I will help cancer patients if they need help	Cancer patients receive good medical services	The government pays attention to cancer patients to reduce their suffering
<b>Gender</b>											
Male	0.50* (0.36-0.69)	1.88* (1.24-2.85)	0.64* (0.47-0.86)	0.66* (0.48-0.91)	1.04 (0.81-1.34)	0.68* (0.52-0.87)	1.26 (0.95-1.68)	1.52* (1.12-2.06)	1.03 (0.68-1.57)	0.51* (0.40-0.66)	0.87 (0.68-1.12)
Female	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<b>Age in years</b>											
<30	0.72 (0.46-1.12)	0.75 (0.41-1.35)	0.75 (0.48-1.18)	1.48 (0.94-2.35)	1.38 (0.96-1.98)	1.37 (0.95-1.97)	1.12 (0.76-1.66)	0.72 (0.48-1.07)	1.82* (1.04-3.21)	0.56* (0.39-0.80)	0.83 (0.59-1.18)
30-39	1.08 (0.71-1.65)	1.33 (0.82-2.16)	0.51* (0.34-0.76)	0.95 (0.63-1.42)	0.46* (0.33-0.65)	1.38 (0.98-1.94)	1.02 (0.70-1.47)	0.50 (0.34-0.73)	1.82* (1.07-3.08)	0.99 (0.71-1.39)	1.21 (0.87-1.68)
≥40	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<b>Marital status</b>											
Single	0.80 (0.55-1.17)	1.65 (0.97-2.80)	0.64* (0.44-0.93)	0.52* (0.35-0.78)	0.54* (0.39-0.74)	0.60* (0.43-0.83)	1.08 (0.76-1.55)	1.05 (0.73-1.51)	0.79 (0.46-1.35)	0.33 (0.69-1.27)	0.97 (0.72-1.32)
Married	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<b>Education</b>											
None	3.06* (2.02-4.65)	0.22* (0.13-0.35)	3.27* (2.18-4.90)	2.10* (1.36-3.26)	2.90* (1.95-4.32)	1.15 (0.77-1.72)	0.91 (0.57-1.46)	0.58* (0.38-0.87)	1.62 (0.90-2.90)	1.18 (0.80-1.73)	0.97 (0.66-1.42)
School	2.99* (1.96-4.57)	0.31* (0.19-0.50)	3.63* (2.39-5.49)	1.49 (0.97-2.31)	2.65* (1.77-3.95)	0.87 (0.58-1.30)	0.54* (0.34-0.86)	0.40* (0.26-0.61)	1.57 (0.87-2.82)	1.60* (1.08-2.36)	0.78 (0.53-1.16)
College and above	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<b>Family history of cancer</b>											
Yes	1.17 (0.81-1.69)	0.65 (0.40-1.06)	1.92* (1.31-2.82)	1.57* (1.05-2.34)	1.18 (0.88-1.58)	1.18 (0.87-1.60)	0.49* (0.36-0.66)	1.21 (0.86-1.69)	0.94 (0.59-1.49)	0.59* (0.44-0.79)	0.59* (0.45-0.79)
No	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<b>Previously been a caregiver for cancer patients</b>											
Yes	0.99 (0.70-1.38)	1.17 (0.77-1.78)	1.26 (0.90-1.75)	1.61* (1.13-2.31)	0.73* (0.56-0.96)	0.76 (0.58-1.0)	1.31 (0.97-1.78)	0.99 (0.72-1.36)	0.57 (0.37-0.87)	1.50* (1.13-1.98)	1.58* (1.20-2.07)
No	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

OR = odds ratio; CI = confidence interval. \*Statistically significant at P<0.05.



**Table 4:** Associations between sociodemographic variables and perceptions of cancer-related personal barriers among patients and attendees attending a teaching hospital in Oman (N = 1,190)

Variable	Cancer-related personal barriers, OR (95% CI)										
	Often feeling introverted	Fear of relying on family and the public	Fear of not being productive in the community	Fear of not finding sufficient care	Fear of death due to cancer	Fear of the negative side-effects of chemotherapy and radiotherapy	Pain associated with advanced stages of the disease	Cancer care services are often located far away	Difficulty in adapting to palliative care to control the pain	Often feeling psychologically unwell	Fear of the views of society for having cancer
<b>Gender</b>											
Male	1.47* (1.14-1.89)	1.35* (1.05-1.74)	1.48* (1.15-1.90)	1.04 (0.81-1.35)	0.75 (0.54-1.04)	0.51* (0.36-0.73)	0.94 (0.72-1.23)	1.28* (1.00-1.65)	0.82 (0.64-1.05)	1.55* (1.18-2.02)	0.92 (0.71-1.19)
Female	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<b>Age in years</b>											
<30	0.72 (0.51-1.02)	1.07 (0.75-1.52)	1.31 (0.93-1.85)	1.79* (1.26-2.55)	2.29* (1.47-3.58)	1.33 (0.84-2.12)	1.26 (0.87-1.85)	1.55 (1.09-2.19)	0.97 (0.69-1.37)	2.50* (1.70-3.57)	2.19 (1.54-3.12)
30-39	0.63 (0.45-0.87)	1.03 (0.74-1.43)	0.87 (0.63-1.20)	1.35 (0.98-1.87)	1.30 (0.89-1.90)	1.84* (1.19-2.83)	0.77 (0.55-1.09)	1.49 (1.07-2.07)	0.62 (0.45-0.87)	1.11 (0.79-1.58)	1.46 (1.06-2.03)
≥40	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<b>Marital status</b>											
Single	2.31* (1.70-3.15)	1.75* (1.28-2.40)	1.73* (1.27-2.36)	1.42* (1.02-1.96)	1.24 (0.80-1.92)	0.99 (0.65-1.50)	0.87 (0.60-1.22)	1.08 (0.80-1.46)	1.11 (0.82-1.51)	0.50* (0.36-0.69)	1.00 (0.73-1.38)
Married	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<b>Education</b>											
None	1.30 (0.87-1.92)	2.20* (1.50-3.22)	1.27 (0.87-1.87)	1.15 (0.79-1.69)	1.37 (0.89-2.12)	1.76* (1.14-2.71)	1.32 (0.90-1.94)	1.47 (0.99-2.16)	1.37 (0.93-2.02)	0.73 (0.49-1.09)	1.82* (1.25-2.67)
School	1.32 (0.89-1.97)	2.60* (1.76-3.84)	1.49* (1.01-2.19)	1.34 (0.91-1.98)	2.12* (1.35-3.34)	3.36* (2.10-5.38)	1.93* (1.30-2.87)	1.30 (0.88-1.93)	1.17 (0.79-1.73)	1.0 (0.68-1.50)	2.36* (1.60-3.47)
College and above	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<b>Family history of cancer</b>											
Yes	0.99 (0.74-1.32)	1.32 (0.99-1.78)	1.34* (1.00-1.79)	0.97 (0.72-1.31)	0.62* (0.43-0.88)	2.07* (1.32-3.24)	1.53* (1.11-2.11)	0.96 (0.72-1.28)	0.71 (0.53-0.95)	0.77 (0.57-1.04)	0.85 (0.64-1.14)
No	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<b>Previously been a caregiver for cancer patients</b>											
Yes	1.08 (0.82-1.42)	1.01 (0.77-1.32)	0.80 (0.61-1.04)	1.22 (0.92-1.61)	1.26 (0.89-1.80)	1.32 (0.90-1.93)	2.07* (1.53-2.79)	1.32* (1.01-1.72)	2.45 (1.87-3.22)	1.72* (1.30-2.27)	0.96 (0.70-1.26)
No	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

OR = odds ratio; CI = confidence interval. \*Statistically significant at P<0.05.

**Table 5:** Associations between sociodemographic variables and perceptions of cancer-related social barriers among patients and attendees attending a teaching hospital in Oman (N = 1,190)

Variable	Cancer-related social barriers, OR (95% CI)									
	Fear of dealing with cancer patients due to the incorrect belief that cancer is contagious	Fear of discovering cancer as there is no treatment	Difficulties in getting married	Few community services for cancer patients	Avoiding interacting with cancer patients	Lack of knowledge about cancer symptoms, screening, and treatment	I don't trust primary healthcare providers	I prefer to use herbs for any medical condition (even cancer), instead of radiation and chemicals	Self-care is not my top priority	
<b>Gender</b>										
Male	1.67* (1.29-2.16)	1.16 (0.49-0.90)	1.56* (1.20-2.02)	1.45* (1.13-1.86)	1.13 (0.84-1.54)	1.07 (0.82-1.38)	1.56* (1.21-2.00)	0.89 (0.63-1.24)	1.98* (1.34-2.93)	
Female	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
<b>Age in years</b>										
<30	1.41 (0.98-2.03)	1.73* (1.20-2.47)	0.94 (0.65-1.34)	1.97* (1.39-2.79)	2.54* (1.61-4.03)	1.69* (1.18-2.44)	1.31 (0.92-1.86)	1.05 (0.64-1.72)	2.38* (1.38-4.11)	
30-39	1.33 (0.95-1.87)	2.51* (1.79-3.52)	0.76 (0.55-1.07)	1.18 (0.85-1.64)	1.56 (1.00-2.42)	0.93 (0.67-1.30)	1.11 (0.54-1.54)	1.25 (0.80-1.95)	1.58 (0.96-2.61)	
≥40	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
<b>Marital status</b>										
Single	1.27 (0.93-1.73)	1.36 (1.00-1.84)	1.68* (1.22-2.32)	0.82 (0.61-1.12)	0.84 (0.58-1.21)	0.92 (0.67-1.28)	1.49* (1.10-2.03)	1.04 (0.68-1.59)	0.52* (0.33-0.82)	
Married	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
<b>Education</b>										
None	1.27 (0.86-1.88)	2.17* (1.45-3.26)	1.67* (1.14-2.45)	1.23 (0.84-1.80)	0.86 (0.54-1.38)	1.98* (1.36-2.90)	0.80 (0.55-1.18)	0.36* (0.23-0.55)	0.51* (0.32-0.81)	
School	0.99 (0.67-1.48)	1.83* (1.21-2.76)	2.40* (1.63-3.55)	1.14 (0.77-1.68)	0.74 (0.46-1.19)	3.26* (2.21-4.82)	1.21 (0.82-1.78)	0.27* (0.17-0.43)	0.22* (0.13-0.38)	
College and above	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
<b>Family history of cancer</b>										
Yes	0.56* (0.41-0.76)	0.80 (0.60-1.07)	0.95 (0.71-1.27)	1.32 (1.00-1.76)	0.49* (0.33-0.71)	0.90 (0.67-1.22)	1.36* (1.02-1.81)	0.84 (0.56-1.27)	0.41* (0.24-0.67)	
No	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
<b>Previously been a caregiver for cancer patients</b>										
Yes	1.01 (0.76-1.32)	1.32* (1.01-1.73)	0.70* (0.53-0.92)	1.19 (0.91-1.55)	2.30* (1.66-3.18)	0.92 (0.70-1.22)	0.93 (0.71-1.22)	0.92 (0.63-1.34)	1.48 (0.98-2.22)	
No	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	

OR = odds ratio; CI = confidence interval. \*Statistically significant at P<0.05.

productive (odds ratio [OR] = 1.92, 95% CI: 1.31–2.82;  $P$  value <0.05) and participate in important occasions (OR = 1.57, 95% CI: 1.05–2.34;  $P$  value <0.05). However, they were significantly less likely to believe that the public respects cancer patients (OR = 0.49, 95% CI: 0.36–0.66;  $P$  <0.05), that cancer patients receive good medical services (OR = 0.59, 95% CI: 0.44–0.79;  $P$  <0.05) or that the government pays attention to cancer patients to reduce their suffering (OR = 0.59, 95% CI: 0.45–0.79;  $P$  <0.05). In addition, participants who had been a caregiver for cancer patients were significantly more likely to believe that cancer patients can participate in different occasions (OR = 1.61, 95% CI: 1.13–2.31;  $P$  <0.05), that cancer patients receive good medical services (OR = 1.50, 95% CI: 1.13–1.98;  $P$  <0.05) and that the government pays attention to cancer patients to reduce their suffering (OR = 1.58, 95% CI 1.20–2.07;  $P$  <0.05) [Table 3].

The majority of participants felt that cancer patients feared side-effects of cancer treatment (82.5%), death (81.5%), pain (66.1%), not finding adequate care (63.3%), society's views (61.3%), having to depend on family and the public (59.8%) and not being productive in the community (56.3%). However, less than half agreed that cancer patients might have difficulties adapting to palliative care to control their pain (46.9%), that cancer care services are often located far away (43.4%) and that cancer patients often feel introverted (41.1%) and psychologically unwell (35.0%) [Table 2].

Multivariate analysis showed that less-educated participants were significantly more likely to believe that cancer patients feared relying on family and the public (OR = 2.20, 95% CI: 1.50–3.22;  $P$  <0.05), not being productive (OR = 1.49, 95% CI: 1.01–2.19;  $P$  <0.05), death (OR = 2.12, 95% CI: 1.35–3.34;  $P$  <0.05), side effects of treatment (OR = 1.76, 95% CI: 1.14–2.71;  $P$  <0.05) and societal views (OR = 1.82, 95% CI: 1.25–2.67;  $P$  <0.05). In addition, those with a family history of cancer were significantly more likely to perceive fear of not being productive (OR = 1.34, 95% CI: 1.00–1.79;  $P$  <0.05), fear of the negative side-effects of treatment (OR = 2.07, 95% CI: 1.32–3.24;  $P$  <0.05) and pain (OR = 1.53, 95% CI: 1.11–2.11;  $P$  <0.05) as cancer-related personal barriers. Participants who had previously been a caregiver for cancer patients were significantly more likely to view pain (OR = 2.07, 95% CI: 1.53–2.79;  $P$  <0.05), cancer care services being located far away (OR = 1.32, 95% CI: 1.01–1.72;  $P$  <0.05) and cancer patients feeling psychologically unwell (OR = 1.72, 95% CI: 1.30–2.27;  $P$  <0.05) as personal barriers [Table 4].

More than half of the participants thought that a lack of knowledge of cancer symptoms, screening and treatment (64.1%) and difficulties getting married (63.1%) were social barriers faced by cancer patients.

However, fewer participants were afraid of a cancer diagnosis due to a perceived lack of treatment (44.5%), feared dealing with cancer patients due to the incorrect belief that cancer is contagious (39.6%), avoided interacting with cancer patients (20.6%) and preferred herbal remedies for any medical condition, including cancer (16.0%) [Table 2].

Multivariate analysis showed that both male (OR = 1.56, 95% CI: 1.20–2.02;  $P$  <0.05) and single (OR = 1.68, 95% CI: 1.22–2.32;  $P$  <0.05) participants were significantly more likely to perceive that cancer patients face difficulties getting married. Moreover, those with no formal education were significantly more likely to fear diagnosis due to lack of treatment (OR = 2.17, 95% CI: 1.45–3.26;  $P$  <0.05), difficulties getting married (OR = 1.67, 95% CI: 1.14–2.45;  $P$  <0.05) and a lack of cancer-related knowledge (OR = 1.98, 95% CI: 1.36–2.90;  $P$  <0.05) as social barriers. However, they were also significantly less likely to prefer medicinal herbs (OR = 0.36, 95% CI: 0.23–0.55;  $P$  <0.05). Participants who had been caregivers of cancer patients were significantly more likely to fear diagnosis due to a perceived lack of treatment (OR = 1.32, 95% CI: 1.01–1.73;  $P$  <0.05) and avoid interacting with cancer patients (OR = 2.30, 95% CI: 1.66–3.18;  $P$  <0.05). However, they were significantly less likely to believe that cancer patients face difficulties getting married (OR = 0.70, 95% CI: 0.53–0.92;  $P$  <0.05) [Table 5].

## Discussion

To the best of the authors' knowledge, this study is the first conducted in the Middle East to evaluate attitudes towards cancer patients among patients and attendees attending a teaching hospital. The majority of the participants in the current study held generally positive views of cancer patients including a willingness to help them if needed and the belief that such individuals were respected by society. This attitude is fortunate as individuals living in cultures that stigmatise cancer patients are less likely to adopt risk-reducing behaviours themselves or to seek support services when necessary.<sup>11</sup> Furthermore, cancer patients are more likely to develop adverse psychological sequelae if they live in a society where people hold negative prejudices and discriminating attitudes towards cancer patients.<sup>5,12</sup>

Overall, while many of the participants in the present study demonstrated incorrect knowledge regarding cancer, they still held supportive attitudes towards cancer patients. This finding might reflect the predominantly Islamic mindset of Omani nationals, as religious beliefs contribute significantly to attitudes towards an individual's health and wellbeing. In



Islam, support is considered integral to the healing process, and taking care of one's health is viewed as a religious obligation.<sup>13</sup> Moreover, traditional cultural values in Oman consider family to be of paramount importance, with the entire extended familial network obligated to care for and provide support to a sick relative.<sup>14</sup> However, cancer is still viewed in many Middle Eastern countries as a death sentence; thus, initiatives are needed to educate individuals regarding recent advances in cancer treatment.<sup>2</sup>

More than half of the current study participants thought it would be better not to tell others of an individual's cancer diagnosis, reflecting their wish to protect the patient's privacy. However, in many Arab countries, medical results and diagnoses are often disclosed first to family members rather than patients.<sup>13</sup> These family members may then keep such information a secret from the patient and other members of the public due to the superstitious belief that disclosure would be bad luck, resulting in a loss of hope which in turn might increase the likelihood of the patient's decline and death.<sup>2,14</sup> In some Western countries, one of the most important barriers for patients of ethnic minorities is the perceived social stigma of a cancer diagnosis.<sup>15</sup>

Most of the participants in the present study believed that cancer patients might fear the negative side-effects of treatment, death due to cancer, pain in advanced stages of the disease, not finding sufficient care, the views of society with regards to cancer patients, having to depend on family and the public and not being productive community members. Perceptions of personal barriers that cancer patients might encounter are likely to be fuelled by the actual concerns of such patients. Indeed, women diagnosed with breast cancer reported being concerned about the side-effects of treatment and the possible impact on their body image.<sup>2</sup> Such concerns likely make it difficult for cancer patients to participate in social activities normally and may result in depression and anxiety.<sup>12</sup>

In the current study, men were significantly more likely than women to believe that cancer patients might face difficulties getting married. Impaired fertility is a noted side-effect of cancer treatment and a particular source of concern for young male cancer survivors.<sup>16</sup> In Omani society, fertility is often valued as much as home-ownership or wealth. While many Arabs believe that fertility is ultimately dependent on God's will, the prospect of being infertile is nevertheless a source of shame, causing feelings of worthlessness and, potentially, for cancer patients who are married, resulting in divorce.<sup>17</sup> In addition, treatment-induced infertility can lead to mental stress, depression

and social and marital issues for cancer patients, particularly women.<sup>18</sup>

Education was a significant factor affecting perceptions of cancer and cancer patients in the present study. In Western countries, low educational levels along with low socioeconomic status and those in an ethnic group have similarly been associated with negative attitudes towards cancer.<sup>19</sup> Among cancer patients, a lack of education is associated with negative consequences such as inadequate access to cancer care, delays in diagnosis, suboptimal treatment, inadequate follow-up or monitoring, poor overall health status and failure to adopt a healthy lifestyle.<sup>19,20</sup> Both governmental and non-governmental organisations in Oman should implement educational initiatives to encourage acceptance of cancer patients in the community and correct misconceptions regarding cancer diagnosis and treatment.

In the current study, participants with a family history of cancer or those who had previously been caregivers for cancer patients were less apprehensive of interacting with cancer patients and were more aware of the physical and psychological consequences of having cancer. As the disease progresses, the family members or caregivers of a cancer patient begin to provide more psychological support and assume more responsibilities; such individuals are more likely to become distressed as their loved one becomes sicker and palliative care is initiated.<sup>21</sup> Many participants who had previously been caregivers for cancer patients reported often feeling psychologically unwell as a personal barrier; this finding might be attributed to the fact that Middle Eastern cultures often promote a strong sense of moral responsibility to one's family.<sup>22</sup>

This study was subject to certain limitations. First, because the questionnaire tool was adapted from a previous South Korean study, it may have resulted in significant cultural differences.<sup>5</sup> However, a pilot study revealed that the tool was valid and had high internal consistency. Second, the study was conducted among patients and attendees attending a teaching hospital in a single region of Oman; moreover, some of them were patients, had cancer themselves or had a family history of cancer. These factors could affect the generalisability of the findings. Indeed, a larger national study involving members of the general public recruited from community settings and other regions of Oman is required for better representative sampling and generalisability of results. Third, two approaches were used to administer the questionnaire to participants, with the survey being self-administered for literate participants and completed by the research assistants during face-to-face interviews for illiterate participants. In order to

avoid bias, using a standardised method to administer the questionnaire should have been considered for all participants, irrespective of literacy status. Fourth, responses from participants with a family history of cancer or those who had been caregivers for cancer patients might have resulted in reporting bias. Finally, the results of this study are not generalisable outside of Oman; however, the authors hypothesise that people in other Middle Eastern countries would demonstrate comparable attitudes towards cancer due to similar sociocultural and religious values. A larger multi-centre study conducted in multiple countries is needed to verify this hypothesis.

## Conclusion

Overcoming cancer-related stigma is necessary in order to normalise the experience of cancer. This study showed for the first time that patients and attendees of a teaching hospital in Oman held relatively positive views regarding cancer patients. Healthcare professionals should reassure cancer patients that the environment in Oman is a supportive one. As education has been found to significantly influence perceptions of cancer patients, the government should implement educational initiatives to encourage acceptance of cancer patients in the community and correct misconceptions regarding cancer diagnoses and treatments. Further collaborative research is recommended to explore public attitudes and perceptions towards cancer patients in other countries in the Middle East.

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## CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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