

# Cancer-Related Stigma and Depression in Cancer Patients in A Middle-Income Country

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Received: January 28, 2019, Accepted: March 28, 2019, Published: October 23, 2019

## ABSTRACT

**Objective:** The aim of the current study are to determine the depression levels of adult oncology patients in the cancer treatment phase and identify both cancer-related stigma and the factors affecting their depression levels. **Methods:** In this correlational study, 303 adult patients who had been treated at a medical outpatient clinic were surveyed using the convenience sampling method. The “questionnaire for measuring attitudes toward cancer – patient version,” a sociodemographic characteristics questionnaire, and the beck depression inventory were used. A multivariable linear regression model was used for the analysis. **Results:** The questionnaire and its subscale scores indicated a positive relationship between depression and

attitudes toward cancer. The predictive variables for depression were “being younger than 40-year-old” and “feelings of social exclusion,” which accounted for 4% of the total variance. Four factors indicating negative attitudes toward cancer were “being more than 60-year-old,” “higher education,” “low income,” and “feelings of social exclusion,” which accounted for 11% of the total variance. **Conclusions:** Cancer-related stigma, which underlies patients’ emotional and behavioral outlooks, should be reduced in cancer patients. Members of health teams should be sensitive to cancer-related stigma.

**Key words:** Attitude, cancer, depression, stigma

## Introduction

Negative attitudes, stereotypes, and discriminating attitudes toward cancer patients are very common in many societies.<sup>[1,2]</sup> Over 30% of cancer survivors have been found to have negative attitudes toward cancer and hold

stereotypical views of themselves.<sup>[3]</sup> The prevalence of cancer stigmatization ranges from 13% to 80%.<sup>[3-5]</sup>

Health-related stigma can occur in a variety of areas, such as health-related situations and shows its effects

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**DOI:**  
10.4103/apjon.apjon\_45\_19

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**Cite this article as:** Yılmaz M, Dissiz G, Usluoğlu AK, Iriz S, Demir F, Alacacioglu A. Cancer-Related Stigma and Depression in Cancer Patients in A Middle-Income Country. *Asia Pac J Oncol Nurs* 2019;7:95-102.

through varied mechanisms, such as negative attitudes, stereotypes, and discriminating attitudes.<sup>[6,7]</sup> It has been associated with an increase in the stress associated with an illness, and its potential consequences are numerous.<sup>[4,5,7-9]</sup> Figure 1 shows a conceptual framework of cancer-related stigma.<sup>[9]</sup> Cancer-related stigma is associated with poor self-esteem, anxiety, depression, poor adherence to treatment, delayed seeking of medical help, social isolation, limitation of living space, obstacles to employment, social exclusion, lack of social support, and diminished quality of life (QOL) in different patient groups.<sup>[4,10-16]</sup> Older cancer patients face double stigmatization due to negative self-perceptions of aging and cancer (breast, gynecological, lung, or hematological).<sup>[17]</sup> Furthermore, cancer survivors continue to experience the negative effect of cancer-related stigma on their QOL<sup>[18]</sup> and have problems returning to work.<sup>[16,19]</sup>

Depression is the most common psychiatric disorder in patients with cancer, with prevalence rates ranging from 21% to 70.6%.<sup>[8,10,20-25]</sup> Depression rates vary according to certain conditions (i.e., the cancer type, treatment modalities, intensity and/or severity of the symptoms, and presence of social support).<sup>[10,12,22,26]</sup> The relationship between stigmatization and depression in cancer patients has been demonstrated in many studies.<sup>[5,8,9,14,27]</sup> Patients who displayed negative attitudes toward cancer were 2.5 times more likely to experience depression than patients who displayed positive attitudes.<sup>[8]</sup> Thirty-one percent of respondents endorsed at least one item in a measure of cancer stigma, and 25% reported feeling that it was at least “a little true” that they were to blame for their illness. Perceived stigma can be associated with poorer psychological adjustment;<sup>[14]</sup> there is a positive association between perceived stigma and depressive symptomatology in cancer patients,<sup>[27]</sup> and strong negative relationships have emerged between QOL and anxiety, depression, and cancer stigma.<sup>[10]</sup> In addition to the effect of depression on stigma, factors such as older age,<sup>[17]</sup> lower education level,<sup>[28]</sup> marital status, and work and income have been reported

as negative attitudes toward cancer. Qualitative studies have yielded similar results to quantitative studies.<sup>[15,29,30]</sup> However, the studies referred to above mainly reflect results obtained from socioculturally and economically developed countries.<sup>[4,5,12,18,23]</sup> Cross-cultural myths can also affect negative attitudes toward cancer. A large portion of the Turkish population, due to their cultural health beliefs, has a perspective that “cancer cannot be cured,” “cancer is fatal,” “patients with cancer are disabled,” “patients with cancer cannot return to their work,” and “a person with cancer is an incompetent person.” All these beliefs and discourses cause a person with cancer to feel they have been labeled and excluded from society and allow communities to discriminate against people with cancer. Because the results of the current study will provide data on stigma and depression in cancer patients, the study aimed to (a) document attitudes toward cancer-related stigma and depression levels among cancer patients in Turkey during the cancer treatment phase and (b) predict the factors that affect cancer patients’ attitudes toward cancer and depression.

## Methods

The current study used a descriptive, cross-sectional design. Patients treated in an outpatient medical oncology clinic of training and research hospital in a city in western Turkey comprised the study population. The study was conducted with individuals undergoing cancer treatment in outpatient clinic rooms. During the 6-month study, 303 patients were reached. A *post hoc* power analysis performed by the GPower<sup>®</sup> 3.1 program (Universität Düsseldorf, Germany) indicated that for a population of 303 patients, the power of the study was 99%, at an effect size of 0.03 and a 95% confidence interval. Patients who were aged between 18 and 75 years, had received cancer therapy between October 2016 and April 2017, had a new diagnosis or relapse, volunteered to participate in the study, and were literate were assigned to the sample using the convenience method. Patients in the population who were in remission had psychiatric disorders, had speech or hearing problems, were illiterate, or did not want to participate were not included in the study. During the data collection process, 17 patients were unable to participate in the study due to their physiological symptoms, such as nausea, vomiting, and fatigue.

## Instruments

### Sociodemographic characteristics questionnaire

This questionnaire was prepared by the researchers in accordance with the relevant literature<sup>[3,8,12,23]</sup> and included 14 items that questioned the sociodemographic characteristics of the participants. The participants were

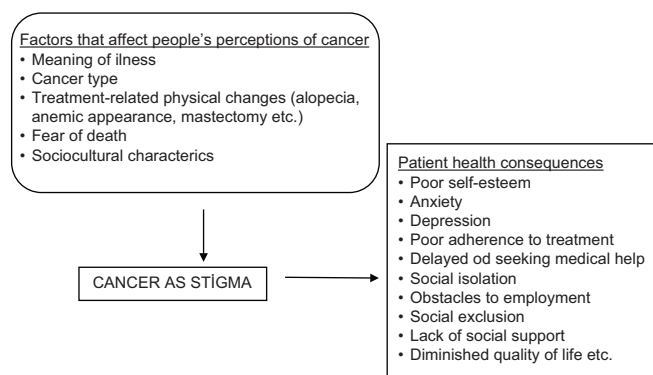


Figure 1: A conceptual framework of cancer stigma

asked to respond to the question “what is your concern about your illness?” by choosing one of the following options: “The spread of my disease,” “my relatives’ feelings of sadness,” or “being in need of others’ support,” “death,” or “others.” They were also asked to respond to the question “do you think that you are excluded because of your illness” by choosing either “no,” “yes,” or “sometimes.”

### Cancer-related stigma

The validity and reliability study of the Turkish version of the “questionnaire for measuring attitudes toward cancer (cancer stigma) – patient version,” developed by Cho *et al.*,<sup>[8]</sup> was performed by Yilmaz *et al.*<sup>[31]</sup> The questionnaire includes 12 questions to assess cancer stigma categorized into three domains: (i) Impossibility of recovery (4 items), (ii) cancer stereotypes (4 items), and (iii) discrimination.<sup>[8,31]</sup> Mean scores of  $\geq 2.5$  indicate that the patient displays negative attitudes towards cancer. The Cronbach’s alpha value of the questionnaire for the original form was 0.88<sup>[31]</sup> and 0.80 in the current study.

### Depression

The beck depression inventory (BDI),<sup>[32]</sup> used to measure somatic, emotional, cognitive, and motivational symptoms in patients with depression, was adapted to Turkish by Hisli.<sup>[32,33]</sup> Scores from 0 to 9 indicate low depression levels, scores from 10 to 16 indicate mild depression levels, scores from 17 to 29 indicate moderate depression levels, and scores from 30 to 63 indicate severe depression levels. The cutoff point for the validity and reliability of the inventory is 17. Scores  $\geq 18$  are accepted as indicative of moderate or severe depression levels.<sup>[33]</sup> Cronbach’s alpha coefficient was 0.74 in the Turkish version of the inventory and 0.86 in the current study.

### Procedures

Data collection was conducted in the outpatient chemotherapy unit. The paper-and-pencil method was used to collect data from the patients who were able to write. For patients who were unable to write because they were undergoing vascular access, the inventory was filled in by the same researcher (the author, amoebic gill disease) based on the patients’ responses. Each interview lasted about 15 min.

### Statistical analysis

The data were analyzed using the statistical program for social sciences®, version 22 (SPSS Inc., Chicago, Illinois, USA). To assess attitudes toward cancer, mean and standard deviation values were calculated for each item in each subdomain (impossibility of recovery, stereotypes of cancer patients, and experience of social discrimination). The dependent variables of the study were the total and

domain scores for the questionnaire for measuring attitudes toward cancer (cancer stigma) – patient version and the BDI scores. The independent variables of the study were age, gender, education level, marital status, working status, income, and exclusion experience. Correlations between cancer stigma scores and depression scores were analyzed using Pearson’s product-moment correlations ( $r$ ). To explain the relationships among the independent and dependent variables, a multivariable linear regression model was used. The dummy variables used for the regression analysis were age (being between 40 and 60 years old), gender (being a woman), educational status (being a primary school graduate), marital status (being married), working status (not employed), depression (BDI score between 0 and 9), and the experience of exclusion (not feeling excluded). Multicollinearity was set using a cutoff value of 10 for the variance inflation factor of the independent variables. The Durbin–Watson statistic (1.82) was within the acceptable range. The standardized residuals were normally distributed according to the Kolmogorov–Smirnov test ( $P = 0.20$ ). These findings indicated that there were no serious issues related to the multicollinearity assumptions and the normal distribution of the residuals.<sup>[34]</sup>

### Ethical approval

Permissions were obtained from the Ethics Committee for non-interventional investigations (Approval No. 2016/25) and the relevant institution. Before the data collection, the participants were informed about the purpose of the research, and their written consent obtained.

## Results

### Sample characteristics

The mean age of the patients was  $54.1 \pm 12.5$ , and 60.1% were female. Other characteristics are shown in Table 1. The major concerns of the patients regarding their illnesses were “the spread of my disease” (55.1%) and “my relatives’ feelings of sadness” (33.7%). Of the participants, 9.2% thought they were always socially excluded because of their cancer diagnosis, while 8.6% thought they were sometimes socially excluded. Of those who thought they were socially excluded, 57.2% thought they were excluded by their friends, and 42.6% thought they were excluded by their family [Table 1].

### Depression findings

The mean total score for the BDI was  $14.1 \pm 8.7$ . Of the participants, 38% had low, 29.4% had mild, 18.5% had moderate, and 14.2% had severe depression scores [Table 1].

### Cancer stigma: Attitudes toward cancer

The mean score for the attitudes toward cancer questionnaire was  $2.7 \pm 0.6$ . The mean levels for each

dimension of the negative attitudes were in the middle range or higher. There was a low positive correlation between the BDI and the attitudes questionnaire and its three domain scores [Table 2]. The responses the participants gave to the inventory items that indicated negative attitudes displayed by patients toward cancer are shown in Table 3.

**Table 1: Sociodemographic characteristics of patients, findings of discrimination and depression scale (n = 303)**

Characteristics	n (%)
Disease-related concerns*	
Spread of the disease	155 (55.1)
Relatives' feelings of sadness	102 (33.7)
Being in need of others	79 (26.1)
Death	23 (7.6)
Do you think that you are excluded because of your illness?	
No	249 (82.2)
Yes	28 (9.2)
Sometimes	26 (8.6)
Who are you excluded by? (n=54)	
Family	23 (42.6)
Friends and people around	31 (57.4)
Classification by the beck depression inventory	
Low (0-9)	115 (38.0)
Mild (10-16)	89 (29.4)
Moderate (17-23)	56 (18.5)
Severe (≥24)	43 (14.2)
Total	303 (100.0)
*Multiple answers	

**Table 2: Correlation analysis between scores of depression scale and stigma subscales**

Scores	Stigma total	Impossibility	Stereotype	Discrimination
	Mean±SD			
	2.7±0.6	2.7±0.7	2.5±0.6	2.9±0.7
Beck total (14.1±8.7), r, P	-0.24, 0.000*	-0.215**, 0.000	-0.199**, 0.001	-0.205**, 0.000
*Correlation is significant at the 0.01 level (two-tailed). SD: Standard deviation. **Correlation is significant at the 0.001 level (two-tailed)				

**Table 3: Distribution of the responses the patients gave to the items in the "questionnaire for measuring attitudes toward cancer (cancer stigma) - Patients version" (n = 303) [n (%)]**

Domains	Items	Strongly disagree	Disagree	Agree	Strongly agree
Impossibility of recovery	Cancer is impossible to treat regardless of highly developed medical science	70 (23.1)	148 (48.8)	57 (18.8)	28 (9.2)
	I would not be socially active once diagnosed with cancer	50 (16.5)	165 (54.5)	71 (23.4)	17 (5.6)
	Job performance at the workplace may decrease even after successful cancer treatment	35 (11.6)	131 (43.2)	119 (39.3)	18 (5.9)
	It is very difficult to be healthy again once a person is diagnosed with cancer	45 (14.9)	153 (50.5)	85 (28.1)	20 (6.6)
Stereotypes of cancer patients	Cancer patients are easily recognized by their look	34 (11.2)	116 (38.3)	126 (41.6)	27 (8.9)
	Cancer patients would have a difficult time having sexual intimacy	23 (7.6)	137 (45.2)	114 (37.6)	29 (9.6)
	Cancer patients deserve to be protected in society	26 (8.6)	94 (31.0)	131 (43.2)	52 (17.2)
	Cancer patients would not be able to make contributions to society	71 (23.4)	154 (50.8)	53 (17.5)	25 (8.3)
Experience of social discrimination	Some friends avoid me because of cancer	20 (6.6)	147 (48.5)	43 (14.2)	20 (6.6)
	Some neighbors tend to avoid interacting with me because of cancer	102 (33.7)	137 (35.2)	47 (15.5)	17 (5.6)
	I have problems with my family/married life because of cancer	107 (35.3)	139 (45.9)	47 (15.5)	10 (3.3)
	My employer/co-workers have discriminated against me	49 (16.2)	128 (42.2)	107 (35.3)	19 (6.3)

### Regression analysis for attitudes toward cancer and depression

According to the results of the multiple regression analysis, the predictive variables for depression were "being under the age of 40" and "feeling socially excluded." These two variables accounted for 4% of the total variance [Table 4]. In the regression analysis, variables such as gender, marital status, education status, working status, and income were not considered as factors that lead to depression.

The multiple regression analysis of the stigma scores revealed that the variables that affected attitudes toward cancer were "being a high school or university graduate," "having a low income," and "feeling socially excluded" [Table 5]. These four variables accounted for 11% of the total variance. In the "impossibility of recovery" domain, the variables affecting views about healing were "being ≥60-year-old," "being a high school or university graduate," "having a low-income level," and "feeling socially excluded," which accounted for 11% of the total variance. In the "stereotypes of cancer patients" domain, the affecting variables were "being ≥60-year-old," "being a high school or university graduate," and "having a low-income level." These four variables accounted for 10% of the total variance. In the "experience of social discrimination" domain, the expected variables were "being a high school or university graduate" and "feeling socially excluded." These variables accounted for 6% of the total variance. The regression analysis demonstrated that gender, marital status, and working status were not factors that lead to stigmatization.

### Discussion

Cancer treatment-related physical changes, such as alopecia, anemic appearance, mastectomy, colostomy,

**Table 4: Multiple backward regression analysis of the patients' depression scores**

Beck depression scores	B	SE	R <sup>2</sup>	t	P	CI	
						Lower	Upper
Constant	27.236	2.933		9.286	0.000	21.462	33.010
<40 age	-4.528	1.517	-0.258	-2.985	0.003	-6.543	-0.152
>60 age	-3.347	1.623	-0.181	-2.062	0.040	-7.515	-1.542
Male versus female	-1.740	1.048	-0.097	-1.660	0.098	-3.803	0.324
Working versus not working	2.177	1.179	0.106	1.846	0.066	-0.144	4.497
I am excluded versus not excluded	2.333	1.315	0.102	1.775	0.077	-0.255	4.921
Stigma scores	-3.543	0.900	-0.226	-3.938	0.000	-5.314	-1.772

Model  $r=0.348$ ,  $R^2=0.121$ , Adjusted  $R^2=0.102$ ,  $F=6.340$ ,  $P=0.000$ . CI: Confidence interval, SE: Standard error

**Table 5: Multiple backward regression analysis of patients stigma scores**

Stigma total score	B	SE	R <sup>2</sup>	t	P	CI	
						Lower	Lower
Constant	2.764	0.050		55.312	0.000	2.666	2.863
High school versus primary	0.330	0.074	0.242	4.438	0.000	0.183	0.476
University versus primary	0.368	0.102	0.196	3.590	0.000	-0.264	-0.018
Income less than expenses versus more than expenses	-0.141	0.063	-0.124	-2.257	0.000	-0.330	-0.007
I am excluded versus not excluded	-0.169	0.082	-0.113	-2.051	0.041	-0.466	-0.119
Severe depression	-0.293	0.088	-0.180	-3.324	0.001	0.166	0.569

Model  $r=0.390$ ,  $R^2=0.156$ , Adjusted  $R^2=0.142$ ,  $F=10.92$ ,  $P=0.000$

Impossibility of recovery							
Constant	3.025	0.111		27.343	0.000	2.808	3.243
<40 age	-0.190	0.107	-0.142	-1.765	0.079	-0.538	-0.089
>60 age	-0.313	0.114	-0.221	-2.745	0.006	-0.401	0.022
High school versus primary	0.346	0.086	0.216	4.009	0.000	0.176	0.516
University versus primary	0.539	0.119	0.245	4.546	0.000	-0.295	-0.007
Income less than expenses versus more than expenses	-0.151	0.073	-0.113	-2.071	0.039	-0.352	0.022
I am excluded versus not excluded	-0.165	0.095	-0.094	-1.737	0.083	-0.329	-0.011
Mild depression	-0.170	0.081	-0.115	-2.104	0.036	-0.667	-0.252
Severe depression	-0.459	0.106	-0.240	-4.351	0.000	0.306	0.772

Model  $r=0.441$ ,  $R^2=0.195$ , Adjusted  $R^2=0.173$ ,  $F=8.82$ ,  $P=0.000$

Stereotypes							
Constant	2.546	0.065		38.949	0.000	2.418	2.675
>60 age	-0.128	0.071	-0.101	-1.807	0.072	-0.267	0.011
Male versus female	0.127	0.069	0.105	1.832	0.068	-0.009	0.263
High school versus primary	0.299	0.080	0.211	3.752	0.000	0.142	0.456
University versus primary	0.348	0.109	0.178	3.205	0.001	0.134	0.562
Income less than expenses versus more than expenses	-0.181	0.067	-0.152	-2.714	0.007	-0.312	-0.050
Severe depression	-0.198	0.092	-0.117	-2.149	0.032	-0.380	-0.017

Model  $r=0.368$ ,  $R^2=0.136$ , Adjusted  $R^2=0.118$ ,  $F=7.69$ ,  $P=0.000$

Experience of social discrimination							
Constant	2.976	0.052		56.715	0.000	2.873	3.079
High school versus primary	0.277	0.099	0.156	2.805	0.005	0.083	0.472
I am excluded versus not excluded	-0.358	0.109	-0.183	-3.269	0.001	-0.573	-0.142
Severe depression	-0.294	0.119	-0.139	-2.467	0.014	-0.529	-0.059

Model  $r=0.395$ ,  $R^2=0.156$ , Adjusted  $R^2=0.142$ ,  $F=10.921$ ,  $P=0.000$ . CI: Confidence interval, SE: Standard error

changes in skin color, and surgical scars, play an important role in patients' social interactions by causing them to feel excluded.<sup>[4,5,28,35]</sup> In the current study, half of the patients stated that "cancer patients are easily recognized by their look," and one in every 10 patients thought they were always excluded because of their cancer diagnosis; more than half of these patients were excluded by friends

and people around them. Almost half of the patients thought that they were discriminated against by employers and/or co-workers. In a review study,<sup>[16]</sup> cancer survivors said that they underwent workplace discrimination after they started working and, another important finding was that the percentage of patients with negative stereotypes was quite high. The regression analysis revealed that

"I'm excluded" is a factor in the "impossibility of recovery" and "discrimination" domains. In Turkey, a middle-income country, changes in the appearance of individuals due to some of the side effects of their cancer treatment and the misbelief that cancer is contagious explain the social discrimination felt by the participants. While the mean discrimination scores of a Korean study<sup>[3]</sup> were much lower compared with those of the current study, in contrast, the stereotypes and impossibility of recovery mean scores were close to those of the current study, which may be due to societal differences, such as social, lifestyle, and cultural factors. These striking results demonstrate the importance of increasing the number of attempts aimed at reducing the negative attitudes displayed by society toward cancer. These attempts should be conducted within the framework of reducing society's negative reactions and attitudes toward cancer patients. Cancer-related nongovernmental organizations (i.e., cancer advocacy groups) should carry out anti-stigma campaigns, governments should televise public service announcements, and mass media should actively provide powerful messages to society to prevent stigmatization.

Another important finding of the current study was that although their depression level was mild, almost one-third of the patients experienced moderate or severe depression. Previous studies have found widely distributed rates of depression<sup>[12,25,27]</sup> closely related to the type and stage of the cancer, the treatments, and the coping methods used by individuals. In Cataldo *et al.*'s study, 54.9% of the total sample was depressed, and there was a strong positive relationship between cancer and depression.<sup>[12]</sup> A positive relationship has been determined between feelings of stigma and depressive symptomatology in cancer patients.<sup>[10,27]</sup> Cancer patients who experienced social discrimination were up to 4 times more likely to experience depression, and patients who had negative attitudes toward cancer were more depressed than patients with positive attitudes.<sup>[8]</sup> Previous studies have reported similar findings.<sup>[3,9,10,14,27,36]</sup> Depressed or anxious individuals without mental illness were 2 times more likely to experience stigma.<sup>[28]</sup> Cancer-related stigma was significantly associated with depressive symptoms in a multivariate model of colorectal cancer patients.<sup>[5]</sup> Strong negative relationships have emerged between QOL and anxiety, depression, and lung cancer stigma.<sup>[8,10]</sup> The regression analysis in the current study revealed that the factors affecting depression in cancer patients were age ("being under 40 years old") and "exclusion." Because being under the age of 40 years has negative effects on an individuals' education, family, or business life, it can

be considered a severe factor for depression, especially because individuals under the age of 40 years are actively involved in their working life. After being diagnosed with cancer, many people quit their jobs and suffer a loss of role and status.

The current study showed that cancer patients over 60 years of age displayed negative attitudes toward cancer, especially in the "impossibility of recovery" and "stereotypes" domains. During the geriatric period, also defined as a period of losses, sufferers experience losses in health and social life and the independence of the elderly diminishes. Increased dependence and losses expose advanced-age people to more discrimination. In the current literature, older patients with different cancer types have been shown to face double stigmatization<sup>[17]</sup> and display more negative attitudes.<sup>[3]</sup> According to the results of the current study, the patients displayed negative attitudes in the "impossibility of recovery," "stereotypes," and "discrimination" domains. This may be because awareness increases as education level increases. In another study of cancer patients, high levels of stigma were associated with lesser educational attainment.<sup>[28]</sup> In all the domains except for "discrimination," another factor that negatively affected attitudes toward cancer was low-income level. However, as in other studies,<sup>[2,4,8]</sup> no association was found between negative attitudes and the variables of gender, marital status, and place of residence in the current study. Because these characteristics were not associated with stigma, this could reflect the influence of sociocultural factors, such as an extended family structure, close relationships between individuals, and high levels of family and/or community social support for chronic diseases in the society where the research is conducted.

Stigma may interfere with a cancer patient's integration into the community and the normalization of their lives. Therefore, members of health teams should be sensitive to cancer-related stigma. When providing comprehensive cancer care to individuals with different sociodemographic characteristics, it is important to consider that these can affect an individual's fight against and coping with the disease. In this way, not only the course of the treatment but also the quality of the service provided and the patient's satisfaction will be improved.

### Limitations

The diagnoses of the cancer patients were not included in the regression analysis because they were not homogeneous, and the sample size was not large. The study used the results of patients who were receiving cancer treatment, not cancer survivors, which could be clarified by investigating cancer-related stigma in cancer survivors. Cross-cultural myths exist, and they contribute to cancer stigma.

## Conclusion

The current study's findings emphasized that negative attitudes toward cancer may interrupt the treatment process and create additional problems, such as depression, the limited use of possible social support, resulting poor health, shortened survival periods, and low QOL. Measuring cancer-related stigma to identify patients exposed to negative attitudes can lead to its prevention and have a significant impact on their QOL. Future studies, conducted with larger samples, should investigate the relationship between stigma and QOL by focusing on different types of cancer.

Educating patients about the diagnosis and prognosis of their disease and support group attendance are effective interventions that strengthen cancer patients' attitudes toward stigma. In addition, public education that provides people with accurate information about the causes, treatment, and prognosis of cancer may be required in different cultures. The exposure of cancer patients returning to work after their treatment to discrimination should be prevented, supportive work environments should be organized, and advocacy and education strategies should be implemented.

Developing countries can implement innovative social and community entrepreneurship by considering their society's cultural, social, and economic structure and analyzing these results. This could take the form of implementing valuable family- and community-based interventions to manage cancer-related stigma. Health professionals, nongovernmental organizations, governments, and social services should perform anti-stigma interventions.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

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