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## Supportive Care Needs and Association With Quality of Life of Mexican Adults With Solid Cancers

### KEY WORDS

Mexico  
Quality of life  
Solid cancers  
Supportive care needs

**Background:** Patients with cancer have supportive care needs. Studies that analyze the relationship between supportive care needs and health-related quality of life (HRQoL) are scarce. Cultural differences in supportive care needs and perceived QoL are also worth analyzing. **Objective:** The aim of this study was to assess the association between supportive care needs and HRQoL of Mexican adults given a diagnosis of solid cancers. **Methods:** We performed a secondary data analysis of a cross-sectional survey of 825 adult patients with cancer treated at the Oncology Hospital of the Mexican Institute of Social Security. The QLQ-30 from the European Organization for Research and Treatment of Cancer served to measure HRQoL, and the Supportive Care Needs Questionnaire was used to ascertain the needs. The analysis included multiple linear regression models for each HRQoL domain controlled for demographic, clinical, and social support covariates. **Results:** There was an association between psychological needs with low scores in the HRQoL domains of global health, emotional functioning, and increased fatigue. Physical and daily living needs were associated with most HRQoL domains except the emotional domain. Patient care needs were related to low scores in the emotional and social functioning domains. Health systems and information needs were associated with low scores on cognitive functioning. **Conclusions:** Physical, psychological, patient care, and informational needs were associated with decreased HRQoL of Mexican patients with cancer. **Implications for Practice:** Healthcare providers, including nurses,

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are encouraged to perform routine, comprehensive evaluations of the supportive care needs and HRQoL of patients with solid cancers to respond in a timely manner to their needs.

Cancer is a major worldwide public health burden due to its increasing mortality and morbidity rates. In 2012, in the region of the Americas, there were 2.88 million new cases and 1.29 million deaths from cancer; 47% of these deaths occurred in Latin America and the Caribbean.<sup>1,2</sup> Between 2012 and 2030, the incidence of cancer in the region will increase 72% among men and 62% among women.<sup>3</sup> In Mexico, between 2008 and 2012, the number of new cancer cases rose from 127 604 to 147 985, and cancer became the third leading cause of death after ischemic heart diseases and diabetes-related complications.<sup>1,4</sup> The speed of the rise of cancer in Latin America exceeds the pace of the healthcare systems to meet the demand related to medical treatment and comprehensive patient-centered services. With this perspective, supportive care needs should be measured and addressed, and health-related quality of life (HRQoL) should be considered.

Health-related QoL is a multidimensional construct that reflects the perception of persons about their symptoms related to the disease and treatment and their physical, psychological, and social functioning.<sup>5</sup> Indeed, the HRQoL construct is consistent with the perspective of “patient-centered care” that is responsive to the person’s needs and preferences.<sup>6</sup> In addition, HRQoL is an important prognostic factor of survival time of patients with cancer.<sup>7,8</sup>

According to Wilson and Cleary’s HRQoL conceptual model revised by Ferrans et al,<sup>9</sup> causal interrelationships exist among individual and environmental factors and QoL. Individual factors are composed of the sociodemographic and clinical patient’s characteristics, whereas the environmental factors encompass social support and other external factors. The HRQoL construct of the revised model reflects its multidimensionality and includes biological, physical, emotional, and psychological variables; functional status; general health perceptions; and overall QoL. The revised model provides a comprehensive framework for guiding QoL research and is substantiated through multiple studies that found that sociodemographic,<sup>10–13</sup> clinical,<sup>10–12,14–18</sup> social support,<sup>10–19</sup> and cultural<sup>20,21</sup> factors contribute to the perception of HRQoL among adults with cancer. The factors associated with better HRQoL are male gender, older age, higher educational level, higher socioeconomic status and social support, and being in the early stages of the disease.<sup>10,11,19</sup> On the contrary, comorbidity, psychological disorders such as anxiety and depression, advanced stages of cancer, and recurrence are associated with reduced HRQoL.<sup>10–18</sup> Although adjuvant therapy is associated with improved survival regardless of the type of cancer, its effect on HRQoL is mixed. Several systematic reviews report that chemotherapy and hormone therapy have negative effects on the HRQoL of patients with breast cancer<sup>19</sup> and a positive impact on patients having other types of cancer.<sup>22–25</sup>

Patients with cancer have supportive care needs for their daily activities, psychological changes, sexuality, access to health services, and information about the disease.<sup>26</sup> Supportive care needs

can be defined as perceived needs of patients with cancer for additional help in coping with cancer-related demands.<sup>27</sup> The association between perception of HRQoL and supportive care needs of patients with cancer has only recently been recognized. Patients whose informational needs have been met report lower anxiety and depression.<sup>28</sup> However, studies analyzing the relationship between overall supportive care needs and HRQoL are scarce and involve small samples of patients with specific cancers.<sup>29,30</sup> Furthermore, cultural differences in supportive care needs and perceived HRQoL merit additional study.<sup>20,21</sup>

In Latin America, studies analyzing factors associated with HRQoL of adults with cancer are incipient. We have identified several studies from Brazil,<sup>31,32</sup> Colombia,<sup>13</sup> Uruguay,<sup>13</sup> and Mexico<sup>33</sup> that investigated the association between demographic, clinical, and social factors and HRQoL of patients with cancer; however, to the best of our knowledge, there are no studies analyzing the supportive care needs of patients and their association with HRQoL in the Latin American context. Moreover, given specific cultural characteristics of the Latino population such as fatalism, spiritism, and familism among others,<sup>34</sup> it is justifiable to assess the association between patient-reported supportive care needs and HRQoL. The objective of this study was to assess the association between supportive care needs and the HRQoL of Mexican adults with solid cancers.

## ■ Methodology

This is a secondary analysis of the database of the 2013 cross-sectional survey on supportive care needs of adult patients with cancer and their caregivers. This survey was conducted at the Oncology Hospital (Mexican Institute of Social Security), Mexico City. The study included 825 consecutive ambulatory patients with cancer older than 20 years with all forms of solid cancer and previous surgical removal of histologically confirmed cancer. The study response rate was 74.8%. Information on the estimation of the sample, sampling strategy, and survey results were published elsewhere.<sup>35</sup> The National Committee for Research and Ethics of the Mexican Institute of Social Security approved the project. In addition, all study participants during their informed consent approval agreed that the information from their interviews would be used for the analysis of supportive care needs and QoL. We used the Wilson and Cleary’s HRQoL conceptual model revised by Ferrans et al<sup>9</sup> to guide this secondary data analysis.

## Study Variables

The dependent variable was the perception of HRQoL, as measured by the EORTC QLQ-30 (QoL questionnaire of the European Organization for Research and Treatment of Cancer). The EORTC QLQ-30 consists of 30 items grouped in a global

health subscale, 5 functional subscales (physical, role, emotional, cognitive, and social functioning), 3 subscales of symptoms (fatigue, pain, and nausea/vomiting), and individual symptoms/problems (shortness of breath, loss of appetite, insomnia, constipation, diarrhea, and financial difficulties). Each item has a 4-point Likert response option scale, and 2 global health questions have a 7-point response option scale. We transformed each subscale linearly to a score of 0 to 100, with 100 being the best overall health, functional status, or major symptoms. The EORTC QLQ-30 was validated previously in Mexican Spanish.<sup>36</sup>

The Supportive Care Needs Questionnaire<sup>27</sup> previously validated in Mexican Spanish measured the supportive needs.<sup>35</sup> This scale consists of 33 items grouped into 5 dimensions: (1) psychological needs; (2) needs related to health system and information about the health system environment, continuity of care, and provision of information; (3) physical and daily living needs; (4) patient care needs referring primarily to the sensitivity of healthcare professionals to patients' physical and emotional needs; and (5) needs relating to sexuality. Each item has a 5-point Likert response option scale where 1 corresponds to the absence and 5 corresponds to greater needs for support. Scores for each domain were calculated according to the McElduff et al<sup>37</sup> scoring recommendations. The final standardized scores range from 0 (no need) to 100 (high need).

Study covariates were those that, in previous studies, showed an association with the HRQoL of patients with cancer. These variables were (1) demographic characteristics including gender, age, education, and life partner; (2) social support assessed by the ENRICH Social Support Instrument<sup>38</sup> that measures functional and emotional support using a 5-point scale ranging from 1 (none of the time) to 5 (all the time)—items were added to obtain the total score, ranging from 6 to 30 points, and the highest scores indicate more availability of social support; and (3) medical history including time since diagnosis, primary tumor site, cancer stage, treatment received in the last month (surgery and adjuvant treatment such as chemotherapy, radiotherapy, immunotherapy, or hormonal therapy), and comorbid diagnosis before cancer defined as any previous degenerative chronic disease. We also assessed anxiety and depression using the 14-item Hospital Anxiety and Depression Scale. Each item has a 4-point Likert scale response option ranging from 0 to 3 where patients indicate the feelings they experienced during the previous week. This scale, previously validated in Spanish in patients with cancer,<sup>39</sup> is composed of anxiety and depression subscales, each with 7 items. The summary score of 11 or more points in each domain indicates anxiety or depression.

## Statistical Analysis

Descriptive statistics were used to analyze the characteristics of patients with cancer, and Student *t* test for 2-group comparisons and 1-way analysis of variance for the difference in means among more than 2 groups were used to compare HRQoL scores according to patients' characteristics.

To determine the association between independent and dependent variables and to control this association for the effect of study covariates, multiple linear regression with simultaneous

enter method was performed for each HRQoL subscale score. Each multiple regression analysis included all relevant covariates found in previous research related to HRQoL.

Multicollinearity was set using a cutoff value of 10 for the variance inflation factor of the independent variables<sup>40</sup>; no multicollinearity among study variables was detected. Stata 10.0 (Stata Corp, College Station, Texas) was used for the analysis; *P* < .05 was statistically significant.

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## ■ Results

The study included 825 adults with histologically confirmed solid cancers. Mean (SD) age was 53.6 (16) years, and 59.3% were women. Most had secondary education or less (72%) and a life partner (68.4%). Participants reported high social support, with a mean of 26.3 points on a scale of 6 to 30. Most respondents had cancer of the digestive tract (29.7%), followed by breast (16.5%) and prostate (11.3%) cancers. The percentage of patients with cancer in the early and late stages was similar (50.5% and 49.5%, respectively). Only 7.0% had a cancer recurrence. For time elapsed since diagnosis, 27% were given a diagnosis within the previous year; 42.4%, between 1 and 3 years; 25.7%, between 3 and 5 years; and 4.5%, more than 5 years. In the last month, only 13.2% underwent surgery, and 19.9% underwent adjuvant therapy; 4.1% had moderate or severe treatment complications, 37.7% had comorbidity, 20% had anxiety, and 11.4% had depression (Table 1).

Regarding HRQoL, the mean score for global health was 67.1 points on a scale of 0 to 100. Cognitive functioning had the highest HRQoL score (mean, 77.3), and role functioning had the lowest score (mean, 64.7). The major symptoms/problems were related to financial difficulties (mean, 38.7), insomnia (mean, 35.0), and fatigue (mean, 34.7).

In order of importance, supportive care needs were related to the health and information system (mean, 48.4 points), followed by physical and daily living needs (42.3 points), psychological needs (41.1 points), patient care (33.8 points), and sexuality (20.8 points).

Men reported higher HRQoL in the domains of global health and physical, emotional, and cognitive functioning, as well as less fatigue and nausea. Patients with higher education perceived better HRQoL in the domains of global health and physical and social functioning than patients with only primary school or without formal education. There were no statistically significant differences in HRQoL among those with and without a life partner (Table 2).

Patients with bone and articular cartilage cancer reported high scores of global health but less physical and role functioning, whereas patients with prostate cancer had high physical and role functioning, and patients with endocrine gland cancers had low global health. Patients with skin cancers had the lowest emotional functioning scores, and those with cancer of the lip, oral cavity, and pharynx had the highest scores. There were no statistically significant differences in other domains of HRQoL among patients according to cancer sites. Patients in earlier

**Table 1 • Patients Characteristics and Supportive Care Needs (N=825)**

Variables	%	Variables	%
Sociodemographic characteristics		Cancer stage	
Age, mean (SD), y	53.6 (16.1)	I–II	50.6
Gender		III–IV	49.4
Men	40.7	Time since cancer diagnosis, y	
Women	59.3	<1	27.4
Schooling		1 to <3	42.4
Secondary school or less	72.0	3 to <5	25.7
High school degree or higher	28.0	≥5	4.5
Life partner		Recurrence of cancer in the last year	
Yes	68.4	No	93.0
No	31.6	Yes	7.0
Social support and HRQoL, mean (SD)		Surgery in the last month	
Social support	26.3 (3.9)	No	86.8
HRQoL domains		Yes	13.2
Global health	67.1 (20.9)	Adjuvant treatment in the last month	
Physical	74.0 (22.9)	No	80.1
Role	64.7 (34.2)	Yes	19.9
Emotional	71.6 (26.7)	Moderate to severe treatment complications in the last month	
Cognitive	77.3 (26.0)	No	95.9
Social	71.0 (31.9)	Yes	4.1
HRQoL: individual symptoms		Comorbid diagnosis before the cancer	
Fatigue	34.7 (27.3)	No	62.3
Pain	28.9 (30.6)	Yes	37.7
Nausea/vomiting	10.8 (19.4)	Anxiety	
Dyspnea	17.1 (27.6)	No	80.0
Insomnia	35.0 (36.4)	Yes	20.0
Appetite loss	17.9 (29.1)	Depression	
Constipation	22.5 (31.0)	No	88.6
Diarrhea	12.5 (22.8)	Yes	11.4
Financial difficulties	38.7 (37.6)	Supportive care needs, mean (SD)	
Clinical characteristics		Health system and information	48.4 (29.1)
Primary cancer site	%	Physical and daily living	42.3 (27.0)
Gastrointestinal tract	29.7	Psychological	41.1 (27.8)
Breast	16.5	Patient care	33.8 (29.1)
Female genital organs	10.1	Sexuality	20.8 (31.5)
Male genital organs	11.3		
Connective and soft tissue	8.8		
Endocrine glands and related structures	5.4		
Skin	5.2		
Urinary tract	5.1		
Lip, oral cavity, and pharynx	3.3		
Respiratory system and intrathoracic organs	2.5		
Bone and articular cartilage	2.1		

Abbreviation: HRQoL, health-related quality of life.

stages had higher scores in most domains of HRQoL compared with those with advanced stages. Health-related QoL varied widely among patients with different times since cancer diagnosis. Lowest HRQoL scores were observed among patients who had less than 1 year since diagnosis, except for the social domain where the lowest score was seen in patients within 5 years or more since diagnosis. Patients with recurrence reported lower social functioning than those without recurrence. Comparison between patients with and without surgery in the last month shows that those with recent surgery had low scores in 5 of 9 HRQoL domains. Patients with adjuvant therapy

reported more fatigue and nausea compared with those without adjuvant therapy in the last month. At the same time, patients with treatment complications reported low HRQoL in the domains of global health and physical functioning, whereas patients with comorbidity reported lower HRQoL in the domains of global health, cognitive function, and increased fatigue compared with patients without comorbidity. Patients with anxiety and depression had lower HRQoL in all domains compared with those without these problems.

Physical and daily living needs were associated with most HRQoL domains except for the emotional domain. For every

**Table 2 • Health-Related Quality of Life Domains by Patients' Sociodemographic and Clinical Characteristics (N=825)**

	Functional Domains of the Quality of Life, Mean (SD)					Symptom Scales, Mean (SD)			
	Global Health	Physical	Role	Emotional	Cognitive	Social	Fatigue	Pain	Nausea/Vomiting
<b>Sociodemographic characteristics</b>									
Gender									
Men	69.4 (19.5) <sup>a</sup>	76.4 (22.4) <sup>a</sup>	64.3 (34.9)	77.2 (23.9) <sup>a</sup>	82.6 (22.2) <sup>a</sup>	73.0 (31.2)	32.1 (27.2) <sup>a</sup>	27.0 (30.9)	8.7 (17.6) <sup>a</sup>
Women	65.5 (21.7)	72.5 (23.2)	65.0 (33.9)	67.9 (27.8)	73.7 (27.8)	69.7 (32.3)	36.4 (27.2)	30.3 (30.4)	12.2 (20.4)
Schooling									
Secondary school or less	63.7 (18.6) <sup>a</sup>	71.1 (23.8) <sup>a</sup>	67.9 (35.9)	71.7 (25.9)	75.5 (26.8)	77.6 (30.0) <sup>a</sup>	33.7 (26.4)	27.8 (30.2)	9.7 (18.3)
High school degree or higher	68.4 (21.6)	75.2 (22.5)	63.4 (33.6)	71.7 (26.9)	78.0 (25.7)	68.5 (32.2)	35.0 (27.6)	29.4 (30.8)	11.2 (19.8)
Life partner									
Yes	66.8 (20.3)	74.2 (22.0)	63.6 (34.7)	72.1 (26.4)	77.9 (25.4)	71.1 (31.5)	34.3 (26.3)	29.3 (30.6)	10.0 (19.3)
No	67.7 (22.2)	73.8 (24.9)	67.1 (33.1)	70.8 (27.1)	76.1 (27.3)	70.9 (32.8)	35.3 (29.2)	28.2 (30.7)	12.4 (19.4)
<b>Clinical characteristics</b>									
Primary cancer site									
Gastrointestinal tract	65.7 (20.0)	71.8 (23.5)	60.7 (36.9)	73.7 (25.7)	76.3 (26.4)	72.1 (31.6)	35.0 (27.5)	28.8 (32.0)	12.8 (21.6)
Breast	68.8 (21.4)	74.9 (19.6)	68.7 (30.1)	67.5 (29.0)	74.3 (29.6)	70.1 (31.8)	33.8 (28.0)	30.5 (30.0)	10.2 (18.6)
Female genital organs	65.6 (21.6)	72.0 (27.6)	63.4 (36.7)	70.6 (29.3)	75.9 (26.1)	71.5 (32.9)	37.9 (27.8)	34.3 (33.4)	12.0 (19.5)
Male genital organs	72.7 (20.9)	83.0 (21.1) <sup>a</sup>	73.1 (32.9) <sup>a</sup>	78.7 (25.4)	81.9 (22.7)	76.5 (29.7)	28.3 (28.2)	24.2 (31.0)	8.4 (16.4)
Connective and soft tissue	67.3 (20.4)	71.1 (23.0)	59.6 (35.3)	68.0 (26.2)	79.7 (23.9)	67.8 (31.3)	37.1 (28.8)	32.2 (31.7)	9.4 (15.7)
Endocrine glands and related structures	58.7 (24.2)	76.7 (22.4)	71.5 (26.5)	64.8 (26.4)	74.4 (25.5)	68.9 (29.4)	40.5 (20.8)	27.0 (27.8)	10.4 (21.4)
Skin	64.7 (18.0)	73.2 (22.5)	70.5 (29.1)	64.3 (29.1)	75.2 (25.0)	68.2 (37.8)	29.2 (22.6)	22.5 (19.9)	8.5 (16.4)
Urinary tract	66.3 (22.5)	72.2 (23.7)	57.1 (35.7)	70.8 (24.3)	79.4 (25.2)	68.2 (30.5)	39.9 (31.4)	29.8 (32.2)	13.9 (24.9)
Lip, oral cavity, and pharynx	69.1 (18.7)	81.0 (17.2)	69.1 (33.9)	80.5 (19.2) <sup>a</sup>	78.4 (26.1)	64.2 (36.0)	29.2 (23.3)	23.4 (27.1)	6.8 (13.3)
Respiratory system and intrathoracic organs	69.8 (22.6)	75.6 (20.1)	61.1 (35.1)	79.4 (17.8)	84.9 (25.8)	74.6 (31.0)	39.7 (25.9)	32.5 (33.1)	11.9 (20.5)
Bone and articular cartilage	72.5 (17.9) <sup>a</sup>	60.0 (22.1)	53.9 (32.5)	75.0 (21.4)	85.3 (20.3)	71.6 (36.2)	30.7 (21.7)	27.4 (18.6)	2.9 (8.8)
<b>Cancer stage</b>									
I–II	70.3 (20.6) <sup>a</sup>	77.7 (21.9) <sup>a</sup>	71.0 (31.5) <sup>a</sup>	73.1 (25.9)	78.2 (25.7)	77.1 (29.2) <sup>a</sup>	30.3 (25.4) <sup>a</sup>	25.1 (28.0) <sup>a</sup>	8.8 (15.7) <sup>a</sup>
III–IV	63.8 (20.7)	70.4 (23.4)	58.2 (35.8)	70.2 (27.4)	76.5 (26.4)	64.8 (33.3)	39.1 (28.4)	32.9 (32.7)	12.8 (22.4)
<b>Time since cancer diagnosis, y</b>									
<1	65.7 (19.6)	69.1 (22.6) <sup>a</sup>	54.6 (34.3) <sup>a</sup>	68.8 (27.9) <sup>a</sup>	77.9 (26.9)	67.0 (32.1) <sup>a</sup>	38.2 (27.9) <sup>a</sup>	31.8 (30.6)	11.8 (19.3)
1 to <3	68.5 (21.0)	76.3 (22.8)	66.9 (34.6)	75.1 (24.1)	77.8 (25.6)	72.7 (31.8)	32.1 (27.0)	27.9 (30.6)	9.9 (18.5)
3 to <5	66.3 (22.3)	76.3 (23.6)	72.8 (30.5)	69.2 (28.3)	76.2 (25.6)	75.0 (30.0)	33.9 (26.4)	27.3 (30.7)	11.1 (21.3)
≥5	66.4 (18.8)	71.2 (17.5)	58.5 (36.3)	70.7 (29.3)	76.1 (28.2)	57.6 (36.3)	41.1 (27.9)	30.6 (30.3)	10.4 (16.8)
<b>Recurrence of cancer in the last year</b>									
No	67.1 (21.1)	74.3 (23.3)	65.0 (34.2)	71.8 (26.4)	77.4 (25.7)	71.8 (31.4) <sup>a</sup>	34.3 (27.3)	28.7 (30.5)	10.8 (19.5)
Yes	66.9 (17.6)	71.3 (18.3)	60.0 (34.9)	69.8 (29.5)	76.7 (30.7)	61.5 (36.2)	38.7 (26.6)	32.7 (31.8)	10.0 (17.1)
<b>Surgery in the last month</b>									
No	67.7 (20.6) <sup>a</sup>	76.0 (22.2) <sup>a</sup>	67.9 (33.2) <sup>a</sup>	71.9 (26.6)	77.0 (26.2)	72.4 (31.2) <sup>a</sup>	33.9 (27.0)	27.8 (30.3) <sup>a</sup>	10.6 (19.4)
Yes	62.9 (22.4)	61.5 (23.8)	43.5 (33.9)	70.1 (26.9)	79.5 (24.7)	62.3 (34.8)	39.2 (28.6)	36.7 (31.9)	11.6 (19.0)

(continues)

**Table 2 • Health-Related Quality of Life Domains by Patients' Sociodemographic and Clinical Characteristics (N=825), Continued**

	Functional Domains of the Quality of Life, Mean (SD)					Symptom Scales, Mean (SD)			
	Global Health	Physical	Role	Emotional	Cognitive	Social	Fatigue	Pain	Nausea/Vomiting
Adjuvant treatment in the last month									
No	67.7 (20.7)	74.6 (23.3)	65.3 (34.7)	71.6 (26.9)	78.4 (25.3)	71.9 (31.8)	33.3 (27.0) <sup>a</sup>	28.2 (30.1)	9.0 (17.7) <sup>a</sup>
Yes	64.4 (21.4)	71.9 (21.3)	62.1 (32.4)	71.8 (25.6)	73.1 (28.3)	67.5 (32.1)	40.1 (27.9)	31.9 (32.5)	18.0 (23.8)
Moderate to severe treatment complications in the last month									
No	67.4 (20.8) <sup>a</sup>	74.5 (22.9) <sup>a</sup>	65.1 (34.0)	71.6 (26.6)	77.5 (25.9)	71.2 (31.8)	34.1 (27.1)	28.4 (30.4) <sup>a</sup>	10.0 (18.3) <sup>a</sup>
Yes	59.3 (21.9)	64.5 (21.1)	54.9 (38.6)	73.8 (26.7)	72.5 (29.5)	66.7 (34.1)	47.0 (27.6)	40.7 (34.1)	27.4 (32.5)
Comorbid diagnosis before the cancer									
No	68.9 (20.7) <sup>a</sup>	76.2 (22.3)	65.9 (33.6)	72.2 (27.0)	79.7 (25.2) <sup>a</sup>	70.4 (31.0)	32.8 (27.2) <sup>a</sup>	27.8 (30.4)	10.0 (18.5)
Yes	64.0 (20.8)	70.5 (23.5)	62.6 (35.2)	70.8 (26.0)	73.4 (27.0)	72.1 (33.3)	37.5 (27.1)	30.9 (30.9)	12.0 (20.7)
Anxiety									
No	70.5 (19.6) <sup>a</sup>	76.9 (21.5) <sup>a</sup>	68.3 (33.3) <sup>a</sup>	79.6 (20.2) <sup>a</sup>	81.9 (22.2) <sup>a</sup>	76.4 (28.9) <sup>a</sup>	29.8 (25.1) <sup>a</sup>	24.0 (28.0) <sup>a</sup>	8.3 (17.1) <sup>a</sup>
Yes	53.6 (20.6)	62.9 (24.9)	50.1 (34.2)	40.1 (25.9)	59.1 (31.6)	49.6 (34.2)	53.9 (26.9)	48.6 (32.7)	20.6 (24.2)
Depression									
No	69.9 (18.9) <sup>a</sup>	76.9 (20.8) <sup>a</sup>	68.0 (32.9) <sup>a</sup>	75.0 (24.4) <sup>a</sup>	79.9 (23.8) <sup>a</sup>	74.6 (29.8) <sup>a</sup>	31.2 (25.5) <sup>a</sup>	25.6 (28.4) <sup>a</sup>	9.0 (17.4) <sup>a</sup>
Yes	45.1 (22.1)	51.5 (26.2)	38.5 (33.2)	45.6 (28.9)	57.1 (33.1)	43.6 (34.2)	61.2 (26.2)	54.6 (35.1)	24.5 (27.3)

<sup>a</sup> *p* < .05 comparison of health-related quality of life domains between patient subgroups.

point increase in physical and daily living needs, there was a decrease of -0.17 points in the domain of global health, -0.36 points in the domain of physical functioning, -0.50 points in the domain of role functioning, -0.24 points in cognitive functioning, and -0.33 points in social functioning. At the same time, for each point of increase in physical and daily living needs, there was an increase of 0.43 points in fatigue, 0.53 points in pain, and 0.12 points in nausea and vomiting. Psychological needs were associated with lower scores in the domain of global health (0.08 points), emotional functioning (-0.40 points), and increased fatigue score (0.11 points). Patient care needs were associated with lower scores on emotional and social functioning (-0.08 and -0.11 points, respectively), and needs related to health systems and information were associated with lower scores on cognitive functioning (-0.08 points) (Tables 3-5).

## ■ Discussion

To our knowledge, this is the first study in Latin America that identifies the importance of the association between supportive care needs and HRQoL of patients with cancer. The primary results indicate the magnitude of the relationship between physical, psychological, patient care, and informational needs with decreased HRQoL among Mexican patients with cancer.

The role functioning domain had the lowest score (64.7 points), followed by the social domain (71.0 points). Cognitive function had the highest score (77.3 points). Role and social domains mirror the social role, work-related QoL, social relationships, and recreational activities affected by cancer symptoms and adverse effects. The cognitive domain is less affected by these circumstances.

Scott et al<sup>20</sup> conducted a study of the HRQoL of patients with cancer clustered in 11 geographical groups according to their cultural aspects. Health-related QoL was measured using the EORTC QLQ-30. Overall, Scott et al<sup>20</sup> reported variability in HRQoL scores among regions. The lowest score was observed in the global health domain in patients from South Asia (55 points), and the highest score was observed in the physical functioning domain in north-central Europe (87.9 points). The cluster from Latin America included 127 patients with a low score in the emotional functioning domain (59.7 points) and a high score in cognitive functioning (79.4 points). Results of this study signal that different cultural groups prioritize different perceived aspects of HRQoL.

The health system and information needs of Mexican patients with cancer were rated the most important supportive care needs. In our study, these needs scored 48.4 points on average (scale, 0-100 points). Studies from Germany,<sup>41</sup> Japan,<sup>42</sup> Hong Kong, and Taiwan<sup>43</sup> that used the same scale also reported high scores for the health system and information needs (38.7, 29.6, 35.1, and 27.4 points, respectively). It is notable that the score of these needs among Mexican patients was higher than those in other countries. The findings of these studies, including ours, are congruent with the recommendation of the 2011 systematic review of the information provision for cancer survivors emphasizing that healthcare providers must deliver patient-centered information.<sup>26</sup>

**Table 3 • Association of the Unmet Supportive Care Needs and Global Health, Physical, and Role Functioning Domains of the Health-Related Quality of Life of Patients (N=825)**

	Global Health			Physical Functioning			Role Functioning		
	Multivariable-Adjusted $\beta$ Coefficient	95% Confidence Interval	P	Multivariable-Adjusted $\beta$ Coefficient	95% Confidence Interval	P	Multivariable-Adjusted $\beta$ Coefficient	95% Confidence Interval	P
Supportive care needs									
Psychological	<b>-0.08</b>	<b>(-0.14 to -0.01)</b>	<b>.024</b>	-0.04	(-0.11 to 0.02)	0.164	-0.01	(-0.12 to 0.09)	.795
Health system and information	-0.02	(-0.08 to 0.03)	.465	0.01	(-0.05 to 0.06)	0.810	-0.05	(-0.14 to 0.04)	.271
Physical and daily living	<b>-0.17</b>	<b>(-0.23 to -0.12)</b>	<b>&lt;.001</b>	<b>-0.36</b>	<b>(-0.42 to -0.30)</b>	<b>&lt;.001</b>	<b>-0.50</b>	<b>(-0.59 to -0.41)</b>	<b>&lt;.001</b>
Patient care	-0.05	(-0.11 to 0.01)	.100	-0.02	(-0.08 to 0.04)	0.560	0.001	(-0.09 to 0.09)	.985
Sexuality	0.02	(-0.02 to 0.07)	.307	0.02	(-0.02 to 0.07)	0.324	-0.01	(-0.08 to 0.06)	.780
Covariates									
Age	-0.06	(-0.16 to 0.04)	.273	<b>-0.17</b>	<b>(-0.28 to -0.07)</b>	<b>0.001</b>	0.11	(-0.05 to 0.27)	.187
Men	-0.66	(-3.97 to 2.64)	.693	-0.96	(-4.32 to 2.40)	0.574	-4.70	(-9.98 to 0.59)	.081
Schooling, secondary school or less	2.33	(-0.75 to 5.42)	.121	1.75	(-1.39 to 4.90)	0.274	-2.07	(-7.00 to 2.87)	.411
Life partner	-1.39	(-4.22 to 1.44)	.337	0.38	(-2.51 to 3.26)	0.798	-2.22	(-6.77 to 2.29)	.333
Social support	<b>0.38</b>	<b>(0.05-0.72)</b>	<b>.023</b>	-0.30	(-0.64 to 0.03)	0.077	-0.51	(-1.04 to 0.02)	.060
Primary cancer site									
Lip, oral cavity, and pharynx	-0.18	(-11.08 to 10.71)	.974	<b>25.17</b>	<b>(14.08-36.25)</b>	<b>&lt;.001</b>	<b>17.59</b>	<b>(0.19-34.99)</b>	<b>.048</b>
Gastrointestinal tract	-2.43	(-11.36 to 6.49)	.593	<b>18.58</b>	<b>(9.50-27.66)</b>	<b>&lt;.001</b>	11.42	(-2.83 to 25.68)	.116
Breast	0.42	(-8.88 to 9.72)	.930	<b>20.70</b>	<b>(11.23-30.15)</b>	<b>&lt;.001</b>	<b>17.20</b>	<b>(2.35-32.05)</b>	<b>.023</b>
Respiratory system and intrathoracic organs	-1.02	(-12.50 to 10.46)	.862	<b>19.05</b>	<b>(7.36-30.72)</b>	<b>0.001</b>	10.94	(-7.40 to 29.28)	.242
Female genital organs	-2.05	(-11.58 to 7.48)	.673	<b>18.28</b>	<b>(8.59-27.97)</b>	<b>&lt;.001</b>	11.93	(-3.29 to 27.15)	.124
Male genital organs	-1.76	(-11.10 to 7.59)	.712	<b>21.01</b>	<b>(11.51-30.52)</b>	<b>&lt;.001</b>	<b>21.16</b>	<b>(6.24-36.09)</b>	<b>.006</b>
Skin	-1.15	(-11.34 to 9.03)	.824	<b>21.35</b>	<b>(10.99-31.71)</b>	<b>&lt;.001</b>	<b>20.24</b>	<b>(3.98-36.51)</b>	<b>.015</b>
Urinary tract	-2.46	(-12.68 to 7.75)	.636	<b>19.10</b>	<b>(8.71-29.49)</b>	<b>&lt;.001</b>	8.01	(-8.30 to 24.33)	.335
Connective and soft tissue	-2.72	(-12.17 to 6.74)	.573	<b>14.80</b>	<b>(5.18-24.41)</b>	<b>0.003</b>	10.56	(-4.54 to 25.66)	.170
Bone and articular cartilage	Reference			Reference			Reference		
Endocrine glands and related structures	-7.90	(-17.80 to 2.10)	.121	<b>23.70</b>	<b>(13.53-33.87)</b>	<b>&lt;.001</b>	<b>22.48</b>	<b>(6.51-38.44)</b>	<b>.006</b>
Cancer stage, III-IV	<b>-3.49</b>	<b>(-6.02 to -0.96)</b>	<b>.007</b>	<b>-3.54</b>	<b>(-6.11 to -0.96)</b>	<b>0.007</b>	<b>-7.25</b>	<b>(-11.30 to -3.21)</b>	<b>&lt;.001</b>
Recurrence of cancer	2.04	(-4.89 to 8.97)	.564	-4.48	(-11.53 to 2.57)	0.213	-7.41	(-18.48 to 3.66)	.189
Time since cancer diagnosis, y				Reference			Reference		
<1	Reference			Reference			Reference		
1 to <3	-0.01	(-3.14 to 3.12)	.996	2.94	(-0.24 to 6.13)	.070	6.00	(0.99-11.00)	.019
3 to <5	-2.18	(-5.70 to 1.33)	.223	3.00	(-0.58 to 6.58)	.100	<b>10.80</b>	<b>(5.18-16.42)</b>	<b>&lt;.001</b>
$\geq 5$	-1.73	(-10.64 to 7.18)	.703	5.32	(-3.74 to 14.39)	.250	<b>8.49</b>	<b>(-5.74 to 22.73)</b>	<b>.242</b>
Surgery in the last month	-3.28	(-7.18 to 0.63)	.100	<b>-9.32</b>	<b>(-13.30 to -5.35)</b>	<b>&lt;.001</b>	<b>-14.70</b>	<b>(-20.93 to -8.46)</b>	<b>&lt;.001</b>

(continues)

**Table 3 • Association of the Unmet Supportive Care Needs and Global Health, Physical, and Role Functioning Domains of the Health-Related Quality of Life of Patients (N=825), Continued**

	Global Health			Physical Functioning			Role Functioning		
	Multivariable-Adjusted $\beta$ Coefficient	95% Confidence Interval	P	Multivariable-Adjusted $\beta$ Coefficient	95% Confidence Interval	P	Multivariable-Adjusted $\beta$ Coefficient	95% Confidence Interval	P
Adjuvant treatment in the last month	-1.32	(-4.78 to 2.14)	.453	1.09	(-2.42 to 4.61)	.541	0.89	(-4.63 to 6.42)	.750
Moderate to severe treatment complications	-3.53	(-10.23 to 3.18)	.302	-5.41	(-12.23 to 1.41)	.119	-3.97	(-14.68 to 6.74)	.467
Comorbidity	-2.58	(-5.43 to 0.28)	.077	-2.13	(-5.03 to 0.78)	.152	-4.74	(-9.31 to -0.17)	<b>.042</b>
Anxiety	<b>-5.20</b>	(-8.88 to -1.51)	<b>.006</b>	-2.11	(-5.86 to 1.63)	.269	-2.66	(-8.54 to 3.23)	.375
Depression	<b>-11.91</b>	(-16.29 to -7.53)	<b>&lt;.001</b>	<b>-13.66</b>	(-18.11 to -9.21)	<b>&lt;.001</b>	<b>-13.96</b>	(-20.95 to -6.97)	<b>&lt;.001</b>

The bold values highlight the statistically significant multivariable-adjusted  $\beta$  coefficients.

Our study found that physical, psychological, and patient care needs of patients with solid cancers were associated with most HRQoL domains. These associations were present after controlling for sociodemographic and clinical variables that we included in the adjusted multiple linear regression models. Few studies have investigated the association between supportive care needs and perceived HRQoL among patients with cancer.<sup>28,29,44-46</sup> Such studies focused primarily on the need for information.<sup>28,44</sup> Only 1 study from Korea<sup>29</sup> and 2 studies from China that included breast cancer<sup>45</sup> and lung cancer<sup>46</sup> survivors reported that physical and psychological unmet needs were associated with poorer HRQoL after controlling for other covariates.

Congruent with the 2011 systematic review<sup>28</sup> and other recent studies,<sup>29,45,46</sup> we found that, after controlling for the effect of study covariates, health system and information needs lacked an association with most of the HRQoL domains. For example, the 2011 systematic review on this topic found that, of 8 intervention studies that aimed at improving the information provided, only 1 intervention showed a positive association with better HRQoL. The lack of effective provider-patient communication could explain these findings. There are 2 perspectives to consider regarding an effective communication process: the patients' perspective, in which their health literacy can limit their capability to understand medical information, and the providers' perspective, where all providers are supposed to provide comprehensive information taking into consideration culture, education, and socioeconomic status of the patients.

Furthermore, we did not find an association among sexuality needs and HRQoL domains but did document that sexuality needs were less reported in our study. These results can be explained by the seeming unwillingness of patients to discuss sexuality, which may reflect their values surrounding this topic.<sup>35</sup>

Understanding the relationship between patients' supportive care needs and HRQoL is a stepping stone to prioritizing interventions aimed at improving the quality of care and, consequently, HRQoL.<sup>47</sup> The magnitude of the association between supportive care needs and HRQoL highlights the importance of performing routine evaluations of the supportive care needs of patients with cancer to guide the development of comprehensive interventions. However, there is an important gap to be bridged both in research and in practice. Previous studies suggest that health professionals do not always detect all physical, psychosocial, and informational needs of patients with cancer.<sup>48,49</sup> To avoid this, information on patients' supportive care needs and their perceived HRQoL could be collected on a regular basis during the provision of healthcare,<sup>47</sup> and educational interventions aimed at training healthcare providers to better understand the notion of patient-centered care could be developed.

Our data indicate that women had poorer HRQoL than men. A patient-centered model with a gender perspective should be considered in the design of interventions aimed at improving HRQoL and targeted to fulfill supportive care needs.

The study has limitations, including that this is a secondary analysis of a cross-sectional study; therefore, it is not possible to make inferences about causal relationships or the direction of the association between supportive care needs and perceived HRQoL. However, the use of secondary data is a highly ethical practice



**Table 4 • Association of the Unmet Supportive Care Needs and Emotional, Cognitive, and Social Functioning Domains of the Health-Related Quality of Life of Patients (N=825)**

	Emotional Functioning			Cognitive Functioning			Social Functioning		
	Multivariable-adjusted $\beta$ Coefficient	95% Confidence Interval	P	Multivariable-adjusted $\beta$ Coefficient	95% Confidence Interval	P	Multivariable-adjusted $\beta$ Coefficient	95% Confidence Interval	P
Supportive care needs									
Psychological	<b>-0.40</b>	(-0.47 to -0.33)	<.001	-0.05	(-0.14 to 0.04)	.240	-0.08	(-0.18 to 0.02)	.131
Health system and information	-0.05	(-0.11 to 0.01)	.090	<b>-0.08</b>	(-0.16 to -0.01)	<b>.030</b>	-0.02	(-0.10 to 0.07)	.726
Physical and daily living	-0.05	(-0.11 to 0.01)	.132	<b>-0.16</b>	(-0.24 to -0.09)	<.001	<b>-0.33</b>	(-0.42 to -0.25)	<.001
Patient care	<b>0.08</b>	(0.02-0.14)	<b>.010</b>	0.02	(-0.06 to 0.09)	.674	<b>-0.11</b>	(-0.20 to -0.02)	<b>.014</b>
Sexuality	-0.01	(-0.05 to 0.05)	.995	-0.05	(-0.11 to 0.005)	.072	-0.06	(-0.12 to 0.01)	.092
Covariates									
Age	0.06	(-0.05 to 0.17)	.295	<b>-0.15</b>	(-0.28 to -0.01)	<b>.030</b>	0.07	(-0.08 to 0.23)	.351
Men	2.81	(-0.70 to 6.32)	.116	<b>5.80</b>	(1.45-10.16)	<b>.009</b>	-1.48	(-6.44 to 3.48)	.558
Schooling, secondary school or less	0.32	(-2.96 to 3.60)	.849	-0.45	(-4.53 to 3.62)	.827	<b>-7.33</b>	(-11.96 to -2.70)	<b>.002</b>
Life partner	-0.86	(-3.87 to 2.14)	.573	0.78	(-2.96 to 4.51)	.683	0.66	(-3.59 to 4.91)	.762
Social support	-0.16	(-0.52 to 0.19)	.362	-0.21	(-0.65 to 0.23)	.346	-0.13	(-0.63 to 0.37)	.602
Primary cancer site									
Lip, oral cavity, and pharynx	9.01	(-2.51 to 20.60)	.125	-1.27	(-15.63 to 13.09)	.862	-5.13	(-21.46 to 11.20)	.538
Gastrointestinal tract	1.91	(-7.56 to 11.37)	.692	-3.93	(-15.69 to 7.84)	.513	2.52	(-10.86 to 15.89)	.712
Breast	-1.02	(-10.88 to 8.85)	.840	-1.99	(-14.24 to 10.27)	.751	0.38	(-13.56 to 14.31)	.958
Respiratory system and intrathoracic organs	2.24	(-9.94 to 14.41)	.718	2.19	(-12.95 to 17.32)	.777	3.83	(-13.37 to 21.04)	.662
Female genital organs	3.58	(-6.53 to 13.68)	.487	0.65	(-11.91 to 13.21)	.919	2.67	(-11.61 to 16.95)	.714
Male genital organs	2.80	(-7.11 to 12.71)	.579	-6.31	(-18.63 to 6.00)	.315	4.81	(-9.19 to 18.83)	.500
Skin	-1.54	(-12.34 to 9.25)	.779	-0.24	(-13.67 to 13.18)	.971	-2.12	(-9.19 to 18.81)	.786
Urinary tract	-0.16	(-10.99 to 10.67)	.976	-0.06	(-13.52 to 13.40)	.993	-1.88	(-17.19 to 13.42)	.809
Connective and soft tissue	-0.44	(-10.47 to 9.58)	.931	-0.74	(-13.20 to 11.72)	.907	1.30	(-12.86 to 15.47)	.857
Bone and articular cartilage	Reference			Reference			Reference		
Endocrine glands and related structures	-0.57	(-11.17 to 10.03)	.915	-1.27	(-14.44 to 11.90)	.850	2.91	(-12.07 to 17.88)	.703
Cancer stage, III-IV	-1.06	(-3.74 to 1.63)	.439	1.01	(-2.33 to 4.35)	.552	-8.64	(-12.43 to -4.84)	<.001
Recurrence of cancer	-0.37	(-7.72 to 6.99)	.922	0.74	(-8.40 to 9.87)	.874	-4.34	(-14.73 to 6.05)	.412
Time since cancer diagnosis, y									
<1	Reference			Reference			Reference		
1 to <3	<b>2.40</b>	(-0.92 to 5.72)	<b>.156</b>	-1.88	(-6.01 to 2.25)	.372	0.37	(-4.33 to 5.06)	.878
3 to <5	-1.88	(-5.61 to 1.85)	.323	-2.68	(-7.32 to 1.96)	.257	3.40	(-1.87 to 8.67)	.206
$\geq 5$	3.08	(-6.37 to 12.53)	.523	-1.90	(-13.65 to 9.84)	.751	-4.88	(-18.23 to 8.48)	.473
Surgery in the last month	1.14	(-3.00 to 5.28)	.589	3.80	(-1.35 to 8.94)	.148	-4.22	(-10.07 to 1.63)	.157
Adjuvant treatment in the last month	2.08	(-1.58 to 5.75)	.265	-2.54	(-7.09 to 2.02)	.275	-1.68	(-6.86 to 3.51)	.526
Moderate to severe treatment complications	0.63	(-6.48 to 7.74)	.863	-0.24	(-9.07 to 8.60)	.958	2.82	(-7.22 to 12.87)	.581
Comorbidity	-1.64	(-4.68 to 1.39)	.288	-3.29	(-7.06 to 0.47)	.087	-0.24	(-4.53 to 4.04)	.911
Anxiety	<b>-22.77</b>	(-26.68 to -18.87)	<.001	<b>-13.70</b>	(-18.56 to -8.85)	<.001	<b>-9.17</b>	(-14.69 to -3.65)	<.001
Depression	<b>-5.05</b>	(-9.69 to -0.41)	<b>.033</b>	<b>-8.26</b>	(-14.03 to -2.49)	<b>.005</b>	<b>-12.07</b>	(-18.63 to -5.51)	<.001

The bold values highlight the statistically significant multivariable-adjusted  $\beta$  coefficients.



**Table 5 • Association of the Unmet Supportive Care Needs and Fatigue, Pain, and Nausea/Vomiting of Patients (N=825)**

	Fatigue			Pain			Nausea/Vomiting		
	Multivariable-adjusted $\beta$ Coefficient	95% Confidence Interval	P	Multivariable-adjusted $\beta$ Coefficient	95% Confidence Interval	P	Multivariable-adjusted $\beta$ Coefficient	95% Confidence Interval	P
Supportive care needs									
Psychological	<b>0.12</b>	<b>(0.04-0.19)</b>	<b>.004</b>	-0.01	(-0.10 to -0.09)	.856	0.03	(-0.04 to 0.09)	.429
Health system and information	0.02	(-0.05 to 0.09)	.573	0.04	(-0.04 to 0.12)	.284	0.01	(-0.05 to 0.07)	.684
Physical and daily living	<b>0.43</b>	<b>(0.36-0.50)</b>	< <b>.001</b>	<b>0.53</b>	<b>(0.45-0.61)</b>	< <b>.001</b>	<b>0.12</b>	<b>(0.07-0.18)</b>	< <b>.001</b>
Patient care	0.02	(-0.05 to 0.09)	.643	0.06	(-0.02 to 0.14)	.157	0.01	(-0.05 to 0.06)	.855
Sexuality	0.01	(-0.05 to 0.05)	.980	-0.01	(-0.07 to 0.05)	.755	0.01	(-0.04 to 0.05)	.787
Covariates									
Age	0.04	(-0.08 to 0.16)	.541	-0.04	(-0.18 to 0.11)	.622	-0.08	(-0.18 to 0.03)	.147
Men	2.03	(-1.94 to 5.97)	.311	3.60	(-1.06 to 8.24)	.130	-1.98	(-5.31 to 1.35)	.243
Schooling, secondary school or less	2.03	(-1.65 to 5.71)	.279	-0.18	(-4.53 to 4.16)	.935	1.43	(-1.68 to 4.55)	.365
Life partner	-1.52	(-4.90 to 1.85)	.376	0.95	(-3.04 to 4.93)	.641	-2.45	(-5.30 to 0.41)	.093
Social support	0.30	(-0.10 to 0.70)	.138	<b>0.66</b>	<b>(0.19-1.12)</b>	<b>.006</b>	-0.04	(-0.38 to 0.29)	.814
Primary cancer site									
Lip, oral cavity, and pharynx	-3.57	(-16.55 to 9.40)	.589	-6.82	(-22.14 to 8.49)	.382	3.53	(-7.44 to 14.51)	.527
Gastrointestinal tract	1.03	(-9.60 to 11.66)	.849	0.76	(-13.31 to 11.79)	.905	8.75	(0.24-17.74)	.056
Breast	-0.71	(-11.74 to 10.36)	.900	2.88	(-10.19 to 15.96)	.665	2.76	(-6.60 to 12.13)	.562
Respiratory system and intrathoracic organs	7.80	(-5.86 to 21.48)	.263	4.10	(-12.04 to 20.24)	.618	8.80	(-2.76 to 20.37)	.136
Female genital organs	2.46	(-8.89 to 13.81)	.671	4.86	(-8.54 to 18.26)	.477	4.95	(-4.64 to 14.55)	.311
Male genital organs	-0.49	(-11.56 to 10.69)	.938	-2.60	(-15.74 to 10.53)	.697	5.58	(-3.83 to 14.99)	.245
Skin	-6.43	(-18.55 to 5.70)	.299	-8.23	(-22.55 to 6.08)	.259	3.76	(-6.49 to 14.02)	.472
Urinary tract	4.75	(-7.41 to 16.91)	.444	-1.36	(-15.72 to 13.00)	.853	10.21	(0.71-20.50)	.052
Connective and soft tissue	2.73	(-8.53 to 13.99)	.634	2.30	(-10.99 to 15.59)	.734	4.08	(-5.44 to 13.61)	.400
Bone and articular cartilage	Ref			Ref			Ref		
Endocrine glands and related structures	3.09	(-8.81 to 14.99)	.611	-6.55	(-20.60 to 7.51)	.361	4.04	(-6.02 to 14.11)	.431
Cancer stage, III-IV	<b>3.89</b>	<b>(0.88-6.91)</b>	<b>.011</b>	3.10	(-0.46 to 6.66)	.088	1.22	(-1.33 to 3.77)	.349
Recurrence of cancer	0.87	(-7.39 to 9.12)	.837	7.55	(-2.19 to 17.30)	.129	-1.31	(-8.29 to 5.67)	.713
Time since cancer diagnosis, y									
<1	Ref			Ref			Ref		
1 to <3	-2.78	(-6.50 to 0.95)	.144	0.95	(-3.45 to 5.36)	.671	-0.46	(-3.62 to 2.69)	.774
3 to <5	-0.80	(-4.99 to 3.39)	.707	-0.18	(-5.12 to 4.77)	.944	1.00	(-2.54 to 4.55)	.579
$\geq 5$	1.84	(-8.77 to 12.46)	.733	-7.99	(-20.52 to 4.54)	.211	0.62	(-8.36 to 9.59)	.892
Surgery in the last month	-0.22	(-4.87 to 4.43)	.926	2.36	(-3.12 to 7.85)	.398	-0.61	(-4.54 to 3.32)	.761
Adjuvant treatment in the last month	1.35	(-2.77 to 5.46)	.521	-3.40	(-8.26 to 1.46)	.170	<b>5.59</b>	<b>(2.11-9.07)</b>	<b>.002</b>
Moderate to severe treatment complications	6.38	(-1.60 to 14.36)	.117	7.58	(-1.85 to 17.00)	.115	<b>11.44</b>	<b>(4.69-18.19)</b>	<b>.001</b>
Comorbidity	<b>3.90</b>	<b>(0.49-7.30)</b>	<b>.025</b>	3.37	(-0.65 to 7.38)	.101	2.16	(-0.72 to 5.04)	.141
Anxiety	<b>7.47</b>	<b>(3.08-11.86)</b>	<b>.001</b>	<b>10.35</b>	<b>(5.17 to 15.53)</b>	< <b>.001</b>	<b>5.49</b>	<b>(1.78-9.20)</b>	<b>.004</b>
Depression	<b>11.34</b>	<b>(6.13-16.55)</b>	< <b>.001</b>	<b>10.95</b>	<b>(4.80-17.10)</b>	<b>.001</b>	<b>7.08</b>	<b>(2.67-11.48)</b>	<b>.002</b>

The bold values highlight the statistically significant multivariable-adjusted  $\beta$  coefficients.

because it maximizes the value of public investment in data collection and reduces the burden on respondents among other benefits, as long as there is consent of the patients or approval of the secondary analysis by the research ethics committee.

Our results cannot be generalized to a population other than studied patients with cancer entitled to social security benefits.

## ■ Conclusions

This study contributes to the knowledge of the relationship between supportive care needs and HRQoL of patients with cancer in the Mexican context. Previous studies emphasized that cultural and healthcare system circumstances should be considered to understand and target HRQoL improvement strategies for patients with cancer.<sup>20,21</sup> The study has several practical implications. It is advisable to encourage healthcare providers to perform routine, comprehensive evaluations of the supportive care needs and HRQoL of patients with solid cancers before and during their treatment to respond timely to such needs and to improve HRQoL. Furthermore, training of healthcare providers on the previously mentioned evaluations and on effective provider-patient communication is important.

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