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ORIGINAL

Relationship between quality of life and optimism in cancer patients from Chillán-Chile

Relación entre calidad de vida y optimismo en pacientes oncológicos de Chillán-Chile

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ABSTRACT

Introduction: cancer can profoundly impact the quality of life of those who suffer from it, influencing their environment and altering their perception, structure, goals, and life purpose. The way individuals cope with the disease largely depends on their level of dispositional optimism.
Method: a correlational quantitative study was conducted using the EORTC QLQ-C30 and LOT-R questionnaires, applied to 66 oncology patients who met the inclusion criteria. Statistical analysis was performed using Jamovi®. To explore associations between qualitative variables, the Chi-square test was used; for quantitative variables, Pearson's correlation coefficient was applied; and to examine the relationship between independent qualitative variables and dependent quantitative variables, the Kruskal-Wallis test was employed.
Results: a total of 66,7 % of participants reported low overall health, and 51,5 % presented with high symptom burden. A low positive correlation was found between dispositional optimism (LOT-R) and global health status ($p = 0,006$; $Rho = 0,333$). Significant associations were also identified between functionality and symptom items from the EORTC and various LOT-R items, particularly regarding pain, insomnia, irritability, and perceived health variation in relation to optimism levels. Additionally, a significant association was found between the total LOT-R score and EORTC questions 12, 28 and 29 ($p < 0,05$).
Conclusions: the results indicated that a high level of dispositional optimism is associated with better quality of life, whereas low optimism is linked to reduced quality of life.

Keywords: Quality of Life; Optimism; Patient; Disease; Neoplasms.

RESUMEN

Introducción: el cáncer puede afectar profundamente la calidad de vida de quienes lo padecen, influyendo en su entorno y lo que transforma su percepción, estructura, metas y propósitos. La manera en que afronten la enfermedad dependerá en gran medida de su nivel de optimismo disposicional.
Método: estudio cuantitativo correlacional los cuestionarios usados fueron EORTC QLQ-C30 y LOT-R a 66 pacientes oncológicos que cumplieron con los criterios de inclusión. El análisis estadístico se realizó con Jamovi®. Para explorar las asociaciones entre variables cualitativas, se aplicó la prueba de Chi cuadrado; para las variables cuantitativas, se utilizó el coeficiente de evaluación de Pearson; y para examinar la relación entre variables cualitativas independientes y variables cuantitativas dependientes, se empleó Kruskal-Wallis.
Resultados: el 66, 7 % de los participantes reportó una salud global baja y un 51, 5% presentó alta

sintomatología. Se encontró una correlación positiva baja entre el optimismo disposicional (LOT-R) y la salud global (p=0, 006; Rho=0,333). Además, se identificaron asociaciones significativas entre ítems de funcionalidad y síntomas del EORTC con diversos ítems del LOT-R, se destacan las relaciones entre el dolor, el insomnio, la irritabilidad y la variación de la salud con el nivel de optimismo. También se encontró una asociación significativa entre el total del LOT-R y las preguntas 12, 28 y 29 del EORTC (p<0, 05).
Conclusiones: los resultados indicaron que un alto nivel de optimismo disposicional se asocia con una mejor calidad de vida, mientras que un bajo optimismo está relacionado con una calidad de vida reducida.

Palabras clave: Calidad de Vida; Optimismo; Paciente; Enfermedad; Neoplasias.

INTRODUCTION

Cancer is defined as a disease that originates in organs and adjacent tissues due to the uncontrolled multiplication of abnormal cells,[1] forming malignant or benign tumors, which are a mass of tissue generated as a result of the proliferation and incorrect formation of cells.[2]

According to data provided by the World Health Organization (WHO), in 2022, 20 million cases and 9.7 million deaths were reported,[3] with lung cancer being the leading cause, with 1,8 million cases (18,7 %), followed by colorectal cancer (9,3 %), liver cancer (7,8 %), breast cancer (6,9 %), and stomach cancer (6,8 %).[4]

On the other hand, the Pan American Health Organization (PAHO) reports a high incidence of deaths, with lung cancer predominating in the male population (20,6 %) and prostate cancer in women (14,5 %), while in women, lung cancer is again the most common (18,4 %), followed by breast cancer (17,5 %).[5] In 2019, cancer was the leading cause of death in Chile, ahead of circulatory diseases;[6] with the highest incidence in stomach cancer, followed by gallbladder, lung, and breast cancer.[7]

It is essential to recognize that quality of life (QOL) plays a crucial role in these diseases. The WHO defines it as "an individual's perception of their place in the cultural environment and in the system of values in which they live, as well as about their goals, expectations, criteria, and concerns,"[8] which presents a state of personal satisfaction and physical, psychological, and social well-being as perceived by the individual.[9]

According to the statistics mentioned above, cancer can have a significant impact on the QoL of people who suffer from it,[10] which has an effect on their environment and changes their perception, organization, goals, and purposes.[11] The direction they take will depend on the individual's dispositional optimism.[12]

Dispositional optimism is considered a personality trait that can be useful in coping with life's difficulties.[13] This can lead to different perceptions of QoL among cancer patients, which will be related to each individual's level of optimism.[14] Fostering optimism in cancer patients would have a positive effect on symptoms and functional areas related to them. On the other hand, it increases the possibility of using adaptive strategies in the face of life's difficulties[15] since optimistic individuals tend to expect favorable outcomes in the future.[16]

A study conducted in Mexico analyzed the relationship between optimism, stress, and QoL, demonstrating that maintaining a positive attitude reduces the perception of limitations in a person's functional and emotional sphere, which contributes to good overall QoL.[17] In this context, an Ecuadorian study showed that dispositional optimism is a protective factor that generates positive expectations and helps people cope better with life.[18] Another study, conducted in Spain, sought to link QoL with dispositional optimism, depression, and anxiety in patients with lupus erythematosus. It has been shown that optimism is linked to better physical health and improved coping with life's complications.[19]

It is essential to provide comprehensive and timely care upon a cancer diagnosis so that the data obtained can guide care toward achieving a better QoL and demonstrate how dispositional optimism acts during the disease.[20] Thus, the purpose of this research is to relate QoL and optimism in cancer patients in Chillán, Chile.

METHOD

This is a quantitative, correlational, cross-sectional study focusing on a universe composed of cancer patients from cancer groups in the city of Chillán, Chile, who are receiving chemotherapy treatment in the same town. Given the small size of the target population, comprising a total of 66 cancer patients, it was decided to work with the entire universe, a methodologically recommended approach to ensure complete representation and minimize sampling errors.

The following inclusion criteria were considered: patients with a confirmed diagnosis of cancer, regardless of the type of cancer they have, who are adult users, who are receiving or have received cancer treatment in the last 6 months (chemotherapy, radiotherapy, surgery, etc.), and who give their informed consent to participate in the study.

The following exclusion criteria were considered: patients with severe comorbidities unrelated to cancer that could significantly affect their QoL (e.g., severe mental illness or advanced heart disease), terminally

ill patients receiving exclusive palliative care, users with cognitive impairment that prevented them from responding adequately to the survey, and patients participating in other clinical studies that could interfere with the assessment of their health-related QoL.

Two instruments were used to conduct this research: the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (EORTC QLQ-C30, version 3), which was used to determine QoL in cancer patients.[21] And the "Life Orientation Test-Revised" (LOT-R) scale, which measured the level of optimism and disposition of the sick user.[22]

The EORTC QLQ-C30 questionnaire was created in 1986.[23] This questionnaire has been widely validated in an international context. In Spain, it proved to be a robust tool for measuring QoL in a multidisciplinary and comprehensive manner, with a *Cronbach's a* of 0,88.[24] In Brazil, it was validated with an average *Cronbach's a* of 0,80 and is considered a valid and reliable system.[25] In Chile, it has been validated with a *Cronbach's a* of 0,70.[26] This questionnaire assesses multiple dimensions. It consists of 30 questions in total, comprising five functional scales, three symptom-oriented scales, one scale oriented towards overall health status/QoL, and six questions regarding the patient's symptoms, including the financial aspect of the disease, within one week.[27] The score ranges from 0 to 100 points. A high score on all five functional scales and the overall QoL scale indicates high overall QoL, while a high score on the symptom scale and individual items indicates a high level of QoL impairment.[28]

The second instrument used in this research was developed in 1985 and is known as the LOT-R scale, created by *Carver and Scheier*.[29] The Spanish adaptation was developed by Otero et al.[30]. This scale was validated in different international and national contexts: It was validated in Barcelona, with a correlation of 0,68 between factors.[31] In Venezuela, it had a *Cronbach's a* of 0,60.[32] In Chile, it was validated with a *Cronbach's a of* 0,72.[33] This scale comprises 10 items, three of which are oriented toward optimism and the other three toward pessimism. At the same time, the remaining four are neutral—that is, they are not aligned with positive or negative expectations—and help reduce bias and balance the questionnaire.=[34] It uses a 5-point *Likert* scale, where 1 = strongly disagree and 5 = strong=.[35] Scores range from 0 to 24 points: 0 to 17 points correspond to a low level, 18 to 20 points are considered average, and finally, 21 to 24 points correspond to a high level of dispositional optimism.[36]

Data collection was conducted from August to October 2024 using the EORTC QLQ-C30 and LOT-R paper questionnaires. This methodology was chosen to facilitate the participation of elderly users and avoid possible technological limitations. The surveys were conducted at meetings organized at each group's facilities.

Microsoft Excel was used to tabulate the data, while statistical analysis was performed using *Jamovi* v. 2.3.28 software. Descriptive statistics were based on measures of central tendency and dispersion for quantitative variables, and qualitative variables were presented in frequency tables and percentage measures. The chi-square test was used to explore associations between qualitative variables. The Shapiro-Wilk test was performed to determine the distribution of the data. Since normality did not exist, nonparametric tests were used. Spearman's correlation was used for quantitative variables. In addition, to compare medians between independent qualitative variables and dependent quantitative variables, analysis of variance was used, along with the Kruskal-Wallis test, establishing a significance level of 0,05 and a 95 % confidence interval.

The data provided by the respondents was protected by an informed consent form, which guarantees complete confidentiality, protection of rights, and security by the Helsinki Declaration[37] and Law 19.628 on the Protection of Privacy.[38] This research was submitted to the Scientific Ethics Committee of the affiliated university, which gave its approval under ruling 2024 64, according to Act 2024-22.

RESULTS

The sociodemographic data showed a higher representation of women, with 83,3 % participation. In terms of marital status, 50 % of respondents identified themselves as married. The predominant age group was between 50 and 58 years old, representing 27,3 % of the total (table 1).

Table 1. Sociodemographic characteristics of cancer patients in the city of Chillán, Chile

Variable	Level	Frequency	Percentage
Sex	Female	5	83,3
	Male	11	16,6
Marital status	In a relationship	6	9,1
	Married	33	50,0
	Separated	2	3,0
	Single	1	18,2
	Widowed	7	10,6
	Divorced	6	9,1

Age	29	10	15,0
	42	11	16,7
	50	1	27,3
	60	17	25,8
	70	8	12,1
	82-84	2	3,0

Regarding overall health classification according to the EORTC, the results indicate that 66,7 % of respondents rated their overall health as "poor." Regarding the functionality dimension, 51,5 % reported a low level. Finally, in the symptom category, 51,5 % presented a high level of symptoms (table 2).

Table 2. EORTC global health classification of cancer patients in the city of Chillán, Chile

Dimensions	Classification	Frequencies	% of total
Overall health	High overall health	2	33,3
	Low overall health	4	66,7
Functionality	High level of functionality	32	48,5
	Low level of functionality	3	51,5
Symptoms	High level of symptoms	34	51,5
	Low level of symptoms	32	48,5

In this study, the descriptive analysis of overall health showed a mean of 1,67, with a standard deviation (SD) of 0,475. In the functionality category, a mean of 1,52 was obtained, with an SD of 0,504. Finally, the symptom classification showed an average of 1,48, with a SD of 0,504 (table 3).

Table 3. Descriptive analysis of overall health, functionality, and symptoms in cancer patients in the city of Chillán, Chile

Classification	N	Mean	Median	Standard deviation (SD)	Minimum	Maximum
Overall health	66	1,67	2	0,475	1	2
Functionality	66	1,52	2	0,504	1	2
Symptoms	66	1,48	1	0,504	1	2

The statistical results related to overall health showed statistical significance. In particular, the combined classification "Total LOT-R and question 12 of the EORTC" showed a p-value of 0,012. Similarly, the classification "Total LOT-R and question 28 of the EORTC" yielded a p-value of 0,007, confirming its statistical significance (table 4).

Table 4. Statistical results of overall health of cancer patients in the city of Chillán, Chile

Kruskal Wallis	F	gll	gl2	p
29 EORTC/9 LOT	3, 29	4	20,4	0,031
Total, LOT-R/12 EORTC	4	3	29,9	0,01
Total, LOT - R/28 EORTC	4,81	3	3	0

With regard to the correlation matrix, a low positive correlation was identified between the LOT-R score and overall health, with a p-value of 0,006 and a Rho coefficient of 0,333.

For the association of qualitative variables performed by the chi-square test (table 5), a significant association was found in the functional scale between item 2 of the EORTC and item 8 of the LOT-R, with a p-value= 0,03.

On the other hand, the p-value for item 3 of the EORTC with items 1 and 4 of the LOT-R was 0,016, and with item 5 of the LOT-R, a p-value of 0,029 was obtained.

For item 11 of the EORTC with items 2, 4, and 8 of the LOT-R, the p-value was 0,005, 0,044, and 0,017, respectively.

For item 14 of the EORTC with item 1 of the LOT-R, a p-value of 0,033 was obtained, while for item 14 of the EORTC with item 10 of the LOT-R, a p-value of 0,001 was obtained.

For item 17 of the EORTC and item 9 of the LOT-R, the p-value was 0,047. Finally, item 23 of the EORTC with items 3, 7, 8, and 9 of the LOT-R obtained p-values of 0,020, 0,022, 0,026, and 0,033, respectively.

On the other hand, the association between quantitative variables was assessed using Spearman's correlation coefficient, which revealed a low positive correlation. The total LOT-R scale score was correlated with overall CV health, with a p-value of 0,006 and Rho = 0,333. Similarly, the total percentage of the LOT-R scale and the variation in health during the past week, corresponding to question 29 of the EORTC, presented a p-value of 0,012 and a Correlation Coefficient of 0,309.

Table 4. Global health statistics for cancer patients in the city of Chillán, Chile

EORTIC	**LOT - R (Frequencies**									
	[1. In times of uncertainty, I tend to hope for the best]	[2. I find it easy to relax]	[3. If something can go wrong, it will]	[4. I am always optimistic about my future]	[5. I enjoy my friends very much]	[6. It is important for me to keep busy]	[7. I hardly ever expect things to turn out the way I want them to]	[8. I don't get angry very easily]	[9. I rarely expect good things to happen to me]	[10. In general, I expect more good things to happen to me than bad things]
[1. Do you have any difficulty doing activities that require significant effort, such as carrying a heavy shopping bag or suitcase?]	0,145	0	0	0	0,42	0,457	0,331	0,430	0,245	0,374
[2. Do you have any difficulty taking a long walk?]	0,069	0,737	0,887	0,233	0,539	0,541	0,206	0,030	0,107	0,778
[3. Do you have any difficulty taking a short walk outside your home?]	0	0	0	0	0	0,223	0,305	0,067	0,508	0,551
[4. Do you have to stay in bed or sit in a chair during the day?]	0,003	0,842	0,659	0,186	0,087	0,969	0,869	0,385	0,486	0,596
[5. Do you need help eating, dressing, bathing, or using the bathroom?]	0,263	0,739	0,824	0,705	0	0,430	0,699	0,209	0,971	0,995
[6. Have you had any impediments to doing your job or other daily activities?]	0,428	0,456	0,168	0,365	0,118	0,695	0,926	0,338	0,473	0,335
[7. Have you had any impediments to pursuing your hobbies or other leisure activities?]	0	0	0,755	0	0,001	0,714	0,655	0,830	0,669	0,539
[8. Did you feel "short of breath" or have difficulty breathing?]	0,256	0,385	0	0	0,315	0,827	0,934	0,238	0,944	0,539
[9. Have you had any pain?]	0,229	0,467	0,427	0,310	0,778	0,691	0,059	0,184	0,549	0,435
[10. Did you need to stop to rest?]	0,078	0,355	0,293	0,438	0,032	0,512	0,577	0,743	0,439	0,513
[11. Have you had difficulty sleeping?]	0,421	0	0,384	0,044	0,261	0,111	0,256	0,017	0,868	0,499
[12. Have you felt weak?]	0,068	0,07	0,297	0,440	0,119	0,791	0,043	0,151	0,440	0,693
[13. Have you had a loss of appetite?]	0,42	0,60	0,580	0,890	0,140	0,840	0,680	0,570	0,870	0,360
[14. Have you felt nauseous?]	0,033	0,540	0,219	0,197	0,990	0,855	0,916	0,585	0,198	<0,001
[15. Have you vomited?]	0	0	0,530	0,010	0,700	0,200	0,600	0,001	0,480	0,010
[16. Have you been constipated?]	0,8	0,52	0,240	0,560	0,340	0,680	0,020	0,460	0,450	0,560
[17. Have you had diarrhea?]	0,54	0,280	0,060	0,460	0,860	0,600	0,090	0,490	0,040	0,790
[18. Were you tired?]	0,25	0,030	0,69	0,500	0,180	0,220	0,250	0,200	0,260	0, 210
[19. Did any pain interfere with your daily activities?]	0	0	0	0,460	0,130	0,960	0,220	0,360	0,590	0,310
[20. Have you had difficulty concentrating on things such as reading the newspaper or watching television?]	0,09	0	0,94	0,410	0,470	0,270	0,220	0,390	0,440	0,310
[21. Did you feel nervous?]	0	0	0	0,310	0,180	0,730	0,420	0,870	0,450	0,380

[22. Did you feel worried?]	0,15	0	0	0,190	0,820	0,530	0,130	0,740	0,830	0,300
[23. Did you feel irritable?]	0,09	0,32	0,02	0,470	0,450	0,420	0,020	0,020	0,030	0,080
[24. Did you feel depressed?]	0,53	0,68	0	0,620	0,220	0,910	0,720	0,750	0,630	0,370
[25. Have you had difficulty remembering things?]	0,47	0,450	0	0,920	0,980	0,730	0,660	0,150	0,220	0,250
[26. Has your physical condition or medical treatment interfered with your family life?]	0	0	0,57	0,510	0,800	0,330	0,260	0,450	0,770	0,280
[27. Has your physical condition or medical treatment interfered with your social activities?]	0,40	0,001	0,36	0,420	0,510	0,980	0,380	0,240	0,530	0,060
[28. Have your physical condition or medical treatment caused you financial problems?]	0,15	0,23	0,83	0	0	0,130	0,620	0,010	0,050	0,54

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Finally, the total LOT-R score and the variation in overall health from question 30 of the EORTC were correlated, yielding a result of p = 0,008 and Rho = 0,324.

DISCUSSION

This study, which focused on QoL and dispositional optimism in a cancer population, highlighted the importance of the variables studied and the sociodemographic aspects of the sample. The majority of participants were married women, accounting for 83,3 % of the surveyed population. This result contrasts with a study conducted in Cuba, where married men predominated, constituting 57 % of the sample.[39] Similarly, another Cuban study reported a male majority of 65,3 % in its sample.[40] This difference can be explained by the higher prevalence of cancer in men worldwide, which results in higher male participation in this type of study, in addition to their higher associated mortality rate.[41,42] In terms of age classification, the most represented group in this study was 50 to 58 years old. This finding coincides with a study conducted in Mexico, where a similar age group constituted 45 % of the sample.[43]

On the other hand, in terms of overall health, according to the EORTC, the study found that 66,7 % of respondents considered it to be "poor." This finding is in line with a study conducted by the WHO, which highlights that cancer has become a global health problem as a result of the low QoL experienced by cancer patients.[44] About the classification of functionality, 51,5 % correspond to a low level of functionality. According to a Chilean study, the results are dissimilar, as the functional well-being of cancer patients was assessed at 62 %, maintaining a good level of functionality in cancer patients.[45] On the other hand, in the classification of symptoms, it was observed that 51,5 % of cases presented a high level of symptoms, which coincides with a study carried out in Mexico and reaffirmed by the WHO, which indicates that there is a significant relationship between cancer and the side effects associated with treatment.[44,46]

About the descriptive analysis, overall health reveals that patients have a positive perception, which contrasts with a Colombian study that measured QoL in cancer patients, resulting in a decreased overall health status.[47] On the symptom scale, the average was 1,48; however, a study conducted in Paraguay showed a considerable increase on the symptom scale, with an average of 29,80.[48]

<Among the statistical results for overall health, a statistically significant relationship was found between question 29 of the EORTC and question 9 of the LOT-R, between question 12 of the EORTC and the total LOT-R, and finally between question 28 of the EORTC and the total LOT-R, with a p-value of 0,05 in all three instances. This is consistent with a study conducted in Argentina that found a statistically significant relationship between pessimistic and optimistic variables and QoL, with a p-value of 0,004.[49]

Regarding the matrix of relationships between the LOT-R and overall health, a low positive correlation stands out, indicating a direct relationship between optimism and overall health in cancer patients. This is consistent with another study conducted in Chile, which revealed a positive correlation between optimism and various aspects of QoL, demonstrating that greater optimism tends to be associated with better QoL.[50] This is supported by a Peruvian study that measured resilience and QoL, which found a moderate positive correlation between the two variables. This finding complements the idea that optimism, like resilience, influences overall health, as an optimistic attitude can contribute to better QoL and emotional well-being in cancer patients.[51]

Regarding the association of qualitative variables, several significant links were found between the EORTC QLQ-C30 questionnaire and the LOT-R scale, notably the relationship between item 3 of the EORTC and items 1 and 4 of the LOT-R, with a p-value of 0,016, demonstrating that a large proportion of users experience mild to moderate discomfort when walking short distances, expressed as a low level of optimism. The above is supported by a study conducted in Spain, which provides significant evidence on the most frequent location of neuropathic pain in the lower extremities. This symptom may explain the study's findings, as neuropathy worsens during daily activities, such as walking, or at night.[52] Furthermore, question 19 of the EORTC questionnaire, with question 1 of the LOT-R scale, has a p-value of 0,043 and is also related to pain in performing activities of daily living, which decreases dispositional optimism. This is supported by a study conducted in Cuba, which states that pain in individuals with cancer, regardless of the nature of the disease itself, leads to functional and emotional impairment and dependence, as well as a threat to the optimal development of QoL.[53]

Regarding the association between quantitative variables, a low positive correlation was observed, suggesting that as the overall health score increases, so does the level of optimism,[49,51] with a similar inverse relationship also occurring. Likewise, the total percentage of the LOT-R scale and the assessment of general health during the week, as indicated by question 29 of the EORTC, showed a low positive correlation, suggesting that the higher the evaluation of general health, the higher the level of optimism. These findings are supported by research conducted in Colombia, which also examined the relationship between these same variables, revealing a correlation of 0,271. This correlation reflects a low positive relationship and supports the results obtained.[54]

Limitations

The dispersion of the groups in the region made it difficult to access the target population for the survey. In

addition, unfavorable weather conditions had a negative impact, causing participants to be absent from their respective groups.

On the other hand, little research related to dispositional optimism in cancer was found.

CONCLUSIONS

In this study, it was observed that cancer patients in the city of Chillán have reduced QoL, along with low levels of dispositional optimism. The findings show a direct relationship between the two variables: the greater the optimism, the better the perception of QoL. It is recommended that optimism be assessed during routine clinical check-ups to identify psycho-emotional risks and design personalized interventions. Furthermore, future longitudinal studies will allow the evolution of these factors to be analyzed during treatment.

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