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Relationship between Hope and Quality of Life in Patients with Advanced Cancer in Uruguay: An Observational Analysis

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Relationship between Hope and Quality of Life in Patients with Advanced Cancer in Uruguay: An Observational Analysis

Hope and Quality of Life in Advanced Cancer: A Uruguayan Study

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Results: There was a positive but non-significant correlation between HHI and FACT-G scores (Pearson coefficient of 0.05). Hope significantly correlated with support from oncology services ($p=0.044$), family support ($p=0.003$), and spiritual beliefs ($p=0.029$). Factors like bone metastases, diagnostic delay, and being accompanied at consultations significantly impacted quality of life ($p=0.041$, $p=0.035$, $p=0.012$).

Conclusions: The study observed a positive association between hope and quality of life, but the lack of statistical significance indicates the need for more research. Clinically, results highlight the importance of comprehensive care addressing spiritual and emotional needs, in addition to medical treatment. It also underscores the potential impact of supportive services on patient well-being. Future research should include larger sample sizes and consider longitudinal designs to better understand hope's effects over time in advanced cancer patients.

Keywords: cancer; palliative care; hope, quality of life; FACT-G; herth index.

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I. INTRODUCTION

Cancer emerges as a predominant issue in global public health due to its high incidence and mortality. It is estimated that annually 14.1 million new cases are diagnosed worldwide, with 32.6 million individuals living with the disease and, unfortunately, 8.2 million lose their battle against it ⁽¹⁾. In Uruguay, the situation is not different: around 13,000 new diagnoses are recorded each year, excluding non-melanoma skin cancer. Of this number, more than 8,000 patients are in a phase where there are no curative treatment options available ⁽²⁾.

The experience of facing cancer is steeped in psychological and emotional nuances. An essential element in this journey is hope, an intrinsic human resource that facilitates adaptation to adversity ^(3,4). Moreover, quality of life reflects the individual's perception in the face of the challenge imposed by the disease. Despite the diversity in emotional responses to cancer, numerous patients cling to life, with hope as a fundamental pillar. Indeed, since the late 1980s, cancer has been in the focus of research exploring the power of hope in quality of life, noting its capacity to improve survival and the overall patient experience during the course of the disease ^(6,7).

Despite advancements, more research is needed to clarify and consolidate the relationship between hope and quality of life and to understand the factors that influence both dimensions. The importance of these studies is even more evident considering that, despite global research, there is a gap in Latin America and specifically in Uruguay.

Against this backdrop, our study aims to analyze the interaction between hope, quality of life, social and family support, and symptom control. The central hypothesis is that hope can significantly improve the quality of life of cancer patients in palliative care. Exploring this relationship and its associated factors could provide a basis for effective interventions that improve the lives of these patients.

a) *Main objective*

To understand the relationship between hope and quality of life in patients with advanced cancer.

b) *Secondary objectives*

To relate sociodemographic aspects to the perception of hope and quality of life in patients.

To determine the relationship between symptomatic control at the time of consultation (especially pain), hope, and quality of life.

To associate aspects of the quality of care with hope and quality of life.

II. MATERIAL AND METHODS

This was an observational, analytical-descriptive, and cross-sectional study that included patients over 18 years old with a recent diagnosis of disseminated cancer in palliative treatment, who were attended at the Oncology service of the Hospital de Clínicas between July 2021 and July 2022, and who provided their informed consent.

Data of interest about the patients were collected from the clinical history: primary site, sociodemographic factors, general aspects of the quality of care, presence of symptoms at the time of the consultation.

To measure hope in patients, the brief Herth Hope Index (HHI) questionnaire was used, which consists of 10 items with 4 response options. The participant was required to mark with an X the option that best suited them over the last two weeks. This scale takes into account daily aspects of the patient's life such as optimism about life, short and long-term plans, faith, possibilities within their state of health, among other items of interest. The higher the score obtained, the higher the level of hope, so it was evaluated as a continuous quantitative variable.

Additionally, the "Functional Assessment of Cancer Therapy – General" (FACT-G) questionnaire was administered. This scale has been used and validated in our country. It assesses the quality of life in cancer patients over the last seven days, analyzing four key aspects: physical, social, emotional, and functional well-being, through 27 items that are categorized using a Likert or ordinal scale ranging from 0 to 4 (0 = not at all, 1 = a little bit, 2 = somewhat, 3 = quite a bit, 4 = very much). It investigates different everyday aspects of the patient that include rest, joy, sadness, satisfaction, the degree of acceptance towards their illness as well as their concern about death, among others. Through this, a profile of the patient is obtained and a score on their perception of their overall quality of life and health in general. It should be noted that there are no proposed cut-off points, so the higher the score, the higher the quality of life, except for some items like the physical and emotional FACT-G where a higher score indicates a lower quality of life. In the same way as the HHI

questionnaire, it was also analyzed as a continuous quantitative variable, in which there are also no cut-off points, behaving similarly to the FACT.

The correlation between hope as measured by the HHI and quality of life as measured by the FACT-G was assessed using the Pearson test. Descriptive statistics techniques were used for the rest of the study variables: means along with their measures of dispersion for continuous variables, and percentages for categorical variables.

Means of the different groups were compared using ANOVA tests. A p-value of 0.05 with a one-tailed test was always considered to determine statistically significant differences. As for data analysis, SPSS-25 software was utilized.

III. PATIENT RESULTS DISSEMINATION PLAN

Acknowledging the importance of sharing the findings of our research with patients and their families, we have developed a specific plan to ensure that the results of the study "Relationship between Hope and Quality of Life in Patients with Advanced Cancer in Uruguay: An Observational Analysis" are accessible and meaningful to them. This plan includes the following actions:

1. *Patient-Friendly Summary*

We will create a summary of the study's findings, written in clear and accessible language, avoiding technical jargon. This summary will highlight the key findings and their relevance for patients with advanced cancer.

2. *Distribution through Oncology Care Centers*

We will collaborate with oncology care centers in Uruguay to distribute the summary to patients and their families. This will ensure that the information reaches directly those who can benefit most from it.

3. *Virtual Information Sessions*

We will organize virtual information sessions where researchers will present the results and answer questions. These sessions will be advertised in clinics and hospitals, and open to all interested patients and their families.

4. *Online Informational Material*

We will publish the summary and other related informational materials on a dedicated website, accessible to patients and the public. This will provide a permanent resource for study information.

5. *Collaboration with Patient Organizations*

We will work in conjunction with local cancer support organizations to disseminate the results. These organizations can help contextualize the findings within the experiences and needs of the patients.

6. *Feedback and Evaluation*

We will seek feedback from patients and their families on the usefulness of the disseminated material

and will consider their suggestions for future research and communications.

This plan aims to ensure that the study's results are shared effectively and empathetically, providing valuable and relevant information to patients and their families, and fostering greater understanding and dialogue between the scientific community and patients.

IV. UNDERSTANDING PERCEIVED BURDEN

To assess the perceived burden on participants, we considered the duration of the questionnaire, estimated at around 20 minutes. Patients were asked to provide feedback on whether this time was manageable and if the experience of completing the questionnaire was emotionally or physically demanding. Additionally, we explored whether participating in the study caused any inconvenience or additional stress, beyond the time spent on completing the questionnaire.

V. MEASUREMENT OF PARTICIPATION TIME

The time each participant spent completing the questionnaire was accurately recorded, establishing an average of 20 minutes. This objective measure of time spent provided a basis for assessing the time demand

of the study and its acceptability to patients. Furthermore, this record allowed for a comparison to see if there were significant variations in response time, which could indicate differences in comprehension or response capacity among participants.

VI. ETHICAL CONSIDERATIONS

The study was conducted following international ethical standards for biomedical research, namely the 'MERCOSUR Standards on clinical trials regulation' and the 'Declaration of Helsinki', and with the research regulations approved by the National Ethics Committee in 2019. Patient anonymity was ensured during the analysis of the results, and the study was approved by the Ethics Committee of the Hospital de Clínicas.

VII. RESULTS

The study included 59 patients, with 50.84% being male and 54.2% living in Montevideo. The average age was 57.2 years, ranging from 25 to 84 years. A total of 66.1% of the participants reported having religious beliefs. Regarding marital status, 39% were married or in a common-law relationship, and 67.8% lived with their family. Additional details are provided in Table 1.

Table 1: Demographic Data (n=59)

Variables	Categories	Frequency	Percentage	RF
Gender	Male	30	50.84%	0.50
	Female	29	49.15%	0.49
Age	30-50	13	22.03%	0.22
	51-70	35	59.32%	0.59
	>70	8	13.55%	0.13
Origin	Montevideo	32	54.23%	0.54
	Interior	27	45.76%	0.45
Marital Status	Married/Free Union	23	38.98%	0.38
	Single	17	28.81%	0.28
	Separated/Divorced	11	18.64%	0.18
	Widow	7	11.86%	0.11
Educational Level	Incomplete Primary	8	13.55%	0.13
	Complete Primary	22	37.28%	0.37
	Incomplete Secondary	19	32.20%	0.32
	Complete Secondary	6	10.16%	0.10
	Incomplete Tertiary	3	5.08%	0.05
Living With	Graduate	1	1.69%	0.01
	Alone	11	18.64%	0.18
	Family	40	67.79%	0.67
Primary Site	Nursing Home	4	6.77%	0.06
	Breast	14	23.72%	0.23

Variables	Categories	Frequency	Percentage	RF
	Lung	13	22.03%	0.22
	Digestive	10	16.94%	0.16
	Otorhinolaryngological	6	10.16%	0.10
	Other	16	27.11%	0.27
Bone Metastases	Yes	22	37.28%	0.37
	No	37	62.71%	0.62
Children	Yes	50	84.74%	0.84
	No	9	15.25%	0.15
Religious Beliefs	Yes	39	66.10%	0.66
	No	20	33.89%	0.33

RF refers to Relative Frequency, which is the frequency relative to the total number of observations.

As for cancer types, 23.7% of diagnoses were breast cancer, followed by lung cancer at 22%, digestive tumors at 16.9%, and otolaryngological malignancies at 10.1%. Bone metastases were present in 37.3% of the patients.

At the time of the survey, the majority of patients did not report experiencing pain (62.1%), asthenia (fatigue) (70.7%), or dyspnea (shortness of breath) (98.3%).

Additionally, 71.2% of patients reported that the clinical approach taken did not delay their diagnostic or therapeutic process, 64.4% stated that the SARS-COV 2 pandemic did not cause delays in their diagnosis and

treatment, and 93.2% felt satisfied with the hospital care received prior to their admission to the oncology service.

a) HHI and FACT-G

The HHI revealed a high score among our patient population, with an average of 35.3 (SD 5.12). The average total FACT-G score was 51.5 (SD 9.73).

The Physical component of FACT-G had an average of 7.95 (SD 5.55). The average for the family component was 17.78 (SD 6.34). The Emotional component showed a low average of 8.36, which is positive as a lower score indicates a better emotional component (SD 4.47). Lastly, the personal component averaged 17.44 (SD 5.75) (Table 2).

Table 2: Scores of FACT-G y HHI.

Instruments	Items	Range	Mean	Standard Deviation
HHI	10	10 - 40	35.3	5.12
FACT-G Total	27	0 - 108	51.5	9.73
FACT-G Physical	7	0 - 28	7.95	5.55
FACT-G Family	7	0 - 28	17.78	6.34
FACT-G Emotional	6	0 - 24	8.36	4.47
FACT-G Personal	7	0 - 28	17.44	5.75

Abbreviations: HHI: Herth Hope Index, HHI: Functional Assessment of Cancer Therapy-General, FACT-G.

A positive correlation between HHI and the total FACT-G was observed, although it did not reach statistical significance (p=0.05). Similarly, significant

correlations were seen for FACT-G Physical (p=0.019), FACT-G Family (p=0.010), FACT-G Emotional (p=0.016), and FACT-G Personal (p=0.032) (Table 3).

Table 3: Correlation between HHI and FACT-G.

	HHI
FACT-G Total	
p	0.05
FACT-G Physical	
r	0.305
p	0.019
FACT-G Family	

	HHI
r	0.332
p	0.010
FACT-G Emotional	
r	0.519
p	0.016
FACT-G Personal	
r	0.279
p	0.032

The 'r' values represent Pearson correlation coefficients, which measure the strength and direction of the linear relationship between two variables, and the 'p' values indicate the statistical significance level of these correlations.

Regarding the univariate analysis, it identified three variables with statistically significant associations with the HHI, which were "Do you have any religious or spiritual beliefs?" ($p=0.029$), "Are you satisfied with the care received at the Clinical Oncology Service?" ($p=0.044$), and "Do you feel supported/contained by your family/friends/close circle?" ($p=0.003$).

Regarding the total FACT-G, the variables with statistically significant associations were "presence of bone metastases" ($p=0.041$), "Do you think that the clinical approach has delayed the diagnosis process of your disease?" ($p=0.035$), and "Do you have any family or friends who accompany you to the consultation?" ($p=0.012$). In relation to the other sociodemographic data acquired from the study participants, no statistically significant relationship was observed.

The scores of the indices were divided into ranges based on the results obtained. The table (Table 3) shows the qualitative relationship between FACT-G and the levels of hope according to the Herth Index.

Given that the majority of patients presented high scores, we divided the index into three groups.

Patients with a general physical FACT-G health score of 10 or less showed a higher HHI score, thus more hope. In the case of the 27 patients who had a familial and social FACT-G environment score of over 20 (we can also include those over 10), they showed a higher HHI score, therefore more hope. However, if we take into account patients with a familial FACT-G score of less than 10, the majority had a high HHI score, so it can be concluded that the family environment does not affect the level of hope. If we analyze the emotional FACT-G, 45 of the 59 patients had a score of less than 10, which is significant since a lower score indicates a better emotional state, and therefore, a better emotional state means more hope in most patients. In the case of the personal functioning FACT-G, 23 of the 59 patients had a score of over 20, which is better for their level of hope.

VIII. DISCUSSION

This pioneering study in the region investigates the relationship between hope and quality of life in oncological patients. With a sample of 59 patients, reflecting a balance in gender (50.8% male), geographic origin (54.2% from Montevideo), and an average age situated in the range most affected by oncological disease, our findings provide a representative perspective for the Uruguayan population. The most common types of cancer matched the main national incidences: breast, lung, and gastrointestinal.

The hypothesis of a positive correlation between quality of life and hope was examined using the Herth Hope Index (HHI) and the FACT-G, along with the Pearson correlation. The study period, July 2021-2022, in patients with advanced oncology at the Hospital de Clínicas, allowed a focused look at the interaction between emotional and physical well-being during critical stages of oncological treatment.

We found that the relationship between hope and quality of life, although not statistically significant, suggests a positive trend, hinting that higher levels of hope might be associated with better quality of life. It's likely that the lack of statistical significance is due to the limited size of our sample. However, the direction of the trend observed in the qualitative analysis supports this positive relationship. Grouping patients according to their responses to the FACT-G questionnaire demonstrated that those with higher hope tend to report a better overall quality of life.

According to the data collected and applying the Herth Index to measure hope, it has been observed that those patients who possess higher levels of hope tend to have a more positive outlook towards their future, which positively impacts quality of life and the ability to cope with treatment and pain⁽⁸⁻¹⁰⁾.

This link is corroborated by Rustøen et al., who demonstrate that lower levels of hope are associated with an increase in symptoms such as pain⁽¹¹⁾. The inclusion of measures to foster hope may be crucial in the clinical management of pain and psychological



distress. Despite the promise of these results, their applicability is limited by the sample size, which calls for future studies with larger groups for a more robust confirmation of these preliminary findings.

The findings suggest a positive association between hope and a lower perception of pain, although it did not reach statistical significance, possibly due to the sample size.

Consistent with the literature, patients in advanced stages of the disease maintain high levels of quality of life and hope^(12,13), potentially strengthened by the observed family support, a factor known to improve quality of life in palliative contexts.

Sociodemographic data did not show a significant influence on levels of hope and quality of life, indicating a minimal relationship in this study. Aspects such as the presence of children, whether they lived alone or with others, and the patient's age did not significantly alter the levels of hope, in line with previous studies suggesting the constancy of hope across different ages⁽⁸⁾.

We found that religious or spiritual beliefs were significantly associated with higher levels of hope ($p=0.029$), in agreement with previous research identifying social support, self-esteem, and spirituality as important elements for hope in cancer patients. Unlike studies focused on early stages of cancer, our work includes patients with advanced stages, and reaffirms that both social support and spirituality can be key in preventing depression and fostering hope^(14,15). Despite this, no significant differences in the level of hope were observed among different types of beliefs.

The results showed that an early diagnosis, perceived by patients as without undue delays, was significantly related to better quality of life ($p=0.035$). This finding highlights the importance of avoiding delays in diagnosis, a problem exacerbated during the COVID-19 pandemic, as shown by a study in Spain that documents a reduction in screening tests and biopsies. This study suggests that delays in diagnosis could impair quality of life, emphasizing the need for in-person care for early detection and proper cancer management⁽¹⁶⁾.

Despite controversy in the literature about the impact of certain sociodemographic and clinical factors on hope and quality of life, no significant differences were observed in our study, which may reflect the positive influence of comprehensive support. A study in Norway⁽¹¹⁾ also found no significant differences in these factors, which could be related to the effectiveness of their health support system. In our case, collaboration with Palliative Care, assistance from volunteers, constant psychological support, and socioeconomic aid contribute to mitigating potential inequalities, thereby favoring hope and quality of life in our patients.

A Chinese study⁽¹⁷⁾ found a positive correlation between hope, social support, and quality of life in

patients with oral cancer, similar to our finding that family support improves hope and quality of life ($p=0.003$). The lack of social support was linked to an increase in depression and anxiety, which could affect treatment outcomes. Another study in Tianjin⁽¹⁸⁾ also confirmed the importance of hope and social support for the quality of life in survivors of triple-negative breast cancer. Both studies support our results, underscoring the relevance of social and family support in the well-being of cancer patients.

Quality of life in cancer patients significantly improves without bone metastases ($p=0.041$), indicating a negative impact of these metastases on daily life due to pain and mobility restrictions⁽¹⁹⁾. A study on metastatic breast cancer with bisphosphonates showed an improvement in quality of life, although without differences in pain perception between bone and visceral metastases. However, Reed et al.⁽²⁰⁾ reported reduced quality of life in patients with bone metastases due to associated pain. On the other hand, it was observed that high levels of hope in patients with lung cancer correlate with fewer symptoms of pain and depression, highlighting the relevance of hope in the psychological adaptation to the disease⁽²¹⁾.

Studies highlight the correlation between hope and quality of life in oncological patients in hospice and palliative care, even when a cure is not possible. One study showed an increase in both parameters following a psychosocial intervention ($r = 0.597$, $P = 0.000$)⁽²²⁾. Satisfaction with oncological care, family support, and spiritual beliefs were linked to higher levels of hope and quality of life. These results are in line with previous literature^(8,23) and support the notion that better care quality improves symptom control and hope⁽²⁴⁾.

When considering the positive relationship that our data suggests between hope and quality of life, it is important to recognize that the limited sample size and the non-multicentric nature of our study could have influenced the representativeness of these findings. Moreover, the challenges faced by patients with pain, fatigue, and distress during the administration of the surveys could have introduced a bias in how they perceived and reported their levels of hope and quality of life. This highlights the need to use more robust and diversified data collection methods in future studies to minimize the influence of these variables. The implementation of such methods could clarify whether the observed trends hold in a larger and more varied sample, offering a deeper understanding of how hope can serve as a critical psychological resource for oncological patients.

IX. CONCLUSIONS

Our study suggests a positive correlation between hope and quality of life in advanced oncological patients in Uruguay, although not

statistically significant possibly due to sample size. Factors such as religious or spiritual beliefs, family support, and quality of care appear to contribute to hope. Bone metastases, diagnostic delay, and accompaniment in consultations influence quality of life. No significant relationships with other sociodemographic variables or symptom control were found, possibly due to sample size. The quality of care from the oncology service was decisive for hope, being a variable that the health team can directly influence.

Future interventions could focus on support programs to raise hope and quality of life for patients. Studies indicate that specific interventions, such as watching documentaries about hope, personal reflection activities, or mindfulness practices, can be effective in improving hope and, consequently, quality of life.

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