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ORIGINAL ARTICLE

Integrative model for the biopsychosocial assessment in pediatric oncology

Modelo integrativo para la evaluación biopsicosocial en oncología pediátrica

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ABSTRACT

Introduction: Building an evaluation model that derives from oncology pediatric patients' perspective is essential for effectively meeting their needs. Current standards of pediatric psychosocial-oncology care are mainly determined by medical providers and the child's relatives. There is a recognized need to develop a holistic model that is driven by patients themselves, with a central focus on utilizing art as a tool to facilitate the expression of their inner world.

Objective: To propose an integrative model for the biopsychosocial assessment of oncology pediatric patients.

Material and Methods: Qualitative grounded theory design based on the analysis of observations, interviews, and art projects. The initial study included twenty children aged 6-17 years diagnosed with cancer from the Hospital de Especialidades Pediátricas in Maracaibo, Venezuela.

Results: An integrative model for the biopsychosocial assessment consisting of six dimensions—physical, cognitive, emotional, behavioral, family, and social—represented as concentric and interacting circles, is proposed. This model depicts factors that promote well-being and health, as well as obstacles that impede them in pediatric oncology.

Conclusions: This model establishes a foundational framework for cancer centers to delineate the essential components of comprehensive biopsychosocial care from pediatric patients' perspective.

Keywords:
Pediatric oncology, integrative model, biopsychosocial, assessment, art.

RESUMEN

Introducción: Construir un modelo de atención que nazca desde la perspectiva del paciente oncológico pediátrico es fundamental para atender eficazmente sus necesidades. Los estándares de atención psicosociooncológica pediátrica son planteadas en su mayoría desde el proveedor médico y los familiares del niño. Se resalta la necesidad de crear un modelo holístico de evaluación que nazca a partir del mismo paciente teniendo como punto central el uso del arte como una herramienta que facilite la expresión de su mundo interno.

Objetivo: Proponer un modelo integrativo para la evaluación biopsicosocial de los pacientes oncológicos pediátricos.

Material y Métodos: Diseño cualitativo de teoría fundamentada basado en el análisis de observaciones, entrevistas y proyectos de arte. El estudio inicial incluyó a veinte niños de 6 a 17 años diagnosticados con cáncer del Hospital de Especialidades Pediátricas de Maracaibo, Venezuela.

Resultados: Se propone un modelo integrativo para la evaluación biopsicosocial que consta de seis dimensiones: física, cognitiva, emocional, conductual, familiar y social, representadas con círculos concéntricos e interactivos. Este modelo describe los factores que promueven el bienestar y la salud, así como los obstáculos que los impiden en pacientes oncológicos pediátricos.

Conclusiones: Este modelo establece un marco fundamental para que los centros oncológicos delimiten los componentes esenciales del cuidado psicosocial integral desde la perspectiva de los pacientes pediátricos.

Palabras Claves:
Oncología pediátrica, modelo integrativo, biopsicosocial, evaluación, arte.

INTRODUCTION

Providing comprehensive care for pediatric oncology patients, considering their own experience, is a fundamental aspect of effectively promoting their quality of life. Research shows the necessity to establish guidelines and standards in psycho-oncological care for patients.(1) This crucial task requires healthcare professionals to understand and consider the different areas of the patient's life. There is an emphasis on the need for integrative service models proposed by expert professionals.(2) There is a consensus regarding the essential areas to address to provide satisfactory care for children and adolescents with cancer. Among these are assessing the patient's psychosocial functioning, accessing psychological support and intervention, receiving age-appropriate psychoeducation about the disease, treatment, and medical procedures, and having the opportunity for social interaction during treatment, considering the patient's health status.(1)

Additionally, it is important to develop and implement programs to improve psychosocial care for pediatric patients in Latin America and the Caribbean, focusing on Psychosocial Standards of Care (PSC) that encompass psychosocial assessment, support and psychoeducation, mental health care, return to daily life, health team competencies and self-care, and the incorporation of cross-cutting approaches.(3)

Petzold and Razavi(4,5) propose that physical, cognitive, emotional, familial, and social dimensions can be explored from the perspective of pediatric patients using art. Often, due to the young age of the patient, it is difficult for them to express their experiences, challenges, hopes, and difficulties. The use of art emerges as a valid method to access the internal world of children and adolescents, providing a voice that facilitates attention to biopsychosocial aspects that may sometimes be overlooked.(6,7)

Upon further examination of Petzold and Razavi's proposals, there is consistency with the standards of psychosocial care for patients, reinforcing the value of building a biopsychosocial model that arises from the firsthand experience of the patient for a holistic evaluation and care of children and adolescents with cancer.(8)

This article represents the final theoretical integration of a research project that, due to its scope, has published its results in two previous articles. The **objective** of this article is to propose an integrative model for the biopsychosocial assessment of oncology pediatric patients.

MATERIALS AND METHODS

A qualitative grounded theory design was utilized to establish a structured and coherent approach for developing information categories. This facilitated the progression from these categories to the construction of a narrative linking them and subsequently to the formulation of a set of theoretical propositions.(9)

Petzold and Razavi(4,5) described the use of observations, interviews, and an art-based assessment program to explore the experiences regarding cancer of twenty children aged 6-17 years diagnosed with cancer and at any stage of their cancer journey from the Hospital de Especialidades Pediátricas in Maracaibo, Venezuela. The inclusion criteria were a) cancer diagnosis; b) age between 6 and 17 years. The wide age range was selected to ascertain the disease experiences of both children (6-12 years) and adolescents (13-17 years), and c) sufficient knowledge of the Spanish language to participate in the study.(4,5)

In this study, data collection and analysis proceeded in parallel. During observation, the researcher documented memos detailing significant discussions. As data accumulated, it was transcribed and reviewed. Data analysis followed Corbin and Strauss' coding procedures.(10) Initially, observation and interview data were transcribed continuously throughout the data collection phase, with repeated readings undertaken to discern analytical directions. The words, phrases, or paragraphs that embodied significant aspects of the behavior, body language, or verbal expression related to the experience of the disease were underlined and organized into units of meaning.(11) Subsequently, units of meaning were coded, and common concepts were labeled (open coding). Codes unrelated to the research's objective were excluded, and relationships among codes (axial coding) were established. Through these processes, the most significant and frequently occurring codes (selective coding) were identified. Additionally, analysis of patients' art projects, such as drawings, sculptures, storytelling booklets, and masks, was conducted. This analysis aimed to develop, revise, and corroborate previously identified codes derived from interviews and observations. Then, searching for recurring patterns and themes was carried out, as categories emerged and were refined. The six final categories emerged(4,5) are shown here:

1. Physical dimension: Pertaining to the patient's physical symptoms associated with the disease and treatment side effects.
2. Cognitive dimension: Involving awareness, knowledge, and concerns regarding the disease and treatment, as well as the patient's health responsibility.
3. Emotional dimension: Encompassing positive and negative emotional states.
4. Behavioral dimension: Involving actions performed by or toward the patient concerning the disease or treatment.
5. Family dimension: Associated with the patient's family needs and relationships.
6. Social dimension: Related to the patient's interrelations and social needs.

Subsequently, connections between codes falling within the same category were established to develop core themes, the theoretical properties of each category meanings were crystallized and relationships among categories were also stablished to build the integrative model for the biopsychosocial assessment of oncology pediatric patients.

To ensure rigor, multiple strategies were employed for data collection and analysis:

Intensive, long-term involvement:(12) This method facilitated the acquisition of diverse information and the validation of observations and inferences.(13) Repeated observations and interviews were conducted by the researcher within the research setting over six months(4,5) to help establish interconnections between different categories and lead to the derivation of a theoretical model.

Rich Data: Committing to long-term involvement enables the collection of "rich data," offering a detailed perspective of the studied situation.(12,14) This study involved verbatim transcription of patients' experiences during sessions and researcher observations,(4,5) providing a substantial data source on the study subject.

Data triangulation: Different resources, including observations, interviews, projective tests, and artworks made by the patients, were utilized for data collection.(4,5) This process mitigates biases and enhances accuracy in data collection and analysis processes.(13,15,16)

Following ethical considerations, the data required to design and construct this model were obtained with written consent from the parents, assent from the participating patients,(4,5) and in adherence of the International Ethical Guidelines for Biomedical Research Involving Human Subjects.(17)

RESULTS AND DISCUSSION

The proposed model comprises six dimensions depicted as concentric and interacting circles (Figure). Within this framework, each dimension carries unique significance and may exert varying influences on others based on the patient's specific circumstances.

Describing patient experiences and needs across different dimensions is valuable in helping patients conceptualize and operationalize the biopsychosocial impact of cancer, empowering them to actively engage in their own psychosocial interventions.(18,19,20)

When applying the concept of dimensions in patient care, health professionals must exhibit flexibility to adapt, emphasize, or exclude specific dimensions based on the patient's circumstances and individual characteristics.(18) An essential consideration integrated into this model is the patient's age and developmental stage,(21) which serve as determinants for adjusting the model.

The dimensions comprising this model include:

The **physical dimension** which pertains to the patient's physical aspects, encompassing both body-related elements such as disease symptoms and treatment side effects.(4,20)

Fatigue emerged as a significant symptom with a profound impact on patients' physical state, often triggered by chemotherapy-induced physical exhaustion.(8,22) This fatigue manifests as weakness, lack of energy, and decreased ability to perform physical and mental tasks.(8) The patients in the study described themselves as physically and mentally exhausted, often feeling the need to rest or sleep which is aligned with previous study.(23) Additionally, pain represents the most common symptoms in pediatric cancer patients and contributes to high levels of stress.(8,24) Our analysis identified two primary sources of pain: the disease itself and the treatments or medical procedures patients underwent, which were consistent with previous finding.(25) Furthermore, decreased appetite was reported by patients, consistent with prior research indicating that it is among the most prevalent symptoms in oncology patients.(26) Chemotherapy's side effects, such as vomiting and nausea, contribute significantly to this decline in appetite.(26)

Based on the described physical symptomatology and treatment side effects, the physical dimension is pivotal in the patient's experience and needs. It holds unique significance as it becomes the focal point of the patient's life, around which the other dimensions revolve. The model depicts the physical dimension as the central star-shaped 1, intersecting with different dimensions. While each dimension in the model can impact others to varying degrees depending on the patient's circumstances, the physical dimension acts as a central axis influencing the others by manifesting tangible outcomes of a disease that disrupts physical well-being and poses a threat to life itself. Symptoms and treatment side effects considered within this dimension can be profound enough to hinder the patient's daily functioning in other areas. The model represents this by the lines extending from the star into the surrounding circles, encompassing the different dimensions.

The **cognitive dimension**, illustrated as inner *circle* 2 in the model, includes several key aspects of the patient's awareness and cognition related to the disease and treatment.(4) The upper left quadrant includes the patient's knowledge about the disease, treatment, and healthy nutrition. These aspects are considered health-promoting factors as they contribute to the patient's sense of control and support.(27)

The ability to comprehend essential information about the disease and its treatment empowers the patient to take responsibility for their health(27) and adhere to treatment protocols.(21)

Furthermore, the cognitive dimension incorporates concerns related to the consequences of the disease,(4,28) situated in the lower left quadrant. These concerns often manifest as negative thoughts and represent a cognitive aspect of emotions such as sadness, anxiety, fear, and anger, which are further explored in the emotional dimension.

The **emotional dimension** (*circle 3*) incorporates aspects of the patient's emotional experiences. In the upper left quadrant, it includes positive emotions such as the "fighting spirit," happiness, and hope.(4) These emotions contribute to the patient's sense of well-being and resilience.(29)

In the upper right quadrant, the emotional dimension captures affection towards others and feelings of solidarity toward others experiencing a similar disease,(4,29) reflecting the importance of social support and relationships in the patient's emotional well-being.(29) These positive emotional states are closely linked with the health-promoting factors described in the cognitive dimension.(29)

Conversely, the lower left quadrant of this dimension represents emotional responses that cause distress, including sadness,(27) anxiety-fear,(28,29) and anger.(4) These negative emotions are often accompanied by distressing thoughts related to the cancer experience(29,30) and may influence the patient's behavior toward treatment adherence.

The **behavioral dimension** (*circle 4*) contemplates a range of behaviors exhibited by pediatric cancer patients.

This comprises patients' aversion to painful procedures such as injections, blood collections, or surgery, consistent with prior reports.(28) Furthermore, this dimension involves reluctance toward hospital visits, treatments, and hospitalization. These experiences, in addition to being unpleasant and painful, negatively impact patients' moods,(28,29) disrupt children's daily routines,(29) and distance them from family and friends.(29)

In the proposed model, the lower left quadrant of this dimension shows behaviors resulting from negative cognitions and emotions that hinder treatment adherence.(31)

On the other hand, the upper left quadrant showcases health-promoting behaviors that contribute to treatment compliance. These behaviors reflect actions taken by the patient to adhere to prescribed treatments and medical advice, which are influenced by the patient's understanding of the disease and treatment and their responsibility in following medical instructions, which are parts of the mentioned cognitive dimension.

The **family dimension** (*circle 5*) expresses the significance of family members in the patient's life, including the patient's perception of parental care and the importance of parental bonding, and family unity(32) (upper right quadrant). These factors are interconnected with the patient's emotional needs, particularly the desire to be with their family.(29,32) In turn, the lower-left quadrant highlights parental conflicts, such as separation, which can represent additional external concerns for the patient.(33)

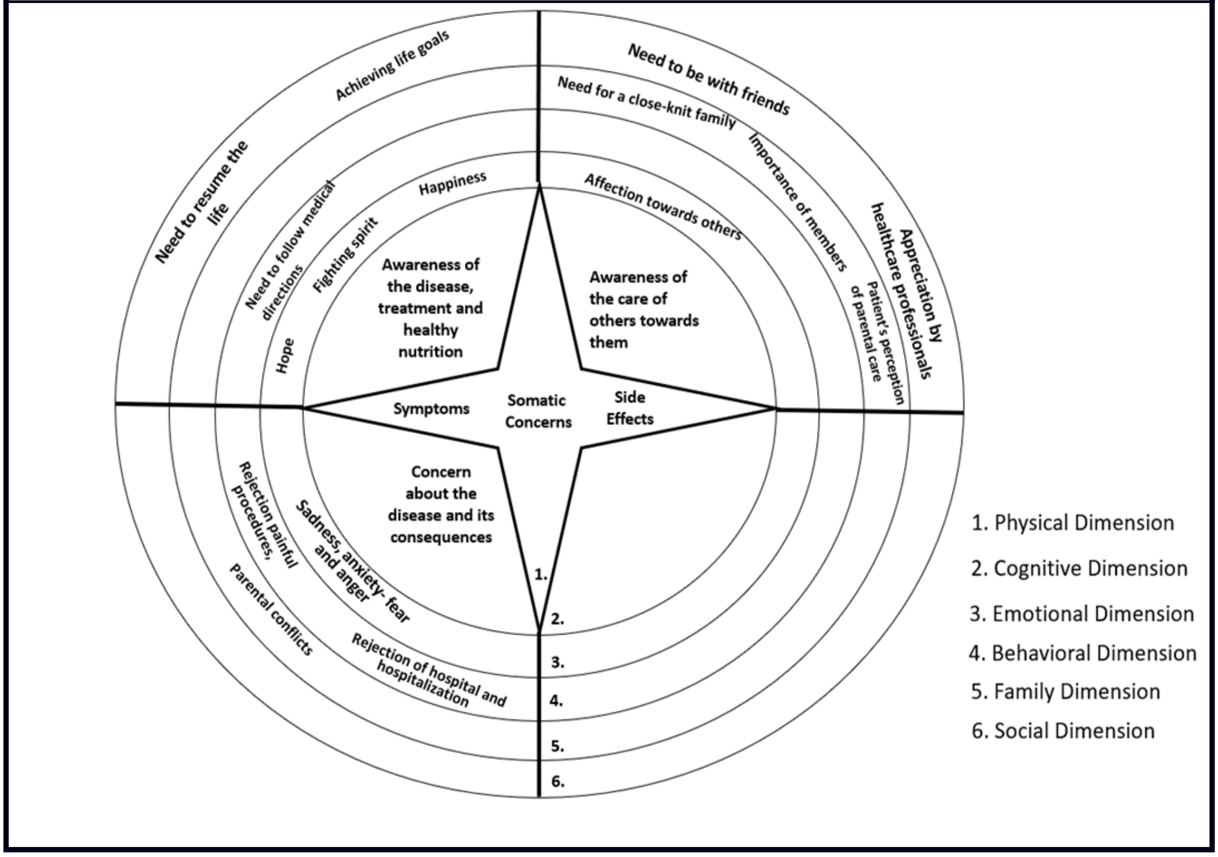
The **social dimension** (*circle 6*) contains health-promoting factors in its upper quadrants, including social needs that act as motivating agents, such as the need for social interaction,(29,34) resuming daily life,(8,29) and achieving life goals.(4,8) On the other hand, this dimension englobes the appreciation for healthcare professionals.(6,29,31)

The physical, cognitive, emotional, and behavioral dimensions are intrapersonal as they refer to internal interactions within the individual. In other words, they are specific to the patient's internal experience. Conversely, the family and social dimensions are interpersonal as they imply interactions with others. The dynamics of each intrapersonal dimension, and the interactions established by the patient within the interpersonal dimensions, will influence the patient's needs, coping strategies, and psychological adjustment in response to the disease.Top of Form

In summary, the proposed model focuses on each patient's needs and experience regarding the disease. These will vary depending on the perception of the disease, the emotions that accompany the process, the family resources available to the patient, and the interaction with health professionals at the hospital. The factors that promote well-being and health are illustrated in the upper sections of the model, while obstacles are depicted in the lower sections. Top of Form

This integrative model for the biopsychosocial assessment is based on principles of interconnection and interdependence, whereby variables within each dimension interact with factors across other dimensions to exert influence. While certain variables may clearly impact others, establishing direct cause-effect relationships can be complex and nuanced. Therefore, interventions should target the dimension that generates the highest stress for the patient, emphasizing positive aspects that promote health and self-care.

Figure: Integrative Model for the Biopsychosocial Assessment in Pediatric Oncology



CONCLUSIONS

This model, with its patient-centric approach, provides a foundational framework for cancer centers. It outlines the essential components of comprehensive biopsychosocial care for oncology pediatric patients. This art-based integrative model, a key feature, not only facilitates the assessment of patient dimensions but also gives voice to the patient's perspective. It delineates both the health-promoting factors and areas requiring attention, ensuring that the patient's needs and experiences are at the forefront of care with tailored interventions.

RECOMMENDATIONS

Develop an activity booklet or mobile application based on this integrative model that enables patients to engage in art-based activities to self-assess their disease experiences. By providing a holistic perspective on the patient's condition, this approach can guide tailored interventions by multidisciplinary healthcare team members. The proposed model can be operationalized through a structured questionnaire format, where healthcare professionals consider each dimension based on art activities completed by the patient. Another recommendation is validating this model with a large sample and in another pediatric oncology center

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Conflict of interests

The authors have no conflicts of interests to declare.

Authors´ contributions

Olimpia Petzold: Study design, processing of information, analysis and discussion of the results, writing-original draft.

Darius Razavi: Critical review of the manuscript.

Both authors have read, reviewed, and approved the final draft of the article.

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