



## EDITORIAL

## The role of health-related quality of life in improving cancer outcomes

José Ignacio Nolzco<sup>1,2\*</sup>, Steven Lee Chang<sup>1,3</sup>

<sup>1</sup>Division of Urological Surgery, Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts, United States of America, <sup>2</sup>Servicio de Urología, Hospital Universitario Austral, Universidad Austral, Pilar, Argentina, <sup>3</sup>Lank Center for Genitourinary Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts, United States of America

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*\*Corresponding author:*

José Ignacio Nolzco

Brigham and Women's Hospital, 45 Francis St,  
Boston, Massachusetts 02115,

United States of America.

Tel: +1 857 250 6301

Email: [jnolzco@bwh.harvard.edu](mailto:jnolzco@bwh.harvard.edu)

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**1. Introduction**

In 1948, the World Health Organization defined *health* as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.” This perspective emphasizes that health goes beyond merely being free from illness, encompassing numerous aspects of an individual's well-being [1]. With the ongoing evolution of oncology and the promising potential of health-related quality of life (HRQoL) to enhance cancer patient outcomes, an exceptional opportunity for improving health emerges. Despite significant progress in grasping disease progression and treatment efficacy, an urgent need persists in harnessing HRQoL's power [2]. Actively gathering “non-clinical” information from cancer survivors during various stages of diagnosis, treatment, and survivorship allows health-care professionals to obtain crucial insights into factors affecting patient outcomes [3]. Employing this approach, clinicians can more effectively customize treatments to address individual patient requirements, ultimately boosting the overall QoL for those with cancer. Consequently, it is essential to acknowledge HRQoL's significance and capitalize on these factors' opportunities for advancement.

**2. Health-Related QoL**

The measurement HRQoL is of paramount importance in the care of cancer patients. HRQoL is a multidimensional construct that encompasses various aspects of an individual's well-being, including physical, emotional, social, and functional domains. Cancer and cancer treatment can significantly impact HRQoL, making it a critical aspect of care that must be addressed [4,5].

It is essential to use validated tools and instruments specifically designed to measure HRQoL in cancer patients [6]. Standard tools include the European Organization for Research and Treatment of Cancer QoL Questionnaire (EORTC QLQ-C30) and the functional assessment of cancer therapy-general [7]. These tools have been extensively validated and provide a comprehensive assessment of the different dimensions of HRQoL [8]. The EORTC has questionnaires tailored to specific cancer types, allowing for a more targeted assessment of HRQoL (<https://qol.eortc.org/questionnaires/>).

Acknowledging that HRQoL may differ significantly across various cancer forms and patient populations is crucial. Consequently, employing culturally-sensitive and population-tailored tools become vital to evaluate and address the HRQoL for all cancer patients accurately.

Addressing HRQoL is a critical component of cancer treatment, as it contributes to enhanced patient outcomes and overall well-being [9]. Specifically, focusing on the physical, emotional, and social repercussions of cancer and its treatments can help alleviate distress and

elevate the QoL for individuals battling cancer [10-13]. Research into digital technologies and wearables to collect and track data on HRQoL is a promising area of exploration. Wearable devices, such as smartwatches and fitness trackers, can monitor physical activity, heart rate, and sleep patterns, which may inform treatment decisions for improved patient outcomes [14-16]. Digital health can revolutionize the way healthcare is delivered and improve patient outcomes by putting patients at the center of care [17]. Digital platforms and apps are also available for collecting patient-reported outcomes (PROMs), such as pain levels, fatigue, and emotional well-being; however, it is important to note that this technology can burden patients in terms of time investments required [18]. Strategies aimed at minimizing patient burden should therefore be sought after to avoid negative impacts on patients. The development of effective software like mobile phone applications has been seen as an effective method for tracking PROMs with high compliance rates from patients while simultaneously alleviating data collection burdens. For example, the BREAST-Q app developed by Dr. Andrea L. Pusic has demonstrated success in post-surgical breast cancer care through its ability to provide feedback on progress along with tailored recovery resources [19].

### 3. Given the Importance of HRQoL: Why Are We Not Leveraging Them?

Unfortunately, most research studies concentrate primarily on collecting clinical data, such as tumor size, laboratory values, treatment response rate, and similar metrics, while neglecting to gather crucial PROMs, including QoL, levels of pain, and treatment side effects. This lack of information regarding patients' experiences and the impact of treatment on their daily lives results in a less comprehensive understanding of the whole picture. They also leave out important aspects influencing outcomes, such as lifestyle choices or environmental stressors [20].

The limited collection of HRQoL data could be due to a combination of physician and patient factors and the need for more technology to collect and track this data prospectively. On the one hand, some physician factors can significantly impede the collection of HRQoL information during clinical visits. Time constraints limit physicians' ability to efficiently capture this data, while inadequate training regarding the importance or relevance of collecting it may further inhibit clinicians from doing so [21]. In addition, many physicians are unfamiliar with recommended instruments for measuring HRQoL and lack access to the necessary resources and technologies for collecting such data. Furthermore, there may be a lack of understanding among physicians that such information is valuable in guiding medical decision-making [22,23]. Medical practitioners often face overwhelming administrative duties and high workloads, leading to alarming burnout rates. By connecting additional financial compensation with adequate patient outcomes monitoring, we can incentivize physicians to prioritize the quality of care over the number of patients in their care. Insurance companies should cover the costs associated with collecting data related to HRQoL, ultimately saving insurers money through healthier customers and actionable data for proactive patient prevention strategies.

Alternatively, several patient-related aspects may present obstacles in obtaining this data. Such factors may encompass limited availability of technology, challenges in deciphering questionnaire items, suboptimal literacy or numeracy capabilities, and cultural blockades that hinder interactions with medical professionals, linguistic constraints, and physical restrictions that inhibit survey participation [24]. Moreover, some patients may also need help understanding the rationale behind their health-care provider's pursuit of particular information.

Health-care providers must consider various patient factors when collecting HRQoL data to effectively assess and intervene in patients' health. Collecting and analyzing this information is challenging for oncology care teams due to the limited time and resources. One conceivable tactic might encompass the establishment of a specialized cadre dedicated to HRQoL data procurement and processing, staffed by proficient experts for handling this critical information. As an alternative, the employment of pioneering technologies such as mobile applications, wearable contraptions, or digital health archives may expedite automated data acquisition techniques and supply prompt input, enabling patients, and their care collaborators to engage in more intimate supervision [25]. However, integrating data generated by wearable devices into electronic health records presents complex issues, particularly regarding patient privacy [26]. Patients must consent for their data to be shared with their care team, and the electronic health record must be able to record and process patients' data in real time. Utilizing secure, compliant platforms with robust data-sharing capabilities are essential in overcoming these challenges [27]. Telemedicine has also proven viable, providing follow-up patients with acceptable quality and high patient satisfaction levels [28]. This approach can be implemented virtually, giving flexibility to patients and health-care providers while alleviating the burden of data collection [29].

### 4. Potential Advantages of Prospective HRQoL Data Collection

Physicians could gain greater insight into which interventions might be most beneficial for specific individuals based on their unique circumstances by actively integrating HRQoL information into existing medical protocols at each visit with a cancer survivor following diagnosis or treatment completion. A QoL assessment should be performed before treatment selection or discussion to ensure patients receive the most appropriate treatment based on their unique needs [30]. This would enable the implementation of patient-center care plans tailored to individual needs instead of relying solely on one-size-fits-all approaches. Prospectively, longitudinally collecting HRQoL data in cancer patients could serve:

- **To measure the impact of cancer treatments on patients' QoL:** this data can provide valuable insights into how treatment regimens affect patient outcomes and QoL [31].
- **To identify potential risk factors for disease progression or recurrence:** clinicians can better understand which factors are associated with a greater risk for cancer progression or recurrence [32].

- **To inform personalized treatment plans:** can help guide the development of patient-center treatment plans that consider each patient's unique needs and preferences, improving overall care quality while reducing costs associated with unnecessary interventions or tests [33].
- **To monitor toxicity levels from chemotherapy/radiation therapy:** by prospectively tracking HRQoL measures, physicians may identify signs of toxicity earlier on so they can adjust dosages accordingly to minimize further damage from these treatments if necessary [34].
- **To improve communication between health-care providers and patients:** regularly measuring HRQoL facilitates open conversations about expectations related to treatment efficacy, side effects, etc., enhancing communication between health-care providers and patients throughout all stages of care delivery processes [35].
- **To evaluate effectiveness/cost efficiency of new technologies and procedures:** by comparing retrospective versus prospective data collected before and after introducing certain medical technologies or procedures, clinicians gain valuable insights into how effective they are in terms of helping manage symptoms such as pain and fatigue and whether improved clinical outcomes justify their cost [36].
- **To objectively assess quality improvement initiatives:** comparing retrospectives versus prospects gathered before and after implementation provides an objective way for health systems/hospitals/clinics/physicians' offices to evaluate progress toward achieving specific goals set forth under various improvement projects [37].
- **To facilitate research studies investigating novel approaches:** research teams conducting clinical trials need access to large amounts of reliable real-world evidence obtained through multi-center surveys containing information collected prospectively from participants enrolled before starting the study [38].

The potential of incorporating HRQoL and other non-clinical topics into medical visits to revolutionize health-care delivery is supported by evidence. Improved patient-physician communication has been linked to better outcomes, as physicians gain insight into patients' perspectives on their health that can inform treatment plans [39]. In addition, this dialogue encourages greater collaboration between doctors and patients, enabling them to manage health conditions and improve their QoL [40]. Therefore, health-care providers must be equipped with the necessary skills to effectively engage with patients regarding HRQoL during regular visits. This requires a multidisciplinary team of mental health professionals experienced in working with diverse populations and those familiar with evidence-based practices such as motivational interviewing or cognitive behavioral therapy techniques, which focus on building solid relationships while fostering trust among all parties involved [41,42]. Implementing strategies focused on increasing physician engagement around HRQoL during routine visits will ensure individualized care without sacrificing traditional standards of excellence in medicine worldwide. The

successful integration of this communication will improve patient satisfaction and overall well-being throughout society – making it essential for health-care providers everywhere to take steps now if they hope to achieve lasting success over time [43].

## 5. Future Directions for Non-Clinical Data and Personalized Medicine

Health-care professionals need to continue recognizing the importance of HRQoL data in enhancing oncological outcomes and taking steps to leverage this data more effectively. Clinicians must utilize predictive models incorporating clinical and non-clinical variables to ensure equitable patient-center care [44]. In addition, efforts should be made to more closely integrate HRQoL data into clinical decision-making and treatment planning, recognizing that HRQoL is an essential factor in determining patient outcomes. For example, some studies have demonstrated that individuals with poverty or lower educational attainment are more likely to experience poorer health-care outcomes due to difficulty accessing quality services or adhering to medication regimens [45,46] By employing such models, clinicians could make tailored interventions rather than rely solely on automated processes based on clinical data, leading to better adherence rates and increased patient satisfaction through patient-center care plans [47]. All this information incorporated as Big Data has the potential to revolutionize personalized medicine by providing unprecedented detail about individuals' traits, lifestyle choices, and environmental factors, which can help to identify and address underlying risks before they become major health issues. By leveraging the power of big data, we can more effectively personalize treatments and improve patient outcomes. Treatments could be tailored to each patient's specific needs and characteristics and further refined for greater efficacy [48].

## 6. Conclusion

The importance of HRQoL in oncological outcomes is often overlooked. Despite the potential for HRQoL to improve cancer patient outcomes, a unique opportunity for progress and health improvement remains untapped mainly due to physicians' factors such as time constraints or inadequate training; and patient factors such as language barriers, physical limitations, lack of access to technology, or difficulty understanding survey questions. Incorporating HRQoL data into existing medical protocols at each visit with a cancer survivor can enable clinicians to develop patient-centered care plans tailored to individual needs instead of relying solely on one-size-fits-all approaches. By actively collecting non-clinical data from patients throughout diagnosis and treatment stages in a longitudinal manner through digital tools such as web surveys or mobile apps, physicians have the potential to gain invaluable insights into which interventions might be most beneficial for specific individuals based on their unique circumstances. Doing so could help alleviate suffering and improve the overall QoL while reducing costs associated with unnecessary interventions or tests through informed decision-making that prioritizes efficacy over cost savings alone. With increased engagement around HRQoL during routine visits enabled by an interdisciplinary team approach focused

on building solid relationships between health-care providers and patients across all stages of care delivery processes, plus greater attention paid to predictive models incorporating clinical and non-clinical variables – there is great hope that these efforts will revolutionize health-care delivery worldwide by providing unprecedented detail about individuals' traits and lifestyle choices necessary for effective personalized medicine treatments targeting underlying risks before they become major issues. Finally, there is an urgent need for a technology able to easily collect data in a longitudinal way that will help the patient, the physician, and the health-care system. Therefore, further research should be conducted immediately to achieve lasting success.

### Conflicts of Interest

None.

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