



Renal Cell Carcinoma: A Review on Patients' Quality of Life

Luísa Soares^{1*}, Soraia Caires²

¹Universidade da Madeira: Departamento de Psicologia, Funchal, Portugal.

²Universidade da Madeira: Departamento de Psicologia, Funchal, Portugal.

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***Corresponding author:** Luísa Soares, Universidade da Madeira: Departamento de Psicologia, Funchal, Portugal.

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Abstract

The present study aims to systematically review the literature on the quality of life of patients with renal cell carcinoma and the importance of resilience and self-efficacy as protective factors for their quality of life.

Keywords: renal cell carcinoma; quality of life; resilience; self-efficacy; kidney cancer

Introduction

Kidney cancer occurs due to the abnormal growth and division of cells. This phenomenon occurs when an injured cell grows and multiplies, giving rise to several abnormal cells forming a tumor (Alberts et al., 2010).

Renal carcinoma originates in the kidneys, essential organs for normal and healthy functioning. The kidneys belong to the urinary system and have several functions, including the excretory function, responsible for filtering the blood and producing urine, which expels substances that in large quantities would be harmful to the body; the regulatory function of internal volume and acid-base balance, responsible for internal homeostasis through the excretion of water and electrolytes; the hormonal function, which plays a role in the internal secretion of hormones that regulate various processes related to the organ and the catabolic function, which ensures that no essential substances are lost.

Kidney cancer represents 2-3% of all malignant tumors in adults, with an increase in incidence in recent decades (Karki et al., 2018), and is one of the most common cancers of the urinary system (Liu et al., 2021). This diagnosis has a higher incidence in males, and it has been shown that they have worse initial tumor characteristics and worse mortality specific to this cancer (Ajaj et al., 2020).

It is estimated that 90% of kidney cancers are represented by Renal Cell Carcinoma (RCC), and this is divided into three types: clear cell RCC, which represents 70% to 85% of cases; papillary RCC, which represents 10 to 15% of cases and chromophobe RCC, which represents less than 5% of cases (Motzer et al., 1996).

A set of risk factors is associated with kidney cancer, meaning that a risk factor implies any aspect that interferes with the probability of having a specific disease but does not incorporate a direct causal relationship in cancer development (Hancock & Georgiades, 2016).

Firstly, we have smoking as one of the main risk factors associated with renal carcinoma. The risk increases proportionally to the number of

cigarettes smoked; however, if the individual stops smoking, the risk decreases. The incidence in males can be explained by the fact that, in the past, men were the biggest tobacco consumers (Lopaz-Beltran et al., 2006).

Additionally, obesity also incorporates a considerable risk factor, with the risk increasing exponentially with excess weight. It may be due to the hormonal changes characteristic of excess weight, which can lead to hormonal imbalance (Lopaz-Beltran et al., 2006). Professional exposure to certain chemicals has also been shown to be a risk factor, specifically trichloroethylene, as well as prolonged exposure to cadmium, benzene, herbicides, and vinyl chloride, among others (Lopaz-Beltran et al., 2006).

CRC does not have a constellation of defined symptoms and is usually asymptomatic in its earliest stages, often discovered at a late stage of the disease, affecting the individual's prognosis and chance of survival (Hancock & Georgiades, 2016).

Patients with metastatic CRC have a more unfavorable prognosis, with a survival rate that varies between 2 and 3 years. However, there is a constant attempt and effort to develop ways to regularly track and effectively manage distress, as an essential component of patient care, to help improve patients' quality of life (Bergerot et al., 2018).

Method

A systematic review of the literature published between 2003 and 2023 was carried out in the B-on database to find out what the literature says about the quality of life in patients with CRC. The research protocol used was: ("kidney cancer" OR "renal cell carcinoma") AND ("intervention plan" OR "therapy" OR "psychology" OR "psychoeducation") AND ("adults" OR "elderly people") AND ("anxiety" AND "trauma" OR "distress" AND "depression" OR "coping" OR "death anxiety" AND "future planning" AND "quality of life"). The Boolean Operators "AND" were used to ensure that the topics were all included in the search, and the "OR" was used to increase the possibility of obtaining more results within the same topics.

The inclusion criteria are studies (a) academic articles, (b) published between 2003 and 2023, (c) in English, (d) that mentioned the quality of life, (e) that focused on the psychological perspective of cancer, and (f) that focused on kidney cancer.

The exclusion criteria are articles that (a) did not mention psychology, (b) were unavailable for consultation, (c) did not address kidney cancer, (d) were more focused on the medical perspective, and (e) focused on testing for cancer symptoms.

First, 50 articles were collected, and, considering the exclusion criteria, 36 articles were removed, leaving 14 articles to be used in this review (Figure 1).

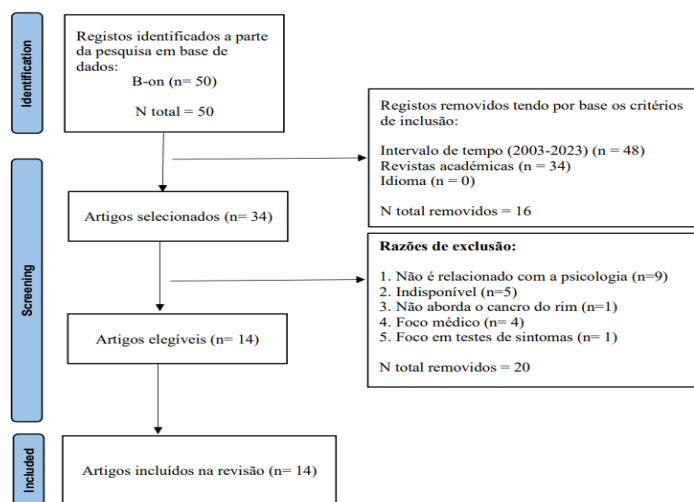


Figure 1: Flow diagram

Results

Firstly, after applying the research protocol, 50 articles were collected, but only 14 articles were considered eligible for the systematic review after applying the exclusion and inclusion criteria mentioned above. Although the number is small, this fact only highlights the importance of more research in psycho-oncology and kidney cancer, specifically on the topic of quality of life, which is the central theme of this systematic review. All articles used in this systematic review are included in Annex 1. Additionally, all literature used in this systematic review included a psychological perspective on the quality of life in the context of kidney cancer, including topics such as resilience, self-efficacy, self-management, hope, the consequences of treatments and experiencing cancer, physical activity, psychopathologies, psychological suffering, and positive affect.

Discussion

Quality of life of patients with CRC

For cancer patients, quality of life (QoL) is an essential factor, and the literature shows that there is a correlation between a high symptom burden and poor QoL. There is a constellation of symptoms associated with cancer; however, among individuals with cancer, fatigue, pain, and depression are the three most frequently reported symptoms related to the disease and subsequent treatment. This phenomenon, together with the fact that 50% of patients who suffer psychosocial impacts do not disclose them to their healthcare team, can immensely affect their QoL. Therefore, the emotional and psychological impact of cancer on patients is likely not well understood (Carlos et al., 2018).

QoL is a subjective perception at various levels that changes over time as it reflects an individual's current situation. Deterioration in QoL is associated with an increased risk of suicide and depression. In particular, the QoL of patients with metastatic kidney cancer deteriorates significantly as a result of treatment due to the stress

imposed on their body and mind (Liu et al., 2021). More specifically, kidney cancer patients are faced with multiple stressors, including pain, fatigue, significant bodily changes, and changes in sexual/urinary function (Yang et al., 2016).

Furthermore, due to the adverse effects of altered self-image/body image and altered sexual/urinary function, individuals may withdraw from friends and other people because they are afraid of losing people due to their condition and do not know how to ask for help due to their embarrassment, which may lead to them receiving insufficient support from their loved ones and friends (Yang et al., 2016).

Furthermore, intense physiological, psychological, and interpersonal challenges may arise in the first year after diagnosis, which may decrease QoL and increase the likelihood of developing psychopathologies such as anxiety, depression, or posttraumatic stress disorder (PTSD) (Moretto et al., 2014; Thekdi et al., 2015). In kidney cancer patients, the prevalence of depression, anxiety, and PTSD is 77.5%, 69.3%, and 25.2%, respectively (Yang et al., 2016).

Psychopathologies can affect the patient's judgment and decision-making capacity, which is crucial in their treatment (Karki et al., 2018). Indeed, concerns about the recurrence of cancer or the possibility of never being able to overcome it can worsen these psychopathologies if they are not correctly regulated (Liu et al., 2014).

Furthermore, these psychological disorders can lead to a decrease in the immune response, prolonged recovery times, difficulties in controlling symptoms, poor adherence to treatment and, possibly, a reduction in survival time. Therefore, regular screening and adequate management of these psychological disorders are an essential aspect of psycho-oncology, as they not only affect the patient's psychological aspect but can also reduce their survival rate and the success of their treatment (Yang et al., 2016).

Although currently available drug treatments (sunitinib, interleukin-2, interferon- α , among others) can improve overall survival and alleviate some of the symptoms to a certain extent, at the same time, they also produce toxic side effects, which can also affect their QoL (Liu et al., 2010).

Additionally, in patients with advanced cancer, fatigue is often a priority symptom. It can hurt QoL because it affects physical and social functioning, activity level and emotional well-being. Fatigue is also a joint adverse event (AE) associated with advanced cancer treatments, including targeted therapies (such as those approved for advanced RCC). It is reported as an AE in approximately 40% to 70% of patients with advanced RCC. (Cella et al., 2014). In fact, due to physical exhaustion and restrictions imposed on activities, these patients have difficulty performing activities they previously enjoyed, which can worsen their psychological suffering (Liu et al., 2021).

Psychological distress refers to non-specific symptoms that include stress, anxiety and depression. Increased levels of psychological suffering may indicate the beginning of diagnostic severe

conditions, such as the psychological disorders already mentioned above. In practice, it is often found that many patients deny any symptoms of psychological distress and often self-medicate with ethanol and recreational drugs. It is assumed that the impact of psychological distress on therapeutic adherence and long-term well-being is significant. However, this field is poorly explored (Bartolomei et al., 2022). Additionally, it has been shown that female cancer patients suffer more from psychological distress. In contrast, men suffer more from symptoms of physical distress, and it has also been shown that younger people are more susceptible to experiencing psychological distress (Ajaj et al., 2019).

While QoL deteriorates through treatments and the various difficulties a patient faces, optimism and resilience work as protective factors for their QoL. Resilience is the ability to restore one's original state when faced with an essential stressful event and can be a process or a result of coping. Characteristics of resilience include resilience, flexibility, self-determination, self-esteem/self-efficacy, a sense of humor, and the ability to maintain positive relationships (Liu et al., 2021; Yang et al., 2016).

In the conceptual framework for recovering the health and well-being of cancer survivors, cancer-related self-efficacy refers to the degree of self-confidence of survivors about self-management of problems caused by cancer or treatment after completion of primary treatment; that is, these patients are confident in their ability to avoid symptoms or health problems that interfere with what they want to do, believe that performing their self-care activities would reduce their need to see a doctor and can improve psychological distress caused by treatment (Liu et al., 2021). This self-efficacy mediates the relationship between negative emotional states and resilience; the fewer negative states, the greater self-efficacy and, consequently, the better resilience (Liu et al., 2021). Additionally, a high level of self-confidence is beneficial so that individuals can adopt self-management behaviors to improve their symptoms or health problems and reestablish their health and well-being. Thus, the emotional state of cancer patients affects their self-efficacy about cancer, which, in turn, affects their resilience and QoL. A negative emotional state may lead to low self-efficacy, while a positive one will have the opposite effect. Resilience plays a crucial role in this process, as it can help resist the influence of a hostile state on QoL, thus implying that patients with better resilience have better QoL (Liu et al., 2021).

As a product of resilience, coping appears, defined as continuous cognitive and behavioral efforts to manage specific external and internal demands that overload or exceed the individual's resources (Lazarus, 1993). Coping helps patients live with the demands placed on them by the disease and experience a general sense of well-being. The main coping styles identified are problem-focused, emotion-focused and avoidance-focused. These mechanisms can be great protectors of QoL, as they increase the individual's resilience if used correctly. However, avoidance-focused coping may have a negative association with QoL, so not all coping styles will benefit all patients (Beisland et al., 2014).

Another concept associated with QoL is hope; a high level of hope in a cancer patient can increase their ability to find solutions to the problems caused by cancer and feel confident that they can use

ways to solve or deal with these problems. Problems. Additionally, hope showed a negative association with PTSD, which may provide valuable information for the development of targeted psychotherapy for PTSD in cancer patients (Yang et al., 2016).

Furthermore, the psychological impact of cancer not only increases levels of negative emotions but also reduces the positive affective experience; that is, patients may not necessarily have an abundance of negative emotions, but rather a lack of positive emotions. Positive and negative affect mechanisms contribute differently to biological and psychological processes, such as blood pressure, heart rate, creativity and stress perception (Prinsloo et al., 2014). Positive affect was also associated with a 10% reduction in mortality; survival outcomes were substantially better for patients who simultaneously reported high positive affect and low depressive symptoms, thus affecting QoL (Prinsloo et al., 2014). Finally, physical activity (PA) and sleep have been associated with better health and QoL outcomes in many cancer groups (Tabaczynski et al., 2020).

Light-intensity PA has also been associated with positive health outcomes for cancer survivors, as it can be performed in many domains as part of daily living activities. Additionally, kidney cancer survivors spend a lot of time sedentary, which is defined as any behavior, including sitting, reclining, or lying down, performed during waking hours. Sedentary behavior is linked to adverse health outcomes for kidney cancer survivors, including decreased physical functioning, increased pain and fatigue, decreased well-being, and reduced QoL (Tabaczynski et al., 2020)

Furthermore, sleep disturbances are also one of the symptoms most cited by cancer patients during and after treatment. Therefore, better sleep quality and longer sleep duration are associated with positive health and well-being and are fundamental to maintaining QoL during the process. Reorienting sedentary time to PA of any intensity or sleep can lead to successful symptom management in kidney cancer patients, increasing QoL (Tabaczynski et al., 2020).
Conclusion

After the systematic review of the literature, we can note that this subject has not yet been explored much, as most articles mentioned the quality of life of cancer patients in general, and few delved into the experience of patients with CRC. However, it cannot be said that the experience of an individual with cancer is not the same as that of an individual with CRC, as the processes are similar.

One of the limitations of this study is the number of keywords used in the research protocol; in a future review, it would be relevant to try to reduce some keywords.

Finally, resilience and self-efficacy play an essential role in maintaining and protecting the quality of life of patients with CRC.

References

- Ajaj, R., Omar, J., Berlín, A., Christopher J.D. Wallis, Chandrasekar, T., Klaassen, Z., Ahmad, A. E., Leão, R., Finelli, A., Fleshner, N., & Goldberg, H. (2020). Gender-based psychological and physical distress differences in patients diagnosed with non-metastatic renal cell carcinoma. *World Journal of Urology*, 38(10), 2547–2554. <https://doi.org/10.1007/s00345-019-03057-2>
- Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., Walter, P. (2010). *Biologia Molecular da Célula*. (5ª ed.) Porto Alegre: Artmed.
- Beisland, E., Beisland, C., Hjelle, K. M., Bakke, A., Aarstad, A. K. H., & Aarstad, H. J. (2014). Health-related quality of life, personality and choice of coping are related in renal cell carcinoma patients. *Scandinavian Journal of Urology*, 49(4), 282–289. <https://doi.org/10.3109/21681805.2014.990051>
- Bergerot, C. D., Clark, K. L., Ashing, K. T., Bergerot, P. G., Obenchain, R., Dizman, N., Hsu, J., Philip, E., Loscalzo, M., & Pal, S. K. (2018). Biopsychosocial distress and clinical outcome in metastatic renal cell carcinoma. *Palliative and Supportive Care*, 17(3), 353–355. <https://doi.org/10.1017/s1478951518000342>
- Carlos, M., Meade, K., Henderson, J. & Gentry, E. (2018). An Integrative Education Program for Patients with Renal-Cell Carcinoma and Their Caregivers: A Scoping Review. *Journal of Oncology Navigation & Survivorship*, 14(2), 48–55. <https://www.jons-online.com/special-series/video-library?view=article&secid=278:online-first&artid=4815:integrative-education-program-renal-cell-carcinoma>
- Cella, D., Davis, M. P., Négrier, S., Figlin, R. A., M. Dror Michaelson, Bushmakin, A. G., Cappelleri, J. C., Sandin, R., MA Beata K., Charbonneau, C., Matczak, E., & Motzer, R. J. (2014). We characterize fatigue associated with sunitinib and its impact on health-related quality of life in patients with metastatic renal cell carcinoma. *Cancer*, 120(12), 1871–1880. <https://doi.org/10.1002/cncr.28660>
- European Commission, Causes of Death Statistics, http://ec.europa.eu/eurostat/statistics-explained/index.php/Causes_of_death_statistics, 2/12/2023.
- Hancock, S. B., & Georgiades, C. S. (2016). Kidney Cancer. *The Cancer Journal*, 22(6), 387–392. <https://doi.org/10.1097/ppo.0000000000000225>
- Liu, J., Mittendorf, T., & Schunlenburg, J-M. (2010). A Structured Review and Guide Through Studies on Health-Related Quality of Life in Kidney Cancer, Hepatocellular Carcinoma, and Leukemia. *Cancer Investigation*, 28(3), 312–322. <https://doi.org/10.3109/07357900903287022>
- Liu, K.-L., Chuang, C.-K., Pang, S.-T., Wu, C.-T., Yu, K.-J., Tsai, S.-C., & Chien, C.-H. (2021). Emotional state and cancer-related self-efficacy as affecting resilience and quality of life in kidney cancer patients: a cross-sectional study. *Supportive Care in Cancer*, 30(3), 2263–2271. <https://doi.org/10.1007/s00520-021-06644-5>
- Lazarus, R. S. (1993). Coping theory and research: past, present, and future. *Psychosomatic Medicine*, 55(3), 234–247. <https://doi.org/10.1097/00006842-199305000-00002>
- Lopez-Beltran, A., Scarpelli, M., Montironi, R., & Kirkali, Z. (2006). 2004 WHO Classification of the Renal Tumors of the Adults. *European Urology*, 49(5), 798–805. <https://doi.org/10.1016/j.eururo.2005.11.035>
- Motzer, R. J., Bander, N. H., & Nanus, D. M. (1996). Renal-Cell Carcinoma. *New England Journal of Medicine*, 335(12), 865–875. <https://doi.org/10.1056/nejm199609193351207>

14. Prinsloo, S., Wei, Q., Scott, S. M., Tannir, N. M., Jonasch, E., Pisters, L. L., & Cohen, L. (2014). Psychological states, serum markers and survival: associations and predictors of survival in patients with renal cell carcinoma. *Journal of Behavioral Medicine*, *38*(1), 48–56. <https://doi.org/10.1007/s10865-014-9578-1>
15. Karki, K., Hashmi, A., Mubarak, M., Sultan, G., Mohsin, R. & Rizvi, S. (2018). Depression and anxiety among renal cell carcinoma patients: a cross-sectional study. *ASEAN Journal of Psychiatry*, *19*(1), 25–31. <https://web.s.ebscohost.com/ehost/detail/detail?vid=0&sid=8c1921b5-c0f2-48af-896550b79923bb8b%40redis&bdata=JnNpdGU9ZWWhvc3QtbG12ZSszY29wZT1zaXRl#AN=131170230&db=a9h>
16. Tabaczynski, A., Courneya, K. S., & Trinh, L. (2020). Replacing sedentary time with physical activity and sleep: associations with quality of life in kidney cancer survivors. *Cancer Causes & Control*, *31*, 669-681. <https://doi.org/10.1007/s10552-020-01308-x>
17. Thekdi, S. M., Milbury, K., Spelman, A., Wei, Q., Wood, C., Matin, S. F., Tannir, N., Jonasch, E., Pisters, L., & Cohen, L. (2015). Posttraumatic stress and depressive symptoms in renal cell carcinoma: association with quality of life and utility of single-item distress screening. *Psycho-Oncology*, *24*(11), 1477–1484. <https://doi.org/10.1002/pon.3758>
18. Vartolomei, L., Schmidinger, M., Vartolomei, M. D., & Shariat, S. F. (2022). Psychological Distress in Patients Treated for Renal Cell Carcinoma: A Systematic Literature Review. *Journal of Clinical Medicine*, *11*(21), 6383. <https://doi.org/10.3390/jcm11216383>