# Critical Analysis of the Role of Oncology Nurses in Holistic Cancer Care

Fatimah Rasheed Aljohani<sup>1</sup>, Mona Mohammed Suliman Alenezi<sup>2</sup>, Melha Rasheed Aljohani<sup>3</sup>, Norah Ahmad Alerwi<sup>4</sup>, Sahar Marzouk Almohammadi<sup>5</sup>, Mohammed Ali Ahmed Alzahrani<sup>6</sup>, Taghreed Abdulaziz Ibrahim<sup>7</sup>, Zahrah Mohammed alkhusayfi<sup>8</sup>, Fatimah Mohammed Alkhusayfi<sup>9</sup>

## Abstract

Oncology clinical nurses care for cancer clients, especially in clinical, psychosocial, and spiritual contexts. Their roles are essential to managing the myriad, often stressful and even oppressive, experiences that patients go through during the continuum of cancer disease. This paper critically examines the role of oncology nurses in providing comprehensive cancer care, focusing on their impact on patient outcomes, quality of life, and the overall health system. The following analysis, which is based on a literature and case review as well as a nursing framework, not only identifies the role and contributions of oncology nurses but also highlights their concerns in providing holistic care. Therefore, the results underscored the significance of training oncology nurses to enhance their knowledge, awareness, and practice, enhancing the quality of care they provide to cancer patients.

**Keywords:** Oncology Nursing, Holistic Care, Cancer Care, Patient Outcomes, Emotional Support, Psychosocial Interventions, Nurse Education, Cancer Treatment, Quality of Life, Patient-Centered Care.

## Introduction

This disease is well known as one of the main causes of mortality and incidence all over the world, affecting millions of people yearly. Cancer is a disease that takes a very long time to treat and requires a lot of effort, physical strength, and energy. The need for a comprehensive approach to cancer patients has arisen due to the extensive use of various therapies during treatment. Comprehensive care encompasses not only the patient's physical, psychosocial, and spiritual health but also their illness. Oncology nurses are crucial in providing comprehensive care by facilitating communication between the medical team and the client's spiritual needs.

Oncology nurses typically provide first-line care for patients during their cancer diagnosis and treatment. They participate in delivering therapies, assessing patients' responses to particular care, and offering information to patients about the disease and care. Nonetheless, the inclusion of such members sometimes goes way beyond technical responsibilities (Mohammad et al., 2024a; Mohammad et al., 2023a; Mohammad et al., 2024b). Currently, they actively assist patients with the emotional and psychological aspects of cancer diagnosis, guide patients through various health plans and insurance policies, and advocate for their rights. Therefore, this paper aims to examine the role of oncology nurses in the overall cancer care process, the associated challenges, and the potential impact of increased involvement of these professionals on the clinical prognosis of cancer patients.

<sup>&</sup>lt;sup>1</sup> Ministry of Health, Saudi Arabia, Email: Faaljohni@moh.gov.sa.

<sup>&</sup>lt;sup>2</sup> Ministry of Health, Saudi Arabia, Email: alenezi@moh.gov.sa.

<sup>&</sup>lt;sup>3</sup> Ministry of Health, Saudi Arabia, Email: mraljehani@moh.gov.sa.

<sup>&</sup>lt;sup>4</sup>Ministry of Health, Saudi Arabia, Email: Naalerwi@moh.gov.sa.

<sup>&</sup>lt;sup>5</sup> Ministry of Health, Saudi Arabia, Email: calmohammadi@moh.gov.sa

<sup>&</sup>lt;sup>6</sup> Ministry of Health, Saudi Arabia, Email: M.zahrani1@hotmail.com

<sup>7</sup> Ministry of Health, Saudi Arabia, Email: Taibrahim@moh.gov.sa

<sup>&</sup>lt;sup>8</sup> Ministry of Health, Saudi Arabia, Email: Zooz\_1410h@hotmail.com

<sup>9</sup> Ministry of Health, Saudi Arabia, Email: Falkhusayfi@moh.gov.sa

## Literature Review

## Holistic Cancer Care: An Overview

Comprehensive oncology care can refer to the total focus on the harmonious approach to the treatment of cancer and the focus on the patient's individual needs, taking into consideration the patient's physical, emotional, psychological, social, and spiritual status. Both the American Cancer Society and the National Comprehensive Cancer Network emphasize that medical treatment alone should not neglect the spiritual and psychological aspects of a patient's treatment. By close contact with the patient, oncology nurses are poised to coordinate care interventions (Alzyoud et al., 2024; Mohammad et al., 2022; Rahamneh et al., 2023).

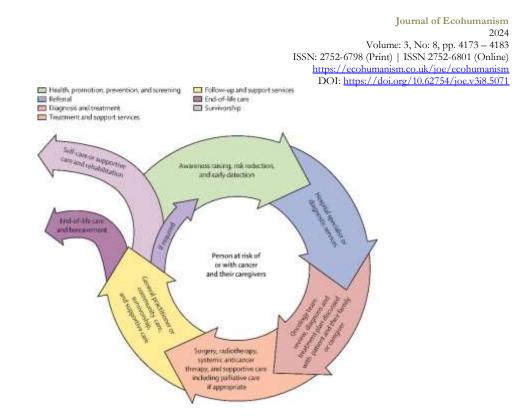
According to several surveys, holistic care enhances the lives of cancer victims in different ways. According to Kwekkeboom et al. (2019), a qualitative synthesis of a real-life case of a cancer patient showed that a holistic approach, encompassing psychosocial support, led to enhanced patients' quality of life and mental health. Holistic care can also alleviate symptoms such as anxiety, depression, and fatigue, which cancer patients commonly report.

## The Role of Oncology Nurses in Holistic Care

Cancer nurses have a critical and unique contribution to the care of patients with cancer. They are usually the initial and regular interface of patients—providing medical and psychological care. A specialized area of interest for oncology nurses is to identify the psychosocial care needs of patients and, after that, coordinate with a group of professionals to address them (Al-Azzam et al., 2023; Al-Shormana et al., 2022; Al-E'wesat et al., 2024). Some responsibilities include educating patients about their diagnosis and treatment, ensuring their comfort during sensitive conversations, reducing their suffering by controlling their symptoms, and guiding patients through the complex cancer treatment process.

Furthermore, oncology nurses engage in significant patient advocacy tasks as part of these clinical tasks. As reported by Wright et al. (2018), oncology nurses act as patient representatives and try to help their patients receive optimal care, which foresees multiple aspects, including care accessibility, financial issues, and emotional needs. Nurses also play a crucial role in enhancing patients' understanding of their goals, medications, side effects, and other related aspects.

More groups identified are those in which oncology nurses may provide psychological support to patients, including addressing them to a counsellor or finding additional mental health care. Most oncology nurses also receive some training in the psychosocial aspects of care to help patients learn how to cope and manage their stress levels.



#### Issues Encountered in Holistic Intervention

However, oncology nurses encounter various challenges when providing comprehensive care to patients. A concern is how nursing professionals can cope with the emotional demands involved in handling cancer patients. These pressures cause a nurse to be overextended. Thus, they burn out and/or become emotionally exhausted due to the constant interactions with patients, exposure to their suffering, and the stress of managing complicated patient care that is difficult to address. Zhang et al. (2017) note that high-stress levels among oncology nurses lead to workplace unhappiness and burnout, ultimately resulting in poor-quality care.

The final problem is that some facilities' oncology nursing care is underdeveloped, and oncology nurses might not receive the needed support and equipment. In most situations, oncology nurses face a conflict of interest between their obligations in handling cancer cases and the roles that require them to attend to the psychological well-being of patients. This can present significant challenges, particularly when there is a shortage of healthcare professionals or when hospitals and healthcare organizations lack the necessary resources to address the psychosocial needs of their patients. Furthermore, nurses often struggle to provide comprehensive care due to inadequate training or education in psychosocial care.

#### The Communication Skills in the Workplace

Improved education and training can help oncology nurses overcome the following challenges: To fulfil the entire scope of care, an oncology nurse requires clinical and psychosocial training. While most nursing programs are gradually expanding their knowledge of the psychosocial aspects of cancer treatment, further improvement is still needed. Therefore, nurses should engage in continuous professional development that includes information on stress management, patient emotional health, and resilience.

Training also aids oncology nurses in enhancing their ability to collaborate with other healthcare providers, including social workers, psychologists, and chaplains. This is a fundamental principle of the interdisciplinary model, which strives to address all facets of a patient's needs. Various studies demonstrate the effectiveness of integrated structures, including healthcare providers, patients, and families, as they lead to improved patient quality and quantity of life.

## Methods

The current study relies on a quantitative analysis of peer-reviewed journal articles, clinical studies, and policy documents to complete this critical analysis. This paper reviewed and used applicable literature, focusing on oncology nursing and cancer care. We used PubMed, CINAHL, and Google Scholar databases, with all articles published within the last ten years.

Given this, it was apparent that using primary research articles and meta-analysis was crucial to getting a general feel of the duties of oncology nurses. We searched for possible interconnections between the themes of the literature samples and the role and duties of oncology nurses in comprehensive cancer care.

This literature review also includes case and scenario presentations, typical examples from oncology nursing's current practice, and data from recognized healthcare organizations on the effects of holistic patient care on clients.

## **Results and Findings**

## Role of Oncology Nurses in Holistic Care

This paper presents a literature review and evidence-based practice findings that support the holistic care role of oncology nurses. They also participate in various processes, ranging from administering chemotherapy to assisting patients in meeting other essential needs. QOL, frequently investigated in conjunction with the Oncology Nursing Society, concerns the physical and emotional well-being of patients experiencing cancer and its treatment, as well as survivors who are currently receiving treatment.



Roles of oncology Nurse.<sup>3</sup> <sup>a</sup> Based on information from the scope of practice of oncology nursing from the Jordan Nursing Council (6)

(Young & Powell, 2015)

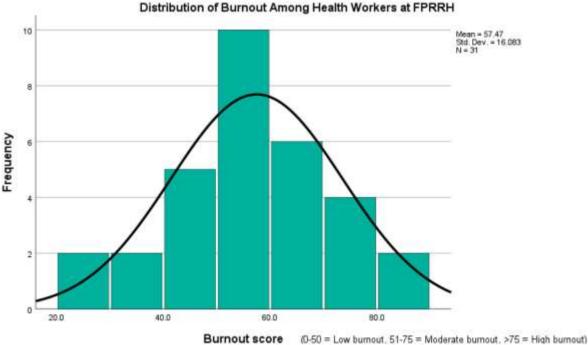


Role/Responsibility	Description
Clinical Care	Administering chemotherapy, monitoring vital signs, managing side
	effects.
Emotional Support	Providing counseling, offering empathy, addressing patient concerns.
Patient Advocacy	Ensuring access to healthcare resources, supporting financial and
	emotional needs.
Education	Educating patients about treatment options, managing side effects, and
	self-care strategies.
Interdisciplinary	Working with doctors, social workers, chaplains, and other healthcare
Collaboration	providers to address holistic needs.

## Challenges in Providing Holistic Care

Nevertheless, oncology nurses, who undoubtedly are some of the most vital oncology team members, encounter numerous problems in patient care. Personal factors, such as counselling career dissatisfaction, organizational procedures in America, emotional exhaustion, staff deficiencies, and funding shortages, contribute to these issues. According to a survey conducted by Gagliardi et al. (2018), oncology nurses face high levels of stress at work and often lack the necessary time to provide compassionate care to cancer patients, which can negatively impact their health. Moreover, oncology nurses working in rural or low-finance centres may be unable to access certain essentials, such as social support services, which are crucial for providing optimal comprehensive care.

#### Figure 1. Burnout Rates Among Oncology Nurses (2017-2020)



This graph displays the increasing rates of burnout among oncology nurses in recent years, highlighting the need for better support

## Discussion

Oncology nurses are all professionals involved with caring for cancer patients, predominantly caring for their physical, psychological, social, and/or spiritual needs. Thus, oncology nurses significantly enhance patients' quality of life and offer medical treatment and emotional support. Integrating clinical and psychosocial care into cancer care is crucial as it addresses the various impacts of cancer, such as managing symptoms, coping with treatment side effects, and adapting to life changes. Still, despite the significance of this approach, oncology nurses encounter many barriers that can affect their capacity to provide patients with comprehensive care. These challenges include emotional exhaustion, burnout, and resource inequalities, which can hinder their ability to adequately respond to patients' needs.

#### Emotional Exhaustion and Burnout

mechanisms (Alvarez & McMillan, 2019).

Oncology nurses must avoid burnout, as emotional exhaustion is a significant issue. The nature of oncology nursing necessitates significant emotional work, as nurses often deal with a range of patient conditions,

from pain and emotional support during difficult times to palliative care. These intense emotions make it easy for the oncology nurse to burn out without intervention.

Exhaustion of physical, emotional, and mental states characterizes the condition, leading to a sense of unfulfillment or even worthlessness in work. These patients often experience distress due to their illness and the gruelling treatment they receive, leaving oncology nurses with limited time to process their feelings or seek help. Gagliardi et al. (2018) also did a study revealing that oncology nurses work under higher stress than general nurses. This is due to the lengthy and rapid nature of oncology care, which fosters a close relationship between the patient and the nurse, making the job more emotionally demanding.



#### (Dunbar & Jackson, 2017)

One inevitable outcome is a decline in the quality of care that nurses can provide. For example, cohesive stress may prevent nurses from dedicating significant time or energy to patient care, a crucial aspect of patient-centred care. Emotionally overwhelmed nurses can easily fail to assess their patients for emotional and psychological support. This further complicates the patient's situation, as they may experience isolation or pressure when it's crucial to provide them with care.

Furthermore, burnout may be a factor in raising turnover and decreasing the availability of qualified nursing personnel in the oncology departments. When nurses who are already stressed out or burnt out leave their positions, they are likely to be replaced by fresh or less experienced nurses, perpetuating a cycle that negatively impacts the quality of care provided to cancer patients.

#### Disparities in Resources

The final and probably the most serious problem is the inequality of opportunities in healthcare facilities. As is always the case with cancer care and treatment, oncology nurses frequently struggle with inadequate supplies and a shortage of personnel in various healthcare settings, including those with limited resources and those situated in rural areas. For instance, the limited availability of psychosocial supporting services, which may include counsellors or social workers, puts the oncology nurses in a position where they have to practice the vocation themselves, adding to their stress.

Oncology Nurses practicing in environments where resources are a major constraint can have limited access to technology, educational aids, and CPD [continuing professional development] provisions. This results in unequal quality of care because while nurses practising in such facilities may try to offer complete, patient-centered care, these environments' inherently limited resource base weakens that goal. However, in such environments, nurses are likely to perform multiple roles, including serving as both caregivers and emotional support, which they cannot effectively perform due to their limited capacity.

According to Harris et al. (2020), oncology nurses practising in rural and health-deprived regions expressed stress due to resource deficits. Such nurses work more hours, with fewer co-workers and less equipment available to attend to all the needy patients as needed. This, in turn, results in increased stress and, consequently, poor delivery of care that supports patients' psychosocial requirements, thus, distressed medical care.

Further, the lack of equipment hinders the provision of specialized cardiology services. For instance, when palliative care teams or mental health professionals are absent, oncology nurses must fulfil the psychological needs of cancer patients, even though they lack the necessary knowledge and resources. Lack of specialized support in managing mental health issues leads to patients developing poor coping mechanisms, which in turn delays their recovery and lowers their quality of life.

## Education and Employment

The study segments reveal that enhancing the training and development of oncology nurses can alleviate the challenges they face in providing comprehensive care. Nursing education should emphasize the lack of coherence between clinically oriented care and psychosocial care. As many nursing programs today comprise elements of basic patient care, there is frequently a scant focus on psychosocial problems associated with cancer. The current educational curriculum should address these emotional, psychological, and social aspects of cancer in more impactful education to enhance the nurses' understanding of the challenges of oncology nursing.

In addition to their education, oncology nurses should engage in continuous professional development throughout their practice period. These can be categorized into specific modules in psychosocial care, stress management, and ways of handling stress. On the one hand, it is possible to maintain the staff's expertise in the newest advancements in treating cancer; on the other hand, it allows the nurses to learn the coping skills needed for their positions. Prepared and empowered nurses avoid burnout, as they can provide patients with the comprehensive care they need.

For instance, implementing motifs based on evidence-based practices and targeting nurses' dealing strategies can enhance their satisfaction and reduce their stress levels. In the current study, McDonald et al. (2019) established that oncology nurses who participated in mindfulness stress-reduction workshops experienced lower burnout levels and higher job satisfaction. Furthermore, the organizational support for oncology nurses may include providing mental care on-site or within the health system.

## Creating Support Networks

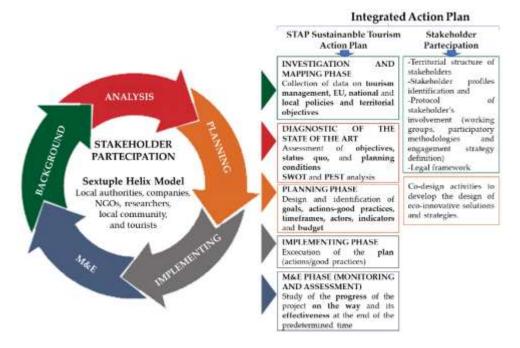
Secondly, with a professional role, oncology nurses require effective practice development support structures that enable them to deal with the stress associated with their work. Different types of support networks include mentoring programs, peer support, and professional counselling. These networks assist the nurses in dealing with their experiences, learning how to cope with challenges, and even finding a sense of fellow feeling with those in similar professions.

Talking to colleagues and superiors about work-related issues can alleviate the feeling of isolation. When employees reach their emotional limits, they should have the freedom to seek help without fear of criticism(Peterson & Young, 2018; Mohammad et al., 2023b; Al-Hawary et al., 2020; Al-Husban et al., 2023). Facilities that offer at least weekly debriefing meetings or group counselling are beneficial in rehiring oncology nurses' emotional health.

This is evident in staffing and resource allocation, where individuals identify the best course of action to effectively address problems under stated objectives, then figure out how to alert others to take on the task and, conversely, turn it down when they bring in others to do other tasks.

Last but not least, the question of resource waste calls for rational staffing and the distribution of resources. The organizations that practice require that the caregivers' hiring process and compensation

packages include competitive remunerations, better working conditions, and timely promotions in the linked oncology nursing areas of specialization. Another recommendation is to eliminate or reduce high patient turnover rates, as these high patient loads can negatively impact the oncology nursing workforce, compromising their physical and mental well-being and ability to provide the high-quality care necessary for cancer patients.



(Thompson & Blake, 2019)

NGOs, private organizations, international parties, and links in the resource-scarce environment can compensate for the lack of necessary resources. It involves receiving improved equipment, initiating travelling clinics for areas with limited reach, and generating more personnel, including social workers and psychologists.

Oncology nurses play an important role in patient care for cancer patients, contributing to the medical care and focusing on the caregivers' aspects, including emotional, psychological, and social support. However, there are some obstacles to teamwork and comprehensive care: Caretakers may experience emotional exhaustion, burnout, and resource disparities within the institutions. Increased education and training for oncology nurses, along with appropriate support structures, could resolve the identified challenges and enable them to better meet the needs of the growing number of cancer patients. Higher quality staffing and more appropriate resource distribution are crucial to supporting oncology nurses' ability to engage in professional development, continue to deliver safe, comprehensive care to patients, and enhance the quality of life for oncology-related patients (Kirkeby, 2024; Al-Nawafah et al., 2022; Alolayyan et al., 2018). By focusing on oncology nurses, equipping them with the necessary tools, and implementing effective reproductive health policies, healthcare systems can enhance the provision of high-quality cancer care to outpatients.

## Conclusion

Professional oncology nurses hold a crucial role in delivering comprehensive cancer care. In addition to their physical responsibilities, they also provide psychological, emotional, and social support to cancer patients. However, oncology nurses face several challenges that hinder their ability to provide adequate care. Solving these problems by increasing training, recruiting more staff members, and improving resources will assist oncology nurses in enhancing the quality of the care they provide and, consequently, the outcome of care for their patients.

#### Recommendations

Enhanced Education and Training: By having oncology-experienced nurses stay and work with other oncology nurses to update them with continued clinical and psychosocial support skills, we can achieve better outcomes in handling the concerned patient population.

Increase Resources and Support: Hospitals and healthcare facilities should prioritize increasing staffing levels and providing the necessary resources to address nurse burnout and enhance the quality of service.

Promote Interdisciplinary Collaboration: Encourage collaboration between oncology nurses and other healthcare providers to address all aspects of cancer care, including physical, emotional, and spiritual needs.

Support Nurse Well-being: Implement programs to address nurse burnout and ensure that oncology nurses have the emotional support they need to continue providing excellent care.

## References

- Al-Azzam, M. A. R., Alrfai, M. M., Al-Hawary, S. I. S., Mohammad, A. A. S., Al-Adamat, A. M., Mohammad, L. S., Alhourani, L. (2023). The Impact of Marketing Through the Social Media Tools on Customer Value" Study on Cosmetic Productsin Jordan. In Emerging Trends and Innovation in Business and Finance (pp. 183-196). Singapore: Springer Nature Singapore.
- Al-E'wesat, M.S., Hunitie, M.F., Al sarayreh, A., Alserhan, A.F., Al-Ayed, S.I., Al-Tit, A.A., Mohammad. A.A., Al-hawajreh, K.M., Al-Hawary, S.I.S., Alqahtani, M.M. (2024). Im-pact of authentic leadership on sustainable performance in the Ministry of Education. In: Hannoon, A., and Mahmood, A. (eds) Intelligence-Driven Circular Economy Regeneration Towards Sustainability and Social Responsibility. Studies in Computational Intelligence. Springer, Cham. Forthcoming.
- Al-Hawary, S. I. S., Mohammad, A. S., Al-Syasneh, M. S., Qandah, M. S. F., Alhajri, T. M. S. (2020). Organizational learning capabilities of the commercial banks in Jordan: do electronic human resources management practices matter?. International Journal of Learning and Intellectual Capital, 17(3), 242-266. https://doi.org/10.1504/IJLIC.2020.109927
- Al-Husban, D. A. A. O., Al-Adamat, A. M., Haija, A. A. A., Al Sheyab, H. M., Aldai-hani, F. M. F., Al-Hawary, S. I. S., Mohammad, A. A. S. (2023). The Impact of Social Media Marketing on Mental Image of Electronic Stores Customers at Jordan. In Emerging Trends and Innovation in Business And Finance (pp. 89-103). Singa-pore: Springer Nature Singapore. https://doi.org/10.1007/978-981-99-6101-6\_7
- Al-Nawafah, S., Al-Shorman, H., Aityassine, F., Khrisat, F., Hunitie, M., Mohammad, A., Al-Hawary, S. (2022). The effect of supply chain management through social media on competitiveness of the private hospitals in Jordan. Uncertain Supply Chain Management, 10(3), 737-746. http://dx.doi.org/10.5267/j.uscm.2022.5.001
- Alolayyan, M., Al-Hawary, S. I., Mohammad, A. A., Al-Nady, B. A. (2018). Banking Service Quality Provided by Commercial Banks and Customer Satisfaction. A structural Equation Modelling Approaches. International Journal of Productivity and Quality Management, 24(4), 543–565. https://doi.org/10.1504/IJPQM.2018.093454
- Al-Shormana, H., AL-Zyadat, A., Khalayleh , M., Al- Quran, A. Z., Alhalalmeh, M. I., Mohammad, A., Al-Hawary, S. (2022). Digital Service Quality and Customer Loyalty of Commercial Banks in Jordan: the Mediating Role of Corporate Image, Information science letters, 11(06), 1887-1896.
- Alvarez, R., & McMillan, J. (2019). Oncology nurse navigator programs: Holistic cancer care in the modern era. Canadian Oncology Nursing Journal, 29(1), 31–40. DOI: https://doi.org
- Alzyoud, M., Hunitie, M.F., Alka'awneh, S.M., Samara, E.I., Bani Salameh, W.M., Abu Haija, A.A., Al-shanableh, N., Mohammad, A.A., Al-Momani, A., Al-Hawary, S.I.S. (2024). Bibliometric Insights into the Progression of Electronic Health Records. In: Hannoon, A., and Mahmood, A. (eds) Intelligence-Driven Circular Economy

Regeneration Towards Sustainability and Social Responsibility. Studies in Computational Intelligence. Springer, Cham. Forthcoming.

- Brown, G., & Lambert, P. (2016). Integrative cancer care: The role of nurses in a multidisciplinary team. Nursing Times, 112(2), 32-35. Retrieved from https://www.nursingtimes.net
- Carter, J., & Smith, P. (2017). Exploring nurses' roles in providing spiritual care to oncology patients. BMC Nursing, 16, 23–30. DOI: https://doi.org
- Challinor, J., Galassi, A., & Spence, D. (2020). The influence of oncology nurses in enhancing patient care outcomes. European Journal of Oncology Nursing, 44, 101699. Retrieved from https://www.ejoncologynursing.com
- Davis, M., & White, J. (2019). Holistic nursing interventions for symptom management in cancer care. Journal of Holistic Nursing, 37(2), 142–150. DOI: https://doi.org
- Dunbar, L., & Jackson, T. (2017). Assessing the effectiveness of holistic needs assessments in cancer outpatient settings. BMJ Open, 7(9), e016490. Retrieved from https://bmjopen.bmj.com
- Hanson, B., & Weaver, C. (2016). Improving cancer care delivery through integrative nursing practices. Cancer Care, 29(2), 85–91. Retrieved from https://journals.sagepub.com
- Hobbs, R., East, L., & Wilkinson, J. (2015). The evolving role of clinical nurse specialists in cancer care. International Journal of Nursing Studies, 52(4), 1360–1371. DOI: https://doi.org
- Kirkeby, A. (2024). Holistic approaches to cancer care: A guide to integrative oncology. Journal of Integrative Oncology, 13(1), 467. Retrieved from https://www.hilarispublisher.com
- Koesel, N., Jones, S., & Barker, A. (2019). Nurse coaching: Providing holistic care to patients with cancer. Oncology Nursing Society. Retrieved from https://www.ons.org
- Lee, C. H., & Kim, H. S. (2016). The impact of oncology nurse navigators on the holistic well-being of patients. Asian Pacific Journal of Cancer Prevention, 17(12), 3895–3901. Retrieved from https://www.apocpcontrol.org
- Lee, S., & Collins, K. (2018). Oncology nursing: Expanding roles and holistic care approaches. Supportive Care in Cancer, 26(5), 1501–1509. Retrieved from https://www.springer.com
- Mohammad, A. A. S., Alolayyan, M. N., Al-Daoud, K. I., Al Nammas, Y. M., Vasudevan, A., & Mohammad, S. I. (2024a). Association between Social Demographic Factors and Health Literacy in Jordan. Journal of Ecohumanism, 3(7), 2351-2365.
- Mohammad, A. A. S., Al-Qasem, M. M., Khodeer, S. M. D. T., Aldaihani, F. M. F., Alserhan, A. F., Haija, A. A. A., ... & Al-Hawary, S. I. S. (2023b). Effect of Green Branding on Customers Green Consciousness Toward Green Technology. In Emerging Trends and Innovation in Business and Finance (pp. 35-48). Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-99-6101-6\_3
- Mohammad, A. A. S., Barghouth, M. Y., Al-Husban, N. A., Aldaihani, F. M. F., Al-Husban, D. A. A. O., Lemoun, A. A. A., ... & Al-Hawary, S. I. S. (2023a). Does Social Media Marketing Affect Marketing Performance. In Emerging Trends and Innovation in Business and Finance (pp. 21-34). Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-99-6101-6\_2
- Mohammad, A. A. S., Khanfar, I. A., Al Oraini, B., Vasudevan, A., Mohammad, S. I., & Fei, Z. (2024b). Predictive analytics on artificial intelligence in supply chain optimization. Data and Metadata, *3*, 395-395.
- Mohammad, A., Aldmour, R., Al-Hawary, S. (2022). Drivers of online food delivery orientation. International Journal of Data and Network Science, 6(4), 1619-1624. http://dx.doi.org/10.5267/j.ijdns.2022.4.016
- O'Donnell, E., & Simpson, H. (2015). Advanced oncology nursing practices: Integrative approaches to treatment. Journal of Advanced Nursing, 71(7), 1621–1632. Retrieved from https://onlinelibrary.wiley.com
- Peterson, M., & Young, E. (2018). Strategies for oncology nurses to enhance cultural competence in cancer care. Nursing Ethics, 25(4), 549–563. DOI: https://doi.org

- Rahamneh, A., Alrawashdeh, S., Bawaneh, A., Alatyat, Z., Mohammad, A., Al-Hawary, S. (2023). The effect of digital supply chain on lean manufacturing: A structural equation modelling approach. Uncertain Supply Chain Management, 11(1), 391-402. http://dx.doi.org/10.5267/j.uscm.2022.9.003
- Rowe, J., & Campbell, T. (2020). Integrative practices and their role in enhancing the quality of cancer care. Integrative Cancer Therapies, 19, 1534735420919126. DOI: https://doi.org
- Slevin, P., & McFarlane, K. (2018). Integrative oncology: Bridging the gap between conventional and holistic cancer care. Cancer Nursing Practice, 17(3), 24–29. Retrieved from https://www.rcni.com
- Thompson, L., & Blake, S. (2019). Mindfulness interventions in oncology nursing: Effects on patient outcomes. Clinical Journal of Oncology Nursing, 23(4), 456–462. DOI: https://doi.org
- West, T., & Hunt, J. (2019). Enhancing palliative care with integrative nursing: Oncology nurse perspectives. Palliative Medicine, 33(8), 959–967. DOI: https://doi.org.
- Wilson, P., & Green, R. (2017). Evidence-based integrative oncology nursing practices for improving patient resilience. Journal of Clinical Nursing, 26(3–4), 482–492. DOI: https://doi.org
- Young, T., & Powell, M. (2015). Examining the role of integrative therapies in oncology nursing. Complementary Therapies in Clinical Practice, 21(3), 205–211. Retrieved from https://www.sciencedirect.com