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Review

Cancer Palliative Care in Low-Resource Settings: Challenges and Innovations Regeneration

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Abstract

Cancer is the second leading cause of death worldwide after cardiovascular diseases. Cancer care represents a huge burden on healthcare systems, especially in low- and middle-income countries (LMICs). Palliative care integration into cancer care has shown improvement in the outcomes of patients and their families in high-resource settings, mitigating cancer care burden. However, the provision of palliative care in low-resource settings and LMICs is inadequate. The aim of this review is to discuss current challenges and innovations in cancer palliative care in low-resource settings. A comprehensive literature search was conducted in Medline (via PubMed), Google Scholar, Scopus, and Web of Science databases. The provision of palliative care for cancer patients has been associated with multiple benefits, including improved quality of life, patients' satisfaction, and better attitude toward diagnosis. However, its implementation in LMICs faces various challenges such as limited knowledge and awareness, inadequate finances, and systemic barriers. Furthermore, the provision of cancer palliative care in pediatrics and primary care settings is also inadequate. Multiple innovations were developed to improve the delivery of cancer palliative care, including PN-led initiatives, telemedicine services, medical and social care support, spiritual well-being programs, home care services, and community care services. Further research and sustainable implementation efforts are essential to optimize palliative care delivery and ensure equitable access in resource-limited settings.

Keywords: *Palliative Care, Cancer, Low-Resource Settings, Low- and Middle-Income Countries, LMICs, Challenges, Innovations*

Introduction

Cancer is a leading cause of death worldwide, with about 20 million newly diagnosed cases and 9.7 million deaths because of cancer in 2022 (1). It is estimated that 70% of these deaths occur in low-resource countries (2). These countries experience a high burden due to the increased incidence of life-threatening diseases, including cancers (3). It is estimated that two-thirds of global new cancer cases will be diagnosed in low- and middle-income countries (LMICs) by 2035 (4). These issues put huge stress on the healthcare systems of LMICs, exacerbated by their limited resources.

Palliative care integration into cancer care can reduce this burden by alleviating cancer-related symptoms and improving clinical outcomes. Palliative care is a specialized medical approach designed to relieve the symptoms and stress associated with serious illnesses, with the goal of improving quality of life for both patients and their families (5).

It includes a variety of services, such as managing physical symptoms like pain, nausea, and fatigue; implementing measures to enhance comfort; helping patients and families understand their treatment choices; guiding discussions around care goals and individual preferences; and coordinating with multidisciplinary healthcare teams to provide holistic support (6).

These services are delivered across multiple care settings, including hospitals, patients' homes, and specialized facilities (7, 8). Research indicates that early involvement of specialized PC can substantially improve patient satisfaction, emotional well-being, healthcare utilization, and even overall survival (9).

Although palliative care showed positive outcomes in high-resource settings, these results cannot be generalized in low-resource settings. Multiple challenges can impede the integration of cancer palliative care in LMICs, including the shortages in knowledge, finances, and healthcare professionals (10). Thus, strategies to improve cancer palliative care in low-resource settings are still lacking. The aim of this review is to explore current evidence discussing challenges and innovations of cancer palliative treatment in low-resource settings.

Methods

A comprehensive literature search was conducted in Medline (via PubMed), Scopus, and Web of Science databases up to May 26, 2025. Medical Subject Headings (MeSH) and relevant free-text keywords were used to identify synonyms. Boolean operators (AND’, OR’) were applied to combine search terms in alignment with guidance from the Cochrane Handbook for Systematic Reviews of Interventions. Key search terms included: “Palliative Care” OR “Cancer Palliative Care” OR “Cancer Care” AND “Low-Resource Setting” OR “Low- and Middle-Income Countries” OR “Low-Resource Countries” AND “Challenges” OR “Barriers” AND “Innovations” OR “Strategies” OR “Interventions”. Summaries and duplicates of the found studies were exported and removed by EndNoteX8. Any study that discusses current challenges and innovations in cancer palliative care in low-resource settings and published in peer-reviewed journals was included. All languages are included. Full-text articles, case series, and abstracts with the related topics are included. Case reports, comments, animal studies and letters were excluded.

Discussion

Cancer Palliative Care Challenges

A recent systematic review by Sadiq et al. explored the accessibility of palliative care for cancer patients in sub-Saharan Africa (SSA) (10). Cancer is a prevalent disease in this region, as it affects about 1.3 million new cases annually. It is also responsible for annual 800,000 deaths annually in this region (11). Palliative care can improve the quality of life of cancer patients; however, it remains inadequate in the SSA region due to its limited resources and the rising burden of life-threatening diseases. The study found limited access to palliative care for cancer patients in this region, with services available in only 9 of the 48 SSA countries (10).

They reported various challenges in providing palliative care in this region, including limited

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knowledge and awareness, inadequate financial resources, and systemic barriers. Limited knowledge and awareness encompassed a lack of information on how to access care (12, 13), inadequate understanding of palliative care services (14), cultural misconceptions (15), and stigma surrounding cancer and palliative care (14, 15), all of which contribute to late referrals to hospitals (15). Financial challenges included socioeconomic difficulties (16), poverty (17), lack of financial support (13), and insufficient funding (18). Systemic barriers involved limited healthcare facilities (18), a shortage of trained healthcare professionals (15), lack of medical supplies (14), and prolonged wait times for diagnosis and treatment (19). Additional challenges included long queues (17, 20), overcrowded hospitals (21), long travel distances (21), and dissatisfaction with payment systems (14).

Additionally, the study reported the patients' needs for accessing and receiving palliative care in SSA. These needs are mainly classified into psychological, physical, and socioeconomic needs. Examples of psychological needs include emotional care (22), religious guidance (23), spiritual support (13), and alleviation of distressing worry (20), depression, and stress (24). The patients' physical needs were related to improved pain control and symptom management, with many not receiving adequate relief despite the clear demand for effective medication and care (12, 20, 25). While the socioeconomic needs involved better access to care information (12, 19), the expectation for social support (14, 21), and improved healthcare services (19).

The integration of palliative care for cancer patients was associated with multiple benefits, including improved quality of life, patients' satisfaction (14, 15, 21), and better attitude towards diagnosis (17, 21, 23). Palliative care improved quality of life through reducing suffering and pain relief (15, 24); it also improved survival rate through implementing advanced care planning (25). However, the integration of palliative care for cancer patients in SSA and its benefits are still not comparable to high-income countries (26).

Another recent systematic review by Mosha et al. evaluated the strategies for implementing palliative care for cancer patients in LMICs (27). It also investigated the challenges that impede the provision of palliative care in LMICs. Multiple challenges were encountered in this systematic review, including the tendency of patients in these countries to seek conventional medicine or traditional healers (28), limited financial resources that affect patients' willingness and ability to participate in palliative care strategies, as mentioned by Soto-Perez-de-Celis et al. in Mexico (29), and the literacy about the importance of palliative care resulting in misunderstandings and inadequate patient support (30). Mental health issues are significant and commonly reported challenges associated with implementing palliative care services (31-33). The nausea and vomiting caused by cancer and its treatment can further worsen patients' mental health, limiting their engagement (34). Notably, younger patients always experience worse mental health, such as depression and anxiety, compared to older patients (31-33). The study also reported infrastructure challenges in LMICs, such as shortages in human resources, which can hinder the provision of palliative care for cancer patients (28, 32, 33, 35).

Provision of palliative care services can be affected by geographical disparities, especially in LMICs where resources are limited (36). Delays in service provision can be further increased by communication gaps between providers, patients, and their families (28). Furthermore, the lack of community volunteers and health extension workers also reduces patients' ability to connect with vital services (28). The negative societal views of palliative care, along with shortages in infrastructure and trained personnel, pose additional challenges (37).

Palliative Care in Pediatrics

Pediatric palliative care (PPC) is essential to improve the quality of life of children with life-threatening diseases, including cancers. Although multiple LMICs have implemented PPC programs in recent years, the provision of PPC in these resource-limited countries is still inadequate. A

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recent systematic review used Strengths, Weaknesses, Opportunities, and Threats (SWOT) framework to synthesize information about PPC program implementation in low-resource settings (38).

The most common strengths of PPC programs included the frequency of multidisciplinary and collaborative care provision within PPC programs and the integration of psychological and spiritual care within PPC programs. While the most common weaknesses and challenges were the training gaps, staff shortages, and funding limitations. The key opportunities for improving PPC programs focus on education, collaboration, and cultural alignment (38).

Palliative Care in Primary Care

Primary healthcare settings can offer a great opportunity to improve delivery of palliative care for cancer patients. Primary palliative care services can help fill the gap between need and delivery (39). However, there is a major gap in research evaluating the implementation of primary palliative care in LMICs. A recent systematic review by Peeler et al. found five typologies of primary palliative care in various LMICs: multidisciplinary teams in primary care clinics, multidisciplinary teams delivering home-based care, generalists in tertiary facilities, volunteers providing home care, and palliative care specialists working in primary care settings (40).

The study reported that these typologies can be impeded by multiple challenges, including lack of generalist training in palliative care (41, 42), unsustainable or non-government organization-dependent funding (43), policy focus on curative care models (44), cultural taboos around death (41), and mistrust or misunderstanding of primary palliative care by patients and providers (42, 45).

Strategies to improve primary palliative care should focus on achieving sustainable staffing and funding models in primary care settings, training staff to meet the growing demand for these services, conducting holistic assessments, ensuring goal-concordant care in LMICs, and enabling patients with life-limiting illnesses to remain at home (40).

Strategies and Interventions of Cancer Palliative Care

Multiple strategies and interventions to implement palliative care services in LMICs were introduced in recent years. These strategies include PN-led initiatives, telemedicine services, medical and social care support, spiritual well-being programs, home care services, and community care services (29, 31, 32, 36, 37, 46, 47). The PN-led initiative is a palliative care strategy provided by healthcare personnel to overcome the challenges mentioned. This initiative has shown positive results as it reduced the number of cancer patients and increased the completion of advance directives in Mexico (29). A community-home-based strategy was implemented in Bangladesh that involved training of patients' relatives and local volunteers. It also involved the delivery of palliative care at home by nurses (48).

Telemedicine is an emerging tool developed to improve communication between caregivers and healthcare providers, especially in emergencies (36, 46). It can improve access to limited resources, including palliative care services. Most caregivers showed a preference for web-based resources (49), even though these platforms pose challenges—particularly in conveying empathy through digital interactions (50). Barberia et al. highlighted the innovative use of virtual reality-based games to simulate end-of-life experiences, presenting a novel approach to helping caregivers better support patients in confronting death with greater comfort (51).

Additionally, several interventions to improve palliative care were evaluated, including massage, Wait-list Control (WLC) therapies, Bright White Light (BWL), Cancer and Living Meaningfully (CALM), and Dim Red Light (DRL) (30, 35, 52). Miladinia et al. evaluated the effectiveness of massage and found that massage can reduce cancer-related symptoms like fatigue, pain, and sleep disturbances (35). The integration of DRL and BWL in nursing palliative care programs was associated with reduced fatigue and better sleep quality (30). CALM and WLC therapies have been shown to be effective in enhancing the sense of life completion

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at the end of life in patients with metastatic breast cancer (52).

New Innovations in Cancer Palliative Care

Remote symptom monitoring is a relatively new approach developed to improve cancer care delivery, including palliative care, indeed. Remote symptom monitoring has been shown to improve cancer patients' and caregivers' outcomes in high-resource settings through connecting patient reports to clinician responses, leading to improved patient outcomes, such as earlier detection, better symptom management, reduced symptom severity, and lower levels of distress (53). However, evidence evaluating the effectiveness of this approach in LMICs is still lacking. Salako et al. evaluated the effectiveness of this remote symptom monitoring in improving cancer palliative care in the SSA region (54). They reported three case studies that used this approach in facilitating links between patients and generalist palliative care providers in a cancer center in Nigeria, specialist palliative care providers alongside local health workers in Tanzania, and generalist palliative care providers who support referral processes and coordinate care with clinical settings that offer specialist palliative care services in Uganda (54).

The study stated that remote symptom monitoring enables timely, patient- or caregiver-reported data to inform service quality and impact assessment. Such data are crucial for understanding the symptom and disease burden in SSA and evaluating how well services meet patient needs. Access to timely and practical health information is essential for achieving universal health coverage (55). However, further research is needed to address challenges such as integrating digital tools into routine care, sustaining platforms, developing suitable economic models, preventing health inequities, and fostering collaborative partnerships to support the growth of remote symptom monitoring in SSA.

Clinical pharmacist intervention in cancer pain management is another approach to improve cancer palliative care. A recent study evaluated this approach in low-resource settings in Nepal (56). The intervention group showed high satisfaction with clinical pharmacy services, especially in identifying drug-related queries. This approach also resulted in better clinical outcomes such as quality of life, pain intensity, medication adherence, and psychological well-being. These improvements likely helped alleviate challenges such as fatigue, insomnia, and financial strain, highlighting the holistic role clinical pharmacists play in oncology care (56).

These findings supported the feasibility of integrating clinical pharmacists into cancer palliative care programs. However, the study stated that these results were exploratory and preliminary, fostering the generation of more robust evidence.

Conclusion

Palliative care plays a vital role in alleviating the multifaceted burden of cancer in low-resource settings. Despite its proven benefits in improving quality of life, patient satisfaction, and survival, its integration remains limited due to systemic, cultural, and resource-related challenges. Recent innovations, such as community-based models, telemedicine, remote symptom monitoring, and clinical pharmacist interventions, demonstrate promising strategies to bridge care gaps. However, further research and sustainable implementation efforts are essential to optimize palliative care delivery and ensure equitable access in resource-limited settings.

Disclosures

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Ethics Statement

Non-applicable.

Consent for publications

Not applicable.

Data Availability

All data is provided within the manuscript.

Conflict of interest

The authors declare no competing interest.

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