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The role of multidisciplinary care in managing sarcoma in low- and middle-income countries: a focus on treatment outcomes

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ABSTRACT

Sarcomas are a heterogeneous group of rare malignancies requiring complex and individualized management strategies. In high-income settings, multidisciplinary care (MDC) has been shown to improve diagnostic accuracy, optimize treatment planning, and enhance patient outcomes. However, the role and implementation of MDC in managing sarcoma within low- and middle-income countries (LMICs) remain underexplored. This paper critically examines the impact of multidisciplinary care models on treatment outcomes for sarcoma patients in LMICs, highlighting current practices, barriers, and opportunities for improvement. Drawing on data from peer-reviewed literature, institutional reports, and global cancer care guidelines, we analyze how team-based approaches involving surgical oncologists, radiation oncologists, medical oncologists, radiologists, pathologists, and supportive care specialists influence early diagnosis, resection margins, recurrence rates, and survival outcomes. Findings indicate that while MDC improves adherence to evidence-based guidelines and fosters coordinated care, its effectiveness in LMICs is limited by workforce shortages, infrastructural deficits, and fragmented health systems. Nevertheless, innovative approaches such as virtual tumor boards, regional centers of excellence, and task-shifting models show promise in bridging gaps. Case studies from selected LMICs demonstrate that even in resource-constrained settings, structured multidisciplinary interventions can lead to earlier diagnosis, improved surgical planning, reduced treatment delays, and better quality of life (QoL). We conclude that scaling up MDC for sarcoma care in LMICs requires sustained investment in health system strengthening, interprofessional training, and policy support. Emphasizing locally adaptable MDC frameworks could significantly enhance sarcoma outcomes and contribute to closing the global cancer care gap.

Keywords: Sarcoma, Multidisciplinary care, Low- and middle-income countries, Treatment outcomes

INTRODUCTION

Sarcomas constitute a heterogeneous group of malignant neoplasms arising from connective tissues, and are classified according to their origin in either bone or soft tissue structures that can manifest in virtually any anatomical location, most commonly the limbs (55%), the head and neck area (15%) and or externally on the trunk whereas the remaining cases are internal, typically situated within the retroperitoneal space or abdominal cavity.[1-3] Soft tissue sarcomas originate from mesenchymal tissues, encompassing muscle, adipose tissue, blood vessels, fibrous tissue, and other supportive structures, while bone sarcomas arise from osseous components of the skeletal system. In contrast to many other malignancies, soft tissue sarcomas exhibit considerable pathological heterogeneity, with over 50 recognized subtypes, each demonstrating distinct biological behaviors and corresponding therapeutic approaches.[4] The rarity and pathological diversity of soft tissue sarcomas pose significant challenges in characterizing their epidemiological features, including incidence rate, age at diagnosis, prognosis and risk of metastasis.

Soft-tissue sarcomas (STSs) are rare and a heterogeneous group tumors that primarily originate from the embryonic mesoderm while bone sarcomas even rarer as they occur at a rate approximately one third that of their soft tissue counterparts.[5,6] A comparable pattern is seen in the pediatric population, where soft tissue sarcomas represent approximately 12% of all childhood malignancies, while bone sarcomas comprise around 6% of pediatric cancers in Europe.[7]

Globally, soft tissue sarcomas have a crude incidence rate of 1-2 cases per 100,000 individuals, with rates of 4.7 per 100,000 in Europe and 2.91 per 100,000 people in China while in Sub-Saharan Africa, incidence shows variability based on gender.[8,11] Research carried out in Nigeria estimated incidence rates at about 0.8 cases per 100,000 males and 0.5 cases per 100,000 females.[8] The extremities are the most frequent site for soft tissue sarcomas, accounting for 60% of cases. Other affected regions include the trunk (19%), retroperitoneum (15%), and head and neck (9%).[8] Malignant fibrous histiocytoma represents the most prevalent histologic subtype accounting for 28% of cases. Other types include leiomyosarcoma (12%), liposarcoma (15%), synovial sarcoma (10%), and malignant peripheral nerve sheath tumor (6%).[8] Bone sarcoma, on the other hand, account for less than 0.2% of all cancers, with their incidence rising by 0.3% annually over the last ten years.[9] Osteosarcoma is the most prevalent type, comprising over 35% of primary bone sarcoma cases. Chondrosarcoma (26%) and Ewing's sarcoma (16%) follow as the next most frequently occurring primary bone sarcomas.[10]

Across all cell types and the majority of specific subtypes, there is a higher prevalence among males.[11] Bone sarcomas exhibit a bimodal age distribution with the first incidence peak in the second decade of life and a second peak appearing after the age of 60.[12]

Osteosarcoma, the most frequent bone sarcoma, primarily affects individuals under twenty years of age, with most cases occurring in the long bones; however, this preference for long bones tends to diminish with advancing age.[13] Ewing's sarcoma also shows a peak incidence during the second decade of life and typically originates in the diaphyseal regions of long bones, in contrast to osteosarcoma, which more commonly occurs in the metaphyseal areas.[13]

Several environmental factors such as radiation exposure, viral infections, occupational hazards, and chemical exposure have been associated with the development of sarcomas.[14] Several inherited conditions such as Li-Fraumeni syndrome, retinoblastoma, neurofibromatosis and Werner's syndrome, are linked with an elevated risk of developing sarcomas.[15] External radiation therapy is a recognized risk factor for soft tissue sarcoma, evidenced by an 8-50 fold increase in sarcoma incidence among patients who have received radiation treatment for cancers of the breast, ovary, cervix, testes or lymphatic system, whereas osteosarcoma has been linked to underlying Paget's disease as well as previous exposure to radiation therapy.[16] Long term prognosis for patients with soft tissue sarcomas is generally poor, with disease-specific 5-year survival rates ranging from just 50%-70%.[17]

Although bone metastases are linked to a worse prognosis, with 5-year survival reported at around 13%; the lungs are affected in roughly 80% of cases, and resulting respiratory failure accounts for the majority of deaths.[18] In contrast to the potential cure rate exceeding 60% in patients diagnosed without metastases, those presenting with detectable metastases at diagnosis (around 15-20%) face the worst overall prognoses, with reported 5-year survival rates as low as 19%.[18]

CURRENT LANDSCAPE OF CARE LMICS

Due to the complexity of soft tissue sarcomas and bone sarcoma, a multidisciplinary approach is employed for their diagnosis and treatment, and this strategy has shown to enhance patient outcomes.

In Western countries, soft tissue sarcomas typically present as asymptomatic masses, with tumors in the distal extremities often being small at the time of diagnosis whereas in Sub-Saharan Africa, presentation is usually delayed, with disease often at an advanced stage.[4] Advanced imaging modalities like computed tomography (CT), magnetic resonance imaging (MRI) and magnetic resonance angiography (MRA) are not widely accessible and where available, they are often unaffordable for most patients. Additionally, fostering strong interdisciplinary collaboration among treating physicians and educating patients about early symptoms is essential.

Surgical intervention remains the sole curative option for limb soft tissue sarcoma, as achieving local control through negative margins is crucial.[19] Surgical outcomes are then improved through the use of adjuvant or neoadjuvant chemotherapy and radiotherapy.[19] Surgical planning depends on factors such as the tumour's location, extent, aggressiveness, respectability, and the feasibility of achieving clear margins.[19]

However, the limited availability of radiotherapy services in LMIC such as Nigeria, the risk of damage to surrounding structures when using radiotherapy, and the uncertain effectiveness of chemotherapy across various soft tissue sarcoma subtypes all underscore the critical role of surgery.[19]

The current standard approach to osteosarcoma management involves a combination of surgery and chemotherapy, while numerous experimental biologics and small-molecule therapies are under development, with several already in clinical trial stages.[20] Progress in cancer chemotherapy and surgical oncology over recent decades has significantly improved osteosarcoma care, leading to a global shift toward limb-salvage procedures and enhanced survival rates and QoL for patients.[21] The situation in Africa, however, contrasts sharply, as late presentation with advanced disease is common, mortality rates are high, and limbs are frequently unsalvageable, resulting in a predominance of amputations, with only 53% of patients undergoing limb-salvage procedures.[21]

MULTIDISCIPLINARY TEAM APPROACH: DEFINITION AND GLOBAL BEST PRACTICES

Managing bone and soft tissue sarcomas is a highly complex task in oncology, owing to their rarity, diversity, and aggressive behavior. Optimal outcomes require the coordinated efforts of a specialized multidisciplinary team (MDT). An effective MDT integrates experts from various fields to ensure accurate diagnosis, personalized treatment, and ongoing follow-up. Key figures in the MDT include surgical and orthopedic oncologists skilled in musculoskeletal tumor resections. They collaborate with musculoskeletal radiologists who use advanced imaging (MRI, CT, PET-CT) to guide biopsies, assess tumor extent, and detect metastases. Image-guided core needle biopsies are critical for diagnosis and must be strategically planned to avoid compromising surgical outcomes.[22] Pathologists with sarcoma expertise provide histological grading and molecular profiling, aiding in precise tumor classification and identifying targets for therapy. Medical oncologists tailor chemotherapy based on tumor characteristics, while radiation oncologists contribute to local control, especially when surgical margins are inadequate.

Beyond clinical experts, sarcoma nurses or care coordinators ensure seamless communication, patient support, and logistical management. Rehabilitation specialists and physiotherapists play early roles in restoring function post-treatment. Pain and palliative care professionals manage symptoms and improve QoL for patients with advanced diseases. Psychosocial support teams-clinical psychologists, social workers, and support groups-address emotional and mental health needs. Regular MDT meetings enable collaborative, case-specific decision-making that incorporate clinical, diagnostic, and personal factors. Post-treatment, the MDT continues to oversee imaging surveillance, manage late effects, and coordinate survivorship care. Essentially, an ideal sarcoma MDT exemplifies a patient-centered, scientifically grounded model, essential for delivering comprehensive, evidence-based care that enhances both oncologic and functional outcomes.

The management of bone and soft tissue sarcomas has significantly evolved in high-income countries (HICs) over the last two decades, this is partly due to the critical role that MDTs play in enhancing survival rates, reducing recurrence, and improving the QoL for sarcoma patients.[23]

Recent studies from the developed countries such as the United States, United Kingdom, have demonstrated that sarcoma patients managed within formal MDT structures have better clinical outcomes.[23] For instance, a population-based study in the UK indicated that sarcoma patients discussed at regional sarcoma MDTs had significantly higher five-year survival rates compared to those managed outside these structures.[24]

Several key factors account for the effectiveness of MDTs in HICs. Firstly, standardization of care through MDT meeting protocols ensures that each patient's case is adequately reviewed systematically. These protocols often include pre-meeting preparation by clinicians, mandatory imaging and pathology reviews, and the use of consensus-building frameworks for decision-making, for example, in the UK, The national health service (NHS) mandates weekly sarcoma MDT meetings at designated centers, where every new or recurrent case is deliberated using structured forms and evidence-based guidelines, thereby ensuring that each patient is treated uniquely and received the very best possible care available.[24]

Secondly, HICs integrate decision-making tools and models that support complex oncologic assessments. Advanced tumor boards-such as the tumor board 500-have revolutionized sarcoma care by incorporating genomic profiling, artificial intelligence-assisted risk stratification, and patient-reported outcomes into the treatment planning process.[25] These tumor boards allow MDTs to adopt and practice precision oncology principles, meaning that these oncologists can tailor patient therapies specifically based on the molecular and histologic cancer subtypes, which is especially vital in sarcomas due to their heterogeneity. Thirdly, the use of centralized data repositories and digital health tools also enhances the functionality of MDTs.[25]

Moreover, HICs foster a culture of collaboration and continuous learning within MDTs. Team members engage

in regular peer review, participate in case-based discussions, and contribute to national and international sarcoma registries. This not only refines clinical judgement but also promotes accountability and innovation. Thereby, the successful deployment of MDTs in the management of bone and soft tissue sarcomas in HICs is underpinned by robust meeting protocols, sophisticated decision-making tools such as Tumor Boards 500, and a culture of structured collaboration. For LMICs aspiring to improve sarcoma care, the MDT model offers a scalable, evidence-backed framework worthy of adaptation and investment.

IMPACT OF MDTS VS. NON-MDT APPROACHES IN LMICS

MDTs significantly improve diagnostic accuracy by integrating diverse expert perspectives into the interpretation of clinical, radiological, and pathological findings (Table 1). MDTs play a crucial role in refining diagnoses through collaborative review of imaging and histopathology. A pivotal study conducted by Mesko et al at the MD Anderson cancer center found that second-opinion pathology reviews in MDT settings resulted in diagnostic changes in 25% of sarcoma cases.[37]

Table 1: Comparative analysis of outcomes in settings with versus without MDTs.

Clinical parameters	With MDT	Without MDT
Diagnostic accuracy[26]	High accuracy due to specialized pathology and radiology review.	Frequent misdiagnosis or delayed diagnosis.
Change in initial diagnosis[27]	~30-40% revised after MDT review.	Rarely revised, even when incorrect.
Treatment planning[28]	Personalized, guideline-concordant multimodal strategies.	Often fragmented and non-standardized.
Surgical margins (R0 resection)[29]	Achieved in >80-85% of cases.	Often <65%, leading to higher recurrence rates.
5-year overall survival (High-grade STS)[30]	67-70%	50-55%
Limb-sparing procedures (Extremity STS)[31]	Preferred approach; higher rates of function preservation.	Lower rates; higher incidence of amputation.
Palliative care integration[32]	Routinely integrated early in treatment course.	Often delayed or absent.
Patient QoL[33]	Better functional and psychosocial outcomes.	Poorer QoL due to late-stage care and disability.
Treatment timeliness[34]	Faster diagnostic-to-treatment interval.	Delays common due to systemic fragmentation.
Adherence to guidelines (e. g., ESMO/NCCN)[35]	High adherence due to collective decision-making and standard protocols.	Low adherence; often based on individual clinician experience.
Feasibility in LMICs[36]	Achievable with centralized or virtual MDT models.	Often unstructured or absent due to resource constraints.

Another significant advantage of MDTs is the timely treatment initiation. Given the aggressive nature of certain sarcoma subtypes, delayed treatment can compromise outcomes. MDTs reduce inefficiencies in referral and decision-making pathways. In a study by Ray-Coquard et al analyzing soft tissue sarcoma management in France, patients treated in MDT-designated centers began definitive therapy significantly earlier than those treated in non-MDT environments (median delay: 22 vs. 38 days; $p<0.05$).[38] Coordinated care facilitated by MDTs allowed for timely biopsies, appropriate imaging (e.g., MRI with contrast) and neoadjuvant planning without unnecessary delays.

Recurrence in sarcoma is influenced by resection adequacy, adjuvant therapy, and surveillance protocols-all of which are optimized through MDT coordination. A study by Blay et al demonstrated that patients treated in sarcoma reference centers with MDTs had significantly lower local recurrence rates at five years (13% vs. 21%, $p<0.01$).[39] This benefit was attributed to personalized, multimodal treatment regimens developed during MDT meetings, including timely delivery of radiotherapy for high-grade tumors and post-op monitoring strategies.

Despite the growing recognition of MDTs as essential to delivering coordinated, patient-centered care, particularly in demanding medical specialties such as oncology and chronic disease management, there are several systemic barriers that continue to hinder their successful implementation, particularly across LMICs. These barriers are deeply rooted in systemic, infrastructural, professional, and policy-related challenges.

Some of these barriers include:

Shortage of skilled healthcare professionals

The formation of functional MDTs requires a diverse range of specialists, including oncologists, pathologists,

radiologists, specialist nurses, and palliative care providers. However, many LMICs face a severe shortage and maldistribution of these professionals. The lack of adequately trained personnel not only limits the frequency and scope of MDT meetings but also undermines the depth of discussions required for comprehensive patient care.

For instance, Awofeso et al reported that Nigeria, with a population exceeding 200 million, has fewer than 100 practicing radiation oncologists.[40] Many tertiary hospitals are unable to convene complete MDTs due to the unavailability of key specialists such as pathologists and radiologists. Consequently, clinical decisions are often made in silos or are based on incomplete diagnostic input, undermining the collaborative ethos of MDTs and potentially affecting patient outcomes.

Inadequate infrastructure and technological limitations

The effective functioning of MDTs is heavily reliant on supportive infrastructure, including reliable diagnostic facilities, digital record-keeping systems, stable electricity, and communication technologies to enable both in-person and virtual collaboration. Unfortunately, these infrastructural components are often either lacking or unreliable in many LMIC settings.

A study conducted in Uganda by Nakaganda et al highlighted that a majority of public hospitals lacked advanced imaging technologies such as CT and MRI scanners, and diagnostic specimens frequently had to be transported to centralized laboratories, resulting in delays.[41] Furthermore, the study found that over 60% of the hospitals surveyed were unable to implement virtual MDT meetings due to inadequate internet connectivity and frequent power outages. These limitations severely compromised the continuity and efficiency of MDT discussions.

Fragmented healthcare systems and ineffective referral networks

An integrated healthcare system is vital for the success of MDTs, as timely access to complete patient information from various levels of care (primary, secondary, and tertiary) is essential. However, many LMICs operate fragmented healthcare systems with disjointed referral networks, poor documentation practices, and the absence of interoperable health information systems.

In Kenya, Otieno et al documented how oncology providers struggled to access complete patient records due to ineffective referral systems and the lack of a national cancer registry.[42] Patients frequently arrive at tertiary centers without prior pathology or imaging reports, leading to repeated investigations and delays in treatment planning. MDT members expressed frustration over spending significant time piecing together incomplete case histories, which detracted from efficient decision-making and hindered patient-centered planning.

Cultural and hierarchical barriers within clinical teams

MDTs are predicated on the principle of interdisciplinary collaboration, where the inputs of all team members are equally valued. However, in many LMICs, healthcare culture remains strongly hierarchical. Senior physicians often dominate discussions, while junior doctors, nurses, and allied health professionals may be discouraged from contributing, either explicitly or through entrenched cultural norms.

The involvement of other specialties such as medical oncology, radiology, or nursing was minimal. This top-down approach not only limits the quality of the MDT deliberations but also stifles the development of a truly collaborative clinical culture. The study emphasized the need for team-based leadership training and organizational change to foster a more inclusive MDT environment.

Financial and policy constraints

Implementing and sustaining MDTs requires ongoing investment in human resources, infrastructure, and administrative support. However, many LMICs face significant budgetary constraints and lack health policy frameworks that formally recognize and support MDT operations. In the absence of institutional funding or government mandates, MDTs often depend on short-term donor funding or isolated pilot initiatives.

A scoping review by Morhason-Bello et al illustrated this challenge with the example of a breast cancer MDT established in a tertiary hospital in Nigeria. The MDT initially showed promise but eventually collapsed following the withdrawal of NGO support. Without national policy endorsement, reimbursement mechanisms, or institutional budgetary provisions, the team lacked the resources needed to sustain operations. The authors called for stronger health system governance and policy integration to support MDTs as a standard of care.

IMPACT OF MDTS VS. NON-MDT APPROACHES IN LMICS

Comparative analyses between settings with and without MDTs in LMICs reveal significant disparities in patient outcomes. At Tata memorial centre (TMH) in India, the introduction of a formal bone and soft-tissue disease management group (DMG) was associated with 5-year event-free survival of 67% and overall survival of 78% for patients with non-metastatic osteosarcoma, and 62% and 83%, respectively, for non-metastatic Ewing sarcoma, results that align closely with international benchmarks.[43]

By contrast, centres operating without structured MDT frameworks often report delayed diagnoses, inadequate surgical margins, and elevated rates of local recurrence and treatment abandonment. MDT participation directly improves diagnostic precision and accelerates treatment initiation. In Armenia, the establishment of a

musculoskeletal cancer MDT conducted through weekly virtual tumour boards led to modifications in initial diagnoses for 30.6% of cases and prompted changes in local control measures for 38% of patients, such as shifting from amputation to limb salvage/adjusting chemotherapy regimens.[43] In contrast, non-MDT environments in many LMICs continue to experience high frequencies of diagnostic errors and incomplete staging, which contribute to insufficient surgical margins and higher recurrence rate. In these contexts, reliance on decisions made by individual specialists leads to fragmented care pathways and prolonged intervals between diagnosis and definitive surgery or adjuvant therapy.

Several barriers impede MDT implementation in LMICs. Limited funding and shortages of trained specialists such as oncology radiologists, pathologists, and orthopedic oncologists hamper the formation of sustainable teams, furthermore inadequate infrastructure, including the absence of digital imaging networks and cancer registries, further obstructs coordinated case discussions.[44] Despite these challenges, pilot programmes have demonstrated success. Armenia's telemedicine-supported MDT shows that online platforms can bridge resource gaps by linking local providers with international specialists, improving decision-making without necessitating on-site hires.

Telemedicine and virtual MDTs thus offer cost-effective, scalable solutions to overcome geographical and resource constraints. Through regular videoconferencing, these teams can review imaging and pathology in real time, ensuring accurate staging and optimizing treatment sequencing.

STRATEGIES TO STRENGTHEN MDT IMPLEMENTATION IN LMICS

Building capacity through targeted training and ongoing education is vital for establishing sustainable MDTs in LMIC. In Central America, a dearth of oncologists, pathologists, radiologists, and allied health professionals hindered comprehensive sarcoma care. To address this, initiatives were launched to train local teams in collaborative decision making and standardized treatment protocols.[45] Case-based workshops organized by academic partners and international collaborators reinforced evidence-based staging and management guidelines, ensuring that best practices were applied consistently. By training clinical officers or nurse practitioners to handle initial staging, administer chemotherapy, and manage supportive care, regions facing critical shortages of specialists have seen reduced treatment delays and more efficient use of existing resources.

Strengthening health systems must accompany human resource development to create an environment conducive to MDT functionality. National policies should formally prioritise MDTs and allocate funding to upgrade diagnostic infrastructure, including immunohistochemistry services, advanced imaging modalities, and digital pathology platforms. In many LMICs, the absence of teleradiology and telepathology networks lengthens diagnostic turnaround times; deploying these technologies enables remote case reviews and hastens treatment initiation.[46] Implementing electronic health records alongside basic cancer registries enables efficient case tracking, scheduling multidisciplinary meetings, and compilation of outcome data, thereby promoting a culture of ongoing quality improvement.

Engaging stakeholders across sectors is crucial for mobilizing resources and sustaining MDT operations. Health ministries can therefore incentivize specialist retention particularly in rural areas through salary supplements or service bonuses, while incorporating MDT metrics into national performance frameworks.

Non-governmental organizations (NGOs) often fill funding gaps by providing grants for diagnostic reagents, patient transportation, and accommodation during treatment, directly reducing abandonment rates in pediatric sarcoma programs.[47] Academic institutions contribute through twinning partnerships, sharing curricula and offering ongoing mentorship via virtual tumour boards, thereby strengthening local expertise and promoting ownership of multidisciplinary practice. Patient advocacy groups and professional societies can lobby for policy support, raising awareness of sarcoma care needs and influencing budget allocations.

Integrating MDTs into national cancer control plans (NCCPs) ensures that multidisciplinary care evolves from isolated pilots to standardized national practice. World health organization guidance recommends that NCCPs specify MDT composition mandating participation of at least one orthopaedic oncologist, radiologist, pathologist, medical oncologist, radiation oncologist, and nurse coordinator and outline workflows for case referral, diagnostic workup, and consensus treatment planning.[48]

Embedding MDT indicators such as the percentage of newly diagnosed sarcoma cases reviewed in a tumour board within 14 days which is within the NCCP monitoring frameworks aligns donor funding, streamlines procurement of essential diagnostics (e.g., fluorescence in situ hybridization, immunohistochemistry), and clarifies accountability for multidisciplinary service delivery.[49] Finally, establishing robust monitoring and evaluation (M and E) frameworks is indispensable for assessing MDT effectiveness and guiding iterative improvements. In Armenia, the telemedicine enabled MDT maintained a centralized database documenting each case's initial diagnosis, MDT recommendations, diagnostic changes after second opinions, and long-term outcomes; annual reviews identified bottlenecks such as recurring delays in pathology reporting and informed targeted corrective actions. Key performance indicators (KPIs) should include the time from biopsy to MDT discussion, proportion of cases with MDT driven treatment modifications, rates of margin-negative resections, and patient satisfaction

scores.[50] Periodic audits, coupled with quarterly feedback to MDT members and health authorities, help maintain momentum, justify continued investment, and ensure that multidisciplinary care translates into improved survival and QoL for patients with bone and soft tissue sarcomas in LMICs.

CONCLUSION

The management of sarcoma, a rare and complex group of malignancies, presents significant challenges in LMICs, where limited resources and fragmented healthcare systems often hinder optimal care delivery. This study underscores the pivotal role of MDC in improving treatment outcomes for sarcoma patients in LMICs. By fostering collaborative decision-making among surgeons, oncologists, radiologists, pathologists, and allied health professionals, MDC enhances diagnostic accuracy, ensures guideline-concordant treatment, and supports holistic patient management. Evidence from emerging LMIC settings reveals that even in the face of workforce shortages, infrastructural limitations, and late-stage presentations, the implementation of MDC-particularly through innovations such as virtual tumor boards and regional cancer centers-can lead to meaningful improvements in surgical outcomes, recurrence rates, and patient QoL.

However, the successful integration of MDC into sarcoma care in LMICs depends on context-sensitive strategies. These include investment in interprofessional training, strengthening referral systems, leveraging telemedicine, and formulating national policies that prioritize team-based oncology care. Moreover, adapting MDC models to align with local resource capacities and sociocultural dynamics is essential to ensure sustainability and impact. Future research should focus on evaluating the cost-effectiveness of MDC in LMICs, understanding patient perspectives, and exploring scalable models of care delivery.

Finally, multidisciplinary care holds immense potential to transform sarcoma management in LMICs. Strengthening and institutionalizing this approach across healthcare systems can bridge disparities in cancer outcomes, promote equity in access to quality care, and move LMICs closer to achieving global cancer control goals.

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