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Mapping Existing Treatment Practices and Management of Prostate Cancer in Low and Middle-Income Countries (LMICs): A Scoping Review

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ABSTRACT

Background: Prostate cancer has been ranked as the second most common cancer and sixth leading cause of death among men globally (Sung et al., (2021), with broader implications in Low-and Middle-Income Countries (LMICs) across Sub-Saharan Africa. This scoping review aimed at mapping the existing studies on Prostate Cancer (PC) diagnosis, treatment, and management in LMICs.
O**bjective:** This scoping review explored existing studies on Prostate Cancer (PC) diagnosis, treatment, and management in LMICs.
Method: The review followed the Joanna Briggs Institute's (JBI) methodology for Scoping reviews; the search strategy yielded 1032 peer-reviewed articles that were published between 2015 and 2024. Out of 1032 articles, only 8 met the inclusion criteria and were thus included in the final review.
Results: The review found that barriers that influence prostate cancer are diagnostic delays, fragmented care systems, limited treatment accessibility, and psychosocial domains.
Conclusions: This scoping review highlighted the significant burden of prostate cancer in low and middle-income countries.
Unique contribution: This scoping review exclusively focused on LMCs settings highlights early detection, treatment, and management of prostate cancer in LMICs, aiming to fill these gaps subsequently.
Key recommendations: There is a need for rapid interventions that are directed to early diagnosis, treatment, and management of prostate cancer in LMICs.

Keywords: Prostate Cancer, Treatment and Management Strategies, LMICs, Healthcare System Influence

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INTRODUCTION

Prostate cancer is one of the commonest malignancies in men and a leading cause of morbidity and mortality from cancer. Although, a slow-growing cancer in most patients, it is a major cause of morbidity in adult males of African descent (Iheanacho, 2025). Despite the reliance on Western guidelines for managing prostate cancer (PC), there are wide variations and gaps in treatment among developing countries such as the Middle East and African (MEA) region. A multidisciplinary team of experts from the MEA region engaged in a comprehensive discussion to identify the real- world challenges in diagnostics and treatment of Metastatic Castration Resistant Prostate Cancer (mCRPC). The discussion provided insights into the urgent unmet needs (Bazarbashi et al., 2022). Prostate cancer (PCa) ranks as the second most diagnosed malignancy and a leading cause of cancer-related mortality among men worldwide (Wang et al., 2022). With 1.4 million new cases and 375,304 deaths documented globally in 2020 (Sung et al., 2022).

Although PCa is a global problem, it is a rising burden in Sub-Saharan Africa and has become the number one cancer in Nigerian men, constituting about 11-15.1% of all male cancers in the Nigerian population (Iheanacho et al., 2025). The International Agency for Research on Cancer (IARC) GLOBOCAN program estimates that Prostate Cancer is a growing problem in Africa (Makau-Barasa et al., 2022). According to Makau-Barasa et al (2022), Prostate cancer mortality is predicted to nearly double by 2040 in Sub-Saharan Africa (SSA) due to the lack of prostate cancer screening in SSA, which has led to advanced stage diagnosis, treatment, and poor survival among prostate cancer patients. Marquez and Farrington (2013) further reported that in North Africa, NCDs are responsible for over three-quarters of all mortalities, and nearly half the population of sub-Saharan Africa already suffers from hypertension and prostate cancer (Naik & Kaneda, 2015). In addition, it has been reported that incidences of PCa have risen faster in LMICs compared to the High-Income Countries (HICs) (WHO, 2016a).

Many of the previous reviews on PCa mainly focus on incidences and causative factors and not on diagnosis, treatment, and management in Low-Middle Income Countries (LMICs), especially in Africa, Asia and South America regions. This scoping review provides a comprehensive overview of the detection, treatment, and management strategies in LMICs and the influence of healthcare systems. Seraphin et al (2021) reported that although prostate cancer (PCa) is the most diagnosed cancer among men in sub-Saharan Africa (SSA), little is known about its management, survival, and the large proportion of patients with PCa. Consequently, early staging and treatment are delayed, which results in unfavourable survival. Seraphin (2021) further emphasizes the need to improve the diagnostic process and access to care in SSA to mitigate the heavy burden of the disease in the region. Therefore, this scoping review aimed at mapping the existing studies on Prostate Cancer (PC) diagnosis, treatment, and management in LMICs. Objective of this study is to map existing data on Prostate Cancer (PC) diagnosis, treatment and management in Low-Middle Income Countries (LMICs).

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METHOD

The review followed Joanna Briggs Institute's (JBI) methodology for Scoping reviews, a methodological framework for conducting a scoping study (Arksey & O'Malley, 2005). The search was conducted on PubMed, MEDLINE, and Google Scholar. The protocol for this scoping review was registered on Open Science Framework (OSF) https://osf.io/95e3f/overview.

Inclusion criteria

This review included published peer-reviewed articles on prostate cancer treatment and management in LMICs, and in accordance with the guidance outlined in the JBI manual (Arksey & O'Malley, 2005). Those articles focused on prostate cancer treatment and management in Low-and Middle-Income Countries (LMICs). Other scoping review has no language as a limitation (Veroniki et al., 2025). However, for this review, only peer-reviewed articles that were published in English between January 2015 and December 2024 were considered for review.

Exclusion criteria

Articles outside the set inclusion criteria and published prior to 2015 and not written in the English language were excluded from this review. This is in line with Peters et al. (2020), who stated that scoping reviews provide up-to-date guidance that can be used by authors when conducting a scoping review.

Search Strategy

Table 1 below illustrates the terms/keywords used during the search as well as the results according to database. Rayyan AI software was used in screening the eligibility of articles (Mak & Thomas, 2022).

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Table 1: Database search results

DATABASES	SEARCH TERMS USED	TOTAL RESULTS
PUBMED	("Prostatic Neoplasms"[MeSH] OR "Prostate Cancer") AND ("Treatment" OR "Management" OR "Therapy") AND ("Low-income countries"[MeSH] OR "Middle-income countries" OR "LMICs") AND ("Healthcare System" OR "Health Services Accessibility" OR "Health Policy") AND ("2009/01/01"[Date - Publication]: "2024/12/31"[Date - Publication])	173
MEDLINE	(Prostatic Neoplasms/ OR Prostate Cancer.tw.) AND (Treatment/ OR Management.tw.) AND (Developing Countries/ OR LMICs.tw.)	216
GOOGLE SCHOLAR	"Prostate cancer treatment" OR "prostate cancer management" OR "prostatic neoplasms therapy" AND ("low-income countries" OR "middle-income countries" OR LMICs OR "developing countries") AND ("healthcare system" OR "health services" OR "health policy" OR "universal health coverage") AND (surgery OR radiotherapy OR "hormone therapy" OR chemotherapy OR "palliative care")	83
	Additional articles identified through hand search	560
TOTAL		1032

Data Extraction and charting

The keywords prostatic neoplasms, as indicated in the search strategy and outlined in Table 1, were selected, analysed, and uploaded to Rayyan AI for duplication detection. The filter process continued throughout the screening, and only those articles that met the criteria were selected. The next step was blind review screening of eligible articles, followed by a full-text screening of all articles included in the review. Included articles in the review were as summarised in Table 2 below, with details as follows: Author, year of publication, country in which the study was conducted, aim of the study, method and design, population and sample size, as well as key findings regarding detection, treatment, and management of prostate cancer.

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Data analysis

The use of quantitative content analysis and the inductive method for scoping reviews was utilised as per Pollock et al. (2023). Familiarisation, open coding, and categorisation of extracted data were the steps included in this review.

RESULTS

The customised search resulted in 1032 articles; the system filtered the records and excluded 923 due to duplication. Sixty (60) studies were screened for full-text assessment, 36 were excluded after full-text screening, 24 articles were assessed for eligibility, 16 were excluded as they did not meet the criteria, and only eight were included in the final review. Figure 1 below depicts the PRISMA ScR flow.

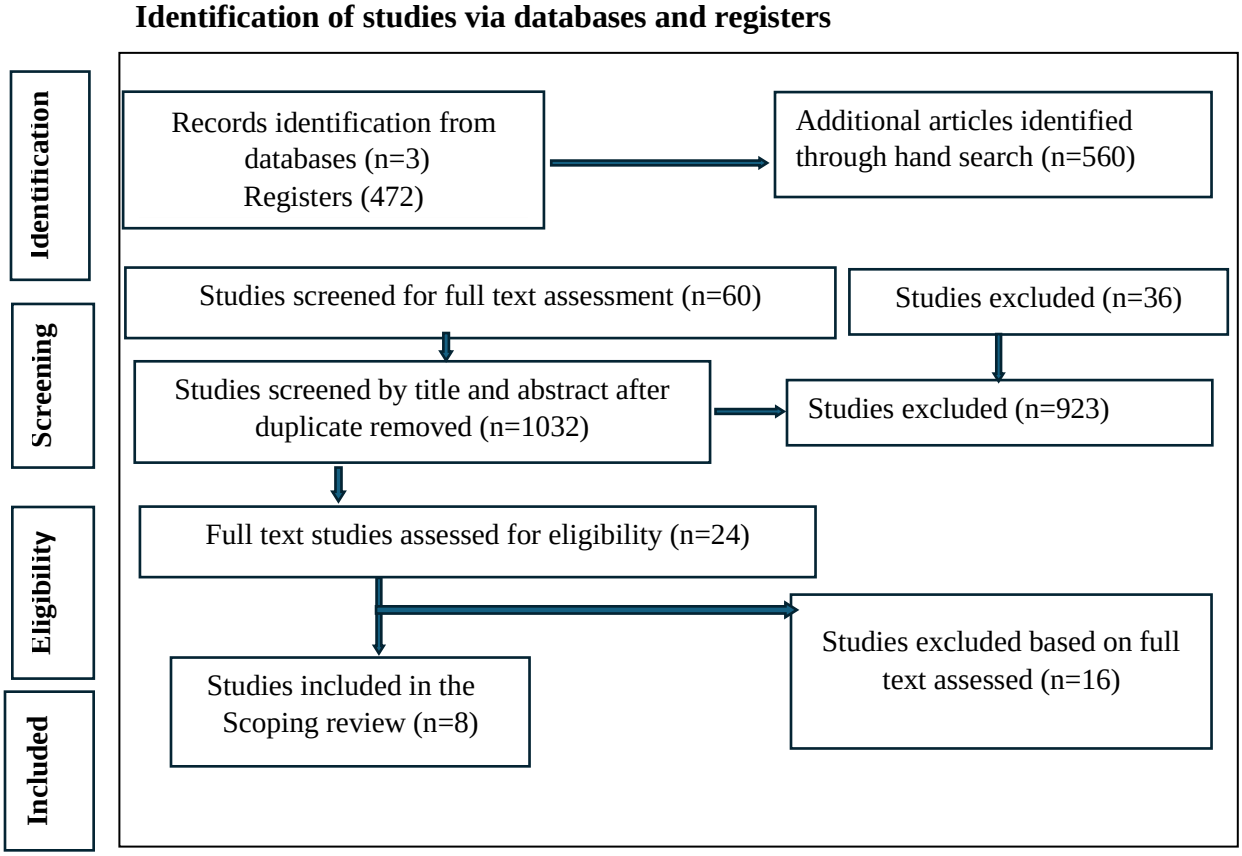

Figure 1: PRISMA ScR depicting results from the database

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Characteristics of Reviewed Studies

Eight different studies were reviewed, employing varied study designs. Three (n=3) of the studies used a qualitative approach (Saad et al., 2017; Bazarbashi et al., 2022; Tolani et al., 2024), four (n=4) utilised a quantitative approach (Echevarria et al., 2017; Seraphin et al., 2021; Irusen et al., 2022; Halaseh et al., 2023), and one (n=1) utilised a mixed-method design (Makau-Barasa et al., 2022). Most of the studies consisted of barrier on prostate cancer detection, treatment and management (Tolani et al.,2024; Echevarria et al.,2017), prostate cancer in LMICs (Halaseh et al.,2023), challenges in diagnostics and treatment of metastatic castration- resistant prostate cancer (Bazarbashi et al.,2022), the gaps between ideal-world consensus and actual clinical practice (Saad et al., 2017), survival outcomes between treated and untreated patients (Seraphin et al., 2021), the development of prostate cancer screening guidelines tailored to SSA health systems (Makau-Barasa et al., 2022), relationship between decisional conflict, disease knowledge, and treatment (Irusen et al., 2022).

Study Trends and Distribution

Most of the reviewed studies lacked early detection, treatment, and management of prostate cancer. This scoping review found articles that identified barriers that influenced prostate cancer detection and management originating from Nigeria (Tolani et al., 2024) and Puerto Rico (Echevarria et al.,2017). Bazarbashi et al. (2022) explored the challenges in the diagnostics and treatment of metastatic castration- resistant prostate cancer (mCRPC) in the Middle East and African (MEA) region. Another study identified gaps and informed the development of prostate cancer screening guidelines tailored to SSA health systems (Makau-Barasa et al.,2022). Seraphin et al. (2021) compare survival outcomes between treated and untreated prostate cancer patients. Another study by Halaseh et al. (2023) examined clinical trials on prostate cancer in LMICs. Table 2 below shows details of the reviewed articles.

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Table 2a: Characteristics of reviewed studies

Reference, Author	Publication years	Country/setting	Aim	Methodology	Study design	Population and sample size	Key findings/outcome
Tolani et al	2024	Nigeria	To identify barriers and facilitators that influence prostate cancer detection and management in Nigeria	Focus group discussions (FGD) (Tolani et al.,2024).	Qualitative study design	Purposive sample of prostate cancer patients (n = 19), caregivers (n = 15), and healthcare providers (n = 18)	• High mortality despite curability. • Treatment abandonment due to fear and misinformation • Inconsistent guideline use. • Financial constraints and poor insurance coverage. • Religious institutions as potential awareness platforms.
Halaseh et al	2023	LMICs	To examine clinical trials on prostate cancer in LMICs	Clinical trials on prostate cancer in LMICs, including the scope. (Halaseh et al., 2023).	A descriptive study design	A total of 3,455 clinical trials for prostate cancer has been conducted globally, with 542 (15.68%) conducted in LMICs	• Only 15.7% of global trials were conducted in LMICs. • Limited scope and infrastructure. • Novel therapies are rarely tested. • Regulatory and human resource barriers. • Need for regional collaboration and context-sensitive trial design.

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Table 2b: Characteristics of reviewed studies (cont'd)

Bazarbashi et al	2022	Saudi Arabia	To identify current challenges in the diagnostics and treatment of metastatic castration-resistant PCa (mCRPC) in the Middle East African (MEA) region	The panel aimed to gain insights into the real- world treatment practices in the MEA region in the mCRPC domain (Bazarbashi et al., 2022)	A multidisciplinary meeting with experts from different countries across the MEA region was convened	A multidisciplinary panel of 8 members with expertise in the diagnosis and management of PCa across the MEA region (Saudi Arabia [n =2], Egypt [n =2], Morocco [n=1], United Arab Emirates [n = 1], Lebanon [n =1], and Turkey [n =1)	• Late-stage diagnosis is common. • PSA/DRE inconsistently used. • Fragmented care and policy gaps. • Cost and infrastructure disparities. • Emphasis on tailored national policies
Saad et al.,	2017	Malaysian	To identify gaps between the ideal-world consensus and actual clinical practice in Malaysia.	Consensus Conference Format: Experts voted on 101 questions across six domains of advanced prostate cancer management. (Saad et al., 2017)	Consensus-based observational study	Not patient-based; expert panel size = 30 participants	• Discrepancy between ideal and real-world practices. • Drug access and cost are major barriers. • Public-private divide in treatment availability. • Need for contextualized national guidelines
Echevarria et al	2017	Puerto Rico	To identify barriers to implementation, including infrastructure, staffing, and insurance challenges.	Retrospective chart review of patients treated with LDR brachytherapy (Echevarria et al., 2017)	Retrospective observational cohort study	191	• Effective and cost-efficient treatment in resource-limited settings. • Infrastructure and insurance challenges. • High transferability to LMICs. • Multidisciplinary care is feasible with local capacity-building

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Table 2c: Characteristics of reviewed studies (cont'd)

Seraphin et al	2021	10 Sub-Saharan Africa (SSA)	To compare survival outcomes between treated and untreated patients	Random sampling of registry data from 11 population-based cancer registries across 10 SSA countries (Seraphin et al., 2021)	Population-based observational registry study	693 patients with confirmed prostate cancer	• 37.3% diagnosed at metastatic stage. • CDT underutilized. • Poor diagnostic workup rates. • CDT improves survival. • Urgent need for standardized protocols and equitable access
Makau-Barasa et al	2022	Sub-Saharan Africa (SSA)	To identify gaps and inform the development of prostate cancer screening guidelines tailored to SSA health systems	Mixed-methods situational analysis (Makau-Barasa et al., 2022)	An electronic survey was administered to clinicians in SSA (Makau-Barasa et al., 2022). Questions covered availability, usage, and perceptions of screening, diagnostic, and treatment procedures	• The study surveyed clinicians across multiple Sub-Saharan African countries, including: Oncologists Urologists Pathologists Radiation oncologists Nurses involved in prostate cancer care	• PSA/DRE is widely used but inconsistently applied. • ADT is more accessible than advanced therapies. • Fragmented care and policy gaps. • Emphasizes the need for evidence-based national guidelines

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Iruse n et al	2022	Sou th Afri ca	-To assess the relationship between decisional conflict, disease knowledge, and treatment modality in South African men with prostate cancer. -To determine whether knowledge deficits or treatment pathways are more predictive of patient uncertainty and dissatisfaction at the point of care.	Prospective observation al design, collecting baseline data before treatment initiation. (Irusen et al., 2022)	Baseline results from Longitudina l Prospective Observation al Study	83 participants of a larger prospective longitudinal observational	• Decisional conflict linked to treatment modality, not knowledge. • Need for decision support tools. • Structural and relational interventions required. • Highlights psychosocial dimensions of care in LMICs

Additionally, results are presented in accordance with themes generated during the review analysis stage. Three themes emerged, namely, *early diagnostic and treatment, management of prostate cancer, and the psychosocial domain.*

Theme 1: Early Diagnostic and Treatment

The need for early detection and timely treatment of prostate cancer in Low-Middle-Income Countries (LMICs) has significant challenges, such as late-stage diagnosis, with 37.3% of cases in Sub-Saharan Africa diagnosed at metastatic stage, as reported by Seraphinah et al. (2021). Inconsistent use of screening tools like PSA and DRE across the region results in limiting early detection of prostate cancer (Bazarbashi et al.,2022; Makau-Barasa et al.,2022). In Nigeria, Tolani et al. (2024) reported treatment abandonment due to fear, misinformation, and financial constraints. Echevarria et al. (2017) highlighted infrastructure and insurance limitations that hinder access to effective therapies, demonstrating the feasibility of LDR brachytherapy in resource-limited settings. Halaseh et al. (2023) outline that clinical trial representation is very low in LMICs, with only 15.7% of global prostate cancer trials conducted in the region, restricting access to novel therapies.

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Theme 2: Management of Prostate Cancer

The management of PCa varies widely across LMICs and is often fragmented due to guideline discrepancies between ideal and real-world practices. This was observed in the study carried out in Malaysia, where drug access and public-private divides care delivery (Saad et al., 2017). Bazarbashi et al. (2022) highlighted the lack of multidisciplinary collaboration. A survey that was done by Makau-Barasa et al. (2022) emphasises the need for tailored national policies. Seraphin et al. (2021) reported that curative disease treatment (CDT) improves survival but remains underutilised in Sub-Saharan Africa. Makau-Barasa et al. (2022) further emphasised that advanced therapies are less accessible than hormonal therapies like ADT, which are more commonly used but inconsistently available. Halaseh et al. (2023) suggested that regional collaboration and context-sensitive trial design are needed to overcome regulatory and human resources barriers.

Theme 3: Psychosocial domain

Psychosocial factors significantly influence patients' experiences and treatment decisions. Irusen et al. (2022) suggested that structural and relational support are critical as decisional conflict is more closely linked to treatment modality than to disease knowledge. Fear and misinformation have been reported to contribute to treatment abandonment and delay in seeking health care by PCa patients (Tolani et al.,2024; Nwafor et al., 2020). Irusen et al. (2022) further reported that religious institutions and community platforms were identified as potential avenues for awareness and psychosocial support.

DISCUSSION

Prostate cancer management in Low-and Middle-Income Countries (LMICs) faces multifaceted challenges, as evidenced by an increasing body of literature. The reviewed articles of 542 clinical trials revealed that there are limited scope and infrastructure, inconsistent testing of novel therapies, and persistent regulatory as well as human resources barriers. The scoping review results indicate that there is an urgent need for regional collaboration and context-sensitive trial designs to improve clinical research outcomes and relevance in LMICs settings. Saad et al. (2017); in Malaysia, identified a significant gap between ideal consensus-based practices and real-world clinical implementation. Drug access limitations, cost barriers, and a pronounced public-private division in treatment availability were observed in their study. These inconsistencies point to the necessity of developing a contextualised national policy guideline that reflects local healthcare service realities and resource constraints. These finding are aligned with those of Makau-Barasa et al. (2022), who reported inconsistent implementation of PSA and DRE protocol across Sub-Sahara Africa (SSA) including accessibility to androgen deprivation therapy (ADT) compared to advanced treatment modality. Their studies underscored the fragmented of prostate cancer management and advocate for development of evidence based national guidelines tailored to SSA health systems to address both clinical as well as at the policy level deficiencies. Similarly, Bazarbashi et al. (2022) co nved a multidisciplinary panel across the Middle East and African (MEA) region to evaluate treatment practices for metastatic castration resistance prostate cancer (mCRPC). Their finding revealed significant disparities in oncology infrastructure and predominance of late-stage diagnoses which reflecting unique system challenges faced by individual countries within MEA region. These regional

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observations reinforce the need for context sensitive strategies that address diagnostic delay, treatment inequities and broader structural limitation within LMICs health care systems.

Echevarria et al. (2017) carried out a study in Puerto Rico that demonstrated that low-dose rate (LDR) brachytherapy is both practical and cost-efficient in resource-limited settings. Nevertheless, infrastructure and insurance barriers remain significant obstacles. Their study supports the feasibility of multidisciplinary healthcare models through local capacity building initiatives applicable to LMICs. Data that were analysed by Seraphin et al. (2021) from 10 SSA countries found that 37.3% of patients were diagnosed at metastatic stages with poor diagnostic workup and underutilisation of chemo dynamic therapy (CDT). Their findings advocate for standardised treatment protocols and equitable access to improve survival outcomes. Finally, Irusen et al. (2022) explored psychosocial dimensions of prostate cancer care in South Africa, linking decisional conflict more strongly to treatment modality than to disease knowledge. This prospective study highlights the need for decision support tools and structural interventions that address relational and emotional aspects of care.

The scoping review results reveal systematic gaps in prostate cancer across LMICs, including infrastructure limitations, policy fragmentation, and disparities in treatment access. Future research must prioritise context-sensitive interventions, regional collaboration, and the integration of psychosocial support to enhance patient-centred health care. Addressing these challenges holistically will be critical to improving outcomes and equity in prostate cancer management globally.

CONCLUSION

Based on the results, the study concluded that delayed challenges and emerging opportunities in prostate cancer management across LMICs with implications for health care systems, policy and patient outcomes. Systems gaps in early diagnosis, treatment access and psychosocial support reflecting broader structural inquiries including inconsistent screening protocols, limited infrastructure and pervasive misinformation. Economic constraints and fragmented health care further restrict access advance treatment therapies, while psychosocial factors such as fear, stigma and decisional conflict which undermining patient engagement and satisfaction. Furthermore, fostering regional collaboration and enhancing LMICs to participating in global clinical research are pivotal to ensure that innovation in prostate cancer management is inclusive and impactful.

To address these challenges, this scoping review suggests several strategies for possible implementation: The development of context-sensitive national guidelines, investment in multidisciplinary and community-based health care models, and the integration of decision support tools to empower patients. Also, regional collaboration and increased representation in clinical trials are essential to ensure that LMICs benefit from global advancements in prostate cancer health care.

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RECOMMENDATIONS

Regarding the thematic synthesis of reviewed articles, the following recommendations are proposed to improve early diagnosis, treatment management, and psychosocial support for prostate cancer in Low-Middle-Income Countries (LMICs). Strengthen early detection by standardised screening protocol across LMICs to ensure consistent use of PSA and DRE test, particularly in primary settings (Bazarbashi et al., 2022; Makau-Barasa et al., 2022). Expand community-based campaigns by leveraging trusted institutions such as religious and cultural organisations to combat misinformation and promote early diagnosis (Tolani et al., 2024). Improve access to diagnostic tools through mobile clinics and telemedicine, especially in underserved rural areas (Seraphin et al., 2021).

Ethical clearance

Approval for this study was obtained from the Faculty of Health, Natural Resources, and Applied Sciences of the Namibia University of Science and Technology with approval number FHNRAS:59/2023. This manuscript is based on secondary data; therefore, the researcher ensured that the articles included in the review adhere to the standard ethical principles as required.

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Conflict of Interest

The authors declare that there is no conflict of interest as the research was conducted without any commercial or financial relationship.

Authors' Contributions

Mr. JH was involved in the initiation and conceptualisation of the research and the development of the research protocol. He carried out the implementation of the research process and was also involved in the drafting of the manuscript. R.M also contributed to the conceptualisation of the research, refining and aligning the study objectives as well as reviewing the manuscript.
O. A was involved in the conceptualisation of the research, refining and aligning the study objectives. He reviewed the research protocol for alignment and reviewed the manuscript.
All contributors reviewed and approved the final version of the manuscript for submission and consideration for publication.

Availability of data and materials

Researchers may utilise the information contained in this report in accordance with the due acknowledgement process.

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