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REVIEW

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The intersection of culture and prostate cancer care in Sub-Saharan Africa: a systematic review

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Abstract

Background In sub-Saharan Africa, prostate cancer poses a growing burden, with projections indicating a near doubling of deaths by 2040. Cultural beliefs and stigmas surrounding prostate cancer can deter men from seeking timely medical care until the disease has advanced**.** This systematic review explores the intersection of cultural influences on prostate cancer care in sub-Saharan Africa, identifying barriers and facilitators to improving health outcomes for sub-Saharan African men.

Method We searched PubMed, ScienceDirect, Web of Science, and Scopus from 2000 to 2023 for studies and reports focusing on cultural beliefs, health-seeking behaviors, traditional medicine for prostate cancer care, and healthcare access related to prostate cancer care in sub-Saharan Africa. Additionally, we used data from the African Cancer Registry and the Global Cancer Observatory to gather information on prostate cancer cases.

Results We included 34 studies in this review. These studies revealed that there are diverse cultural perceptions influencing attitudes to prostate cancer, such as associating it with spiritual causes or issues of masculinity, leading to stigma and delays in seeking medical care in sub-Saharan Africa. Mostly, men perceive prostate cancer screening negatively due to fears of discomfort, social stigma, fatalism, and misconceptions about the causes and outcomes of the disease. Effective strategies for improving awareness about prostate cancer include community engagement, media outreach, healthcare provider education, and enhancing accessibility to screening services, particularly in rural areas.

Conclusion This study highlights the significant impact of cultural beliefs on prostate cancer care-seeking behaviors in sub-Saharan Africa and uncovers widespread misconceptions and stigmas that impede timely diagnosis and treatment. Our findings show the urgent need for culturally tailored interventions to increase awareness, correct misconceptions, and diminish the stigma associated with prostate cancer in the region. This is essential for enhancing prostate cancer outcomes and addressing the anticipated increase in cases.

Keywords Prostate cancer, Sub-Saharan Africa, Cultural beliefs, Awareness programs, Healthcare access, Stigma

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1 Background

Globally, 1.6 million men are diagnosed annually with prostate cancer (PCa) and it is the most prevalent cancer among men in over 100 countries, resulting as the highest cause of cancer-related mortality in 50 countries [8, 35, 52, 54]. The available data shows that the total estimated PCa cases in 2020 were 77,300 in over 40 sub-Saharan African (SSA) countries, and the current number of cases has risen to 103,050 making it the leading cause of cancer

in men in the region [9, 20, 51]. In SSA alone, the Institute for Health Metrics and Evaluation in 2013 found that the number of years lost due to disability from PCa rose from 100,200 in 1990 to 219,700 in 2010 with the number of deaths increasing from 5600 to 12,300 during the same time frame [3]. Projections suggest that PCa deaths will almost double by 2040 in SSA [36].

The exact cause of PCa is unknown, but risk factors such as age, race, family history, and diet can increase the likelihood of developing PCa [34]. In SSA, PCa diagnosis often relies on clinical evaluation, digital rectal examination (DRE), prostate-specific antigen (PSA) testing, biopsies, and imaging, though accessibility, cost, and cultural stigmas pose significant barriers [36, 50].

When detected early, PCa often has an excellent prognosis. Barring metastasis, most individuals diagnosed with PCa have a very high chance of surviving at least five years [4]. However, due to the lack of diagnostic capacity in SSA coupled with cultural factors preventing men from seeking early PCa care, there is an urgent need to address the inequities in PCa care in the region [36, 52].

Black men, particularly in SSA, are significantly underrepresented in PCa research [33]. African American men already face low clinical trial participation [33, 62], and African men in SSA are further excluded due to limited research diversity and structural and cultural barriers [43]. Studies typically draw participants from clinical settings, excluding men who avoid formal healthcare [25]. This exclusion impedes the collection of meaningful data on PCa burden, risk factors, and care outcomes, making it difficult to design effective, context-sensitive interventions [39, 52].

Cultural beliefs and stigma play a central role in delayed help-seeking behavior, often leading men to present only at advanced disease stages [10, 60]. This systematic review, therefore, explores how cultural beliefs and stigmas influence PCa care in SSA and highlights culturally sensitive interventions to improve awareness, reduce stigma, and enhance early detection and treatment.

2 Methodology

We conducted a comprehensive literature search using four databases (PubMed, ScienceDirect, Web of Science, Scopus), one registry (the African Cancer Registry), and data from the Global Cancer Observatory (GLOBOCAN) following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines [53]. We retrieved studies published in English from 2000 to 2023. We sought studies focused on cultural beliefs, health-seeking behaviors, traditional medicine, and healthcare access related to PCa in SSA. We used a combination of the following search terms to capture relevant literature: Prostate cancer AND cultural beliefs AND Africa, Prostate cancer AND health-seeking behavior AND Africa, Prostate cancer AND traditional medicine AND Africa, Prostate cancer AND treatment AND stigma AND Africa, Prostate cancer AND diagnosis AND healthcare access AND Africa.

2.1 2.1 Inclusion criteria

Studies were included if they reported original empirical research, whether qualitative, quantitative, or mixed methods, focused on PCa in SSA. Eligible studies specifically examined aspects such as awareness, diagnosis, treatment, help-seeking behavior, or care experiences related to PCa. Only peer-reviewed articles published between January 2000 and December 2023, written in English, and involving populations residing within SSA countries were considered.

2.2 2.2 Exclusion criteria

We excluded publications that did not present original data, including editorials, commentaries, opinion pieces, conference abstracts, short communications, and both narrative and systematic reviews. Studies focusing on African or African American populations outside SSA, as well as non-peer-reviewed literature such as theses, reports, or dissertations, were also excluded. Additionally, articles not published in English or not available in full text were excluded.

2.3 2.3 Quality assessment

A formal standardized quality assessment tool was not used; however, a set of predefined criteria was applied to ensure the inclusion of high-quality studies. All duplicate studies were identified and removed using Mendeley Reference Manager. The abstracts of the remaining articles were independently screened by two authors (BO and KF) for relevance and consistency in study design, data collection, and analysis. Studies were included based on the following criteria: clear articulation of study objectives, use of appropriate and well-defined study populations, transparent description of data collection methods, and presence of empirical data relevant to PCa and cultural or health-seeking behaviors in SSA. Redundant publications, which were defined as multiple reports from the same authors, population, or region within the same year, were excluded to prevent duplication. Discrepancies in the selection process were resolved through discussion and consensus between the two reviewers (BO and KF).

2.4 2.4 Data extraction

Two authors (BO and KF) independently screened titles and abstracts followed by full-text reviews to extract data from the included studies. We sought data

on papers that had reported study characteristics, participant demographics, cultural aspects, and outcomes of PCa screening and care in SSA.

3 Results

3.1 Overview

From the combined search of four databases (PubMed, ScienceDirect, Web of Science, Scopus), the African Cancer Registry, and data from the Global Cancer Observatory (GLOBOCAN), we identified 34 relevant studies for this review (Fig. 1). The studies included in this review were mainly conducted in SSA countries namely, Burkina Faso, Cameroon, Ghana, Kenya, Nigeria, South Africa, Tanzania, Uganda, and Zimbabwe. These studies were analyzed according to the inclusion and exclusion criteria.

3.2 Educational background of screened men

The educational levels of men screened for PCa varied across the included studies. Primary education was the most common level of schooling, with a study in Free State in South Africa reporting up to 75% of participants having only primary education [49] and 44.3% in the Kazo district of Uganda [47]. In contrast, secondary education was more prevalent in other regions, with 46.4% to 70% of men in Kenya, Tanzania, Nigeria, and Zimbabwe completing secondary school [2, 37, 42, 45]. The proportion of men with tertiary education was relatively low, ranging from 6.4% to 29.5%, [46, 65] with some exceptions, such as a Ghanaian study where 90.6% of participants had university-level education [67]. Additionally, a notable percentage of participants had no formal education, with figures reaching 25% in Makueni county in Kenya [46] and 60% in Bamenda, Cameroon [26] although these geographical areas were urban. These findings highlight that most men undergoing PCa screening in SSA have lower levels of formal education,

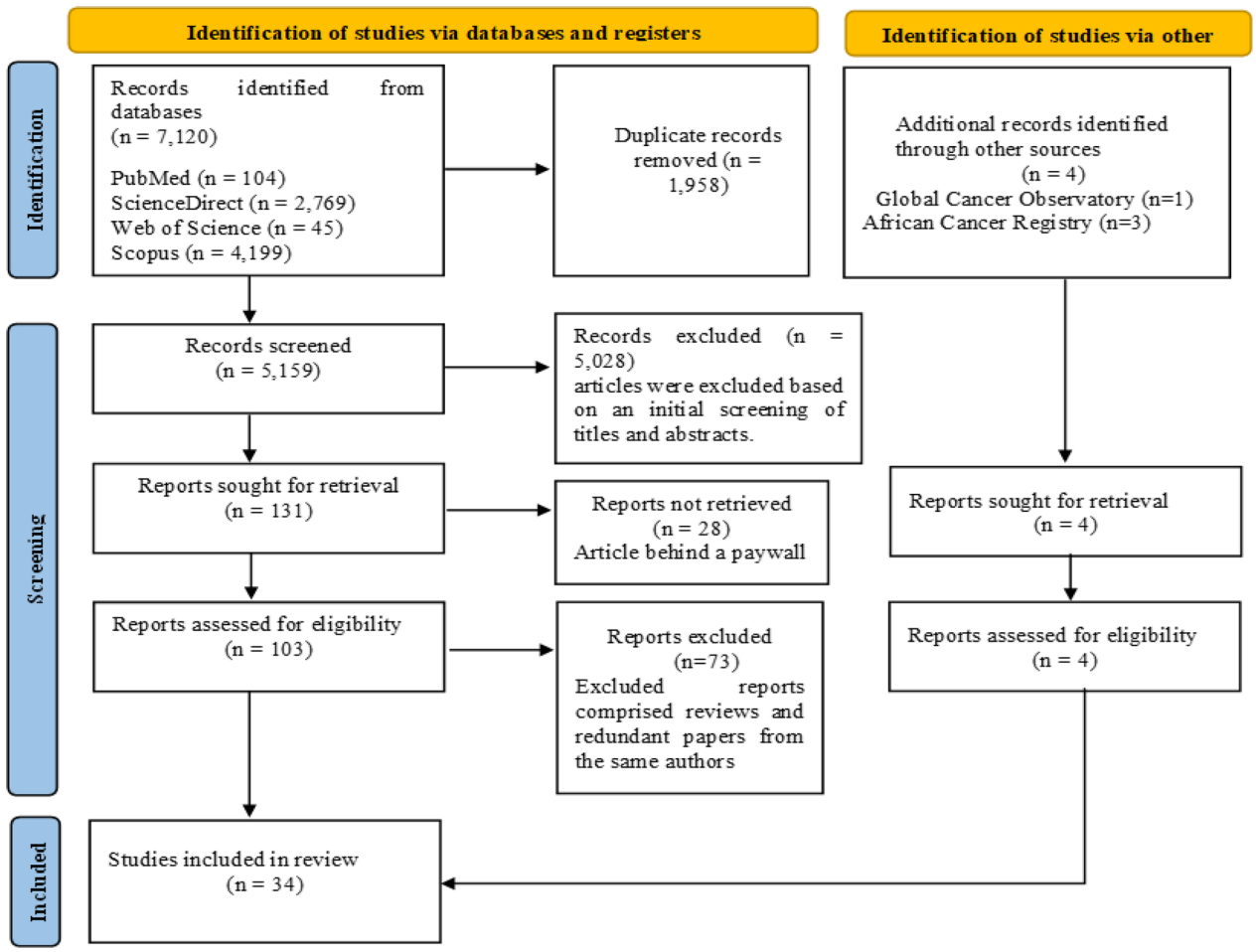

Fig. 1 Flow diagram of literature search strategy and results

which may impact PCa awareness, screening uptake, and health-seeking behaviors.

3.3 Prevalence and incidence rates

The prevalence and incidence rates of PCa in SSA exhibit significant regional variations. Data from GLOBOCAN provided specific incidence rates for PCa across various SSA countries. The estimated total number of new PCa cases in 2022 was 103,050 representing 20.4% of all cancer cases in males in the region [20]. This number is projected to increase to 196,021 by 2040 with a percentage increase of 90.2%, higher than all cancer projections globally, reinforcing PCa as the leading cause of cancer among men in this region [21]. Notably, countries such as Chad, Côte d'Ivoire, and Sierra Leone reported higher incidence rates compared to other nations in the region based on total cancer cases in each country (Fig. 2). Globally, SSA shows one of the fastest-growing rates of PCa. [66].

3.4 Cultural beliefs and attitudes towards prostate cancer screening in Sub-Saharan Africa

Common cultural beliefs and myths about PCa may influence men's understanding and attitudes toward the disease [18, 19, 42, 65]. The studies identified in the review show that sometimes in SSA, PCa is associated with spiritual causes or notions of masculinity, contributing to the stigma surrounding the condition. In some communities, discussing prostate health remains uncommon, potentially delaying medical consultations.

Among the 16 studies on cultural perceptions included in this review as shown in Table 1, two reported beliefs that PCa could result from lack of sexual activity, while others associate PCa risk with having multiple sexual partners or early sexual activity [42, 48]. This belief was more common among men with lower education levels and had deep roots in religious beliefs, as seen in Gatundu North and Kiambu Subcounties in Kenya and Kampala in Uganda, where most

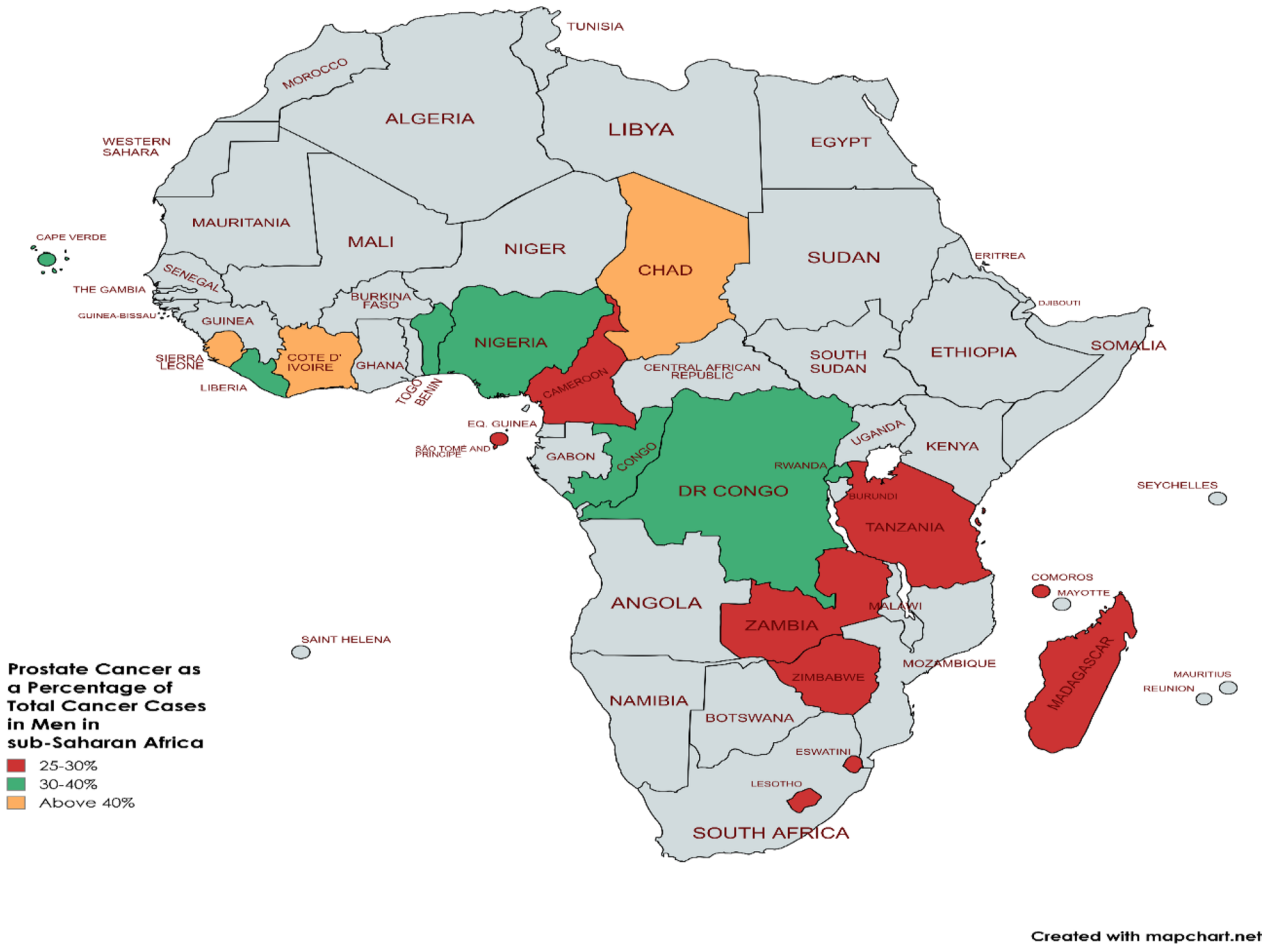

Fig. 2 Prostate cancer prevalence among men in sub-Saharan Africa (2022): countries with ≥ 25% total cancer cases. Data obtained from [21]. Map created at https://www.mapchart.net/ under a creative commons attribution-shareAlike 4.0 international license (CC BY-SA 4.0)

Table 1 Summary of studies on socio-demographic characteristics and cultural beliefs regarding prostate cancer screening in sub-Saharan African countries

Country and geographic region	Study design	Participant characteristics	Sample size	Cultural beliefs and perceptions	Author(s) references
South Africa, Limpopo Province	Hermeneutic phenomenology design	Black men aged 67–85 years; the majority (75%) had only primary school education. Most were either retired (65%) or on a pension (30%). A significant proportion (80%) were members of the Zion Christian Church	20	Religious beliefs and practices played a major role in coping with PCa, with the majority relying on faith, prayer, and church support. Notably, all participants (100%) relied on prayer, and some transitioned from traditional healing to Christian practices	[49]
South Africa, Free State	Analytical cross-sectional survey	Men aged 40–49 years (57.8%), mainly Sesotho (47.8%), and predominantly residing in rural areas (79.4%). Educational levels showed 28.0% completed Grade 12, and 15.7% had tertiary education. Most (73.8%) did not have health insurance. Income sources included employment (39.3%), self-employment (22.1%), and government grants (20.1%), with 54.0% earning below R500 (USD 275.5) monthly. Relationship status: 48.6% married, 19.5% single. A family history of cancer was noted in 18.8%	389	Participants exhibited low fatalistic beliefs (mean score: 2.05) and minimal fear or apprehension toward PCa and screening (mean score: 2.25). They demonstrated a moderate belief in the benefits of screening (mean score: 2.69) and reported experiencing moderate social influence (mean score: 2.90) from both family members and healthcare providers. They encountered few situational barriers and had a moderate perceived risk of PCa. Knowledge about PCa came from various sources, including healthcare providers and the media, highlighting a high demand for additional information on the subject	[6]
South Africa	Exploratory-descriptive qualitative methodology	Black male participants aged 46 to 76, all with an ECOG performance status of 1 and locally advanced PCa, ranging from low to high grade, with PSA levels between 265 and 1486 ng/ml. Three travelled from another province for treatment, while most locals lived in distant townships	9	Participants expressed feelings of shame and embarrassment about the illness due to societal stigma and a lack of understanding about PCa. There was a prevalent notion of self-blame for late diagnosis due to ignorance about the disease. The association of prostate issues with masculinity led to a reluctance to discuss symptoms and a refusal by some to seek treatment, prioritizing perceived manhood over health. Participants noted that PCa is seen as a 'silent killer,' and were worried about how they were going to get cured if they contracted the disease	[57]

Table 1 (continued)

Country and geographic region	Study design	Participant characteristics	Sample size	Cultural beliefs and perceptions	Author(s) references
Ghana, Ashanti region	Cross-sectional quantitative design	Female participants (mean age = 45.02 ± 10.66 years), predominantly Christian (91.75%) and Akan (83.50%). About half of the participants (52.5%) had completed primary school education. Also, about 29.5% had achieved higher education degree while about 20.25 had no form of education	400	The majority of participants (87.75%) believed that every man could develop PCa, with 90.25% disagreeing that PCa is a spiritual disease. A significant proportion (66.00%) disagreed that it is a family disease, while nearly all participants agreed that early diagnosis can lead to a cure. Additionally, about one-third believed that nothing could be done to save a PCa patient	[65]
Ghana, Accra	Cross-sectional questionnaire survey	The age range of participants was 40 to 80 years, with the majority (53.7%) falling between 40 and 49 years. Most participants (79.2%) were married, 77.5% were Christians and 19.4% Muslims, and the remaining came from other religious groups, and 71.1% were employed. About a quarter (25.2%) had attained a bachelor's degree or higher. The majority of participants were employed (71.1%), while 19.9% were unemployed and 5.3% were retired	356	High level of PCa awareness (86%), yet few had been screened (23%). However, most were willing to undergo screening if recommended (79.2%). Lack of family history with PCa correlated with lower screening rates and intentions to discuss it with a doctor. Overall knowledge about PCa was limited, with many misconceptions about symptoms and outcomes. Perceived susceptibility to PCa was low among participants. Those who had been screened (23%) had fewer perceived barriers to screening	[7]
Ghana, Sunyani Municipality	Cross-sectional study	Men aged between 45 and 60 years (68.1%) and identified as Christians (90.6%). 87.5% were married and the majority had attained education at the university level (90.6%). They were predominantly Akans (65.6%)	160	The majority acknowledged the potential fatality of PCa (93.8%) and the possibility of prevention through regular screening (96.9%). There were misconceptions about its causes, with 13.1% believing it might be caused by radiation from mobile phones. Additionally, some respondents held beliefs about PCa being incurable (2.5%) although the majority disagreed that PCa is associated with curses/taboo (98.1%). The majority (97.5%) agreed on the importance of screening and 95.6% expressed willingness to undergo screening if given the opportunity. However, concerns about pain (11.9%) and embarrassment (6.9%) were evident, along with misconceptions about screening aggravating the disease (7.5%)	[67]

Table 1 (continued)

Country and geographic region	Study design	Participant characteristics	Sample size	Cultural beliefs and perceptions	Author(s) references
Nigeria, three geopolitical zones	Qualitative interpretative description design	Mendiagnosed with PCa, aged between 54 and 84 years, within their first 2 years after diagnosis. Most had completed basic education (81.5%), with some retired from civil service (48.1%), and others engaged in farming (25.9%) or trading (18.5%)	27	The participants' beliefs surrounding PCa were largely negative, with majority holding views of it being associated with witchcraft and promiscuity. Discussions about PCa were often discouraged or kept hidden due to societal stigma. Some perceived it as incurable and synonymous with death, reflecting varying degrees of stigma and fear associated with the disease	[18]
Southern Nigeria, Ogun State	Descriptive cross-sectional design	Half of the participants (49.7%) comprised younger and middle-aged men, most having completed secondary education. About 48.7% were self-employed or artisans, and the majority earned less than N18,000 (11.50 USD) monthly. Most identified as Christians (65.6%) and 90.6% were married, with the majority (60.2%) having fewer than four children	422	Social factors such as age, religion, and income shaped perceptions of PCa risk and screening decisions. Middle-aged men perceived PCa as a greater risk, while Muslims in rural communities were less likely to perceive themselves at risk. Additionally, income disparities negatively impacted PCa risk perception and screening behavior amongst the study population	[2]
Nigeria, Benin City	Qualitative study	Nigerian men aged between 40 and 60 years, who visited the Urology Department of the University of Benin Teaching Hospital for PSA testing from July to August 2010. They were all well-educated individuals, proficient in both spoken and written English and belonged to socio-economic backgrounds ranging from average to above average	10	Participants often sought medical advice based on the experiences of friends and relatives with PCa. Fear also played a key role, driven by concerns about personal risk after witnessing the impact of the disease on loved ones. Being married or in a partnership was associated with increased testing uptake and older age was linked to heightened awareness of health issues, including prostate health	[16]

Table 1 (continued)

Country and geographic region	Study design	Participant characteristics	Sample size	Cultural beliefs and perceptions	Author(s) references
Kenya, Gatundu North, and Kiambu Sub-counties	Descriptive cross-sectional survey	Men aged 40–69 years, predominantly from agricultural backgrounds. The majority were Christians (98.1%), and most were married (81.4%), while 5.9% were single, 6.9% divorced, and 5.7% widowed. In terms of employment, 40.1% were small-scale farmers, and 24.8% were casual workers. Regarding education, 46.4% had secondary education, while 41.3% had only primary education	576	The most commonly reported barrier to PCa screening was the belief that they were healthy and did not need it (56.9%). Other reasons included the inability to afford screening (14.7%), the perception that screening is not beneficial (13.7%), lack of information (7.8%), and concerns that screening is too risky (6.9%). Misconceptions about the causes of PCa include beliefs such as the denial of conjugal rights by spouses in the menopausal stage, the notion that bacteria can cause the disease, and the idea that masturbation increases the risk. Other beliefs associate PCa with having multiple sexual partners or viewing it as a form of punishment from God. Participants mentioned preventive measures such as maintaining hygiene, consuming traditional foods, and placing trust in God	[42]
Kenya, Makueni County	Cross-sectional quantitative study	Men with an average age of 49.8 years, ranging from 25 to 98 years. About one-third (32.9%) were under 40 years. Most participants (85%) were married, and 94% were Christians. Educational levels were generally low, with 25% having no formal education and only 6.4% having tertiary education	155	High fatalistic beliefs regarding PCa and screening (mean score: 3.6), coupled with considerable fear or apprehension (mean score: 3.2) about the screening process. However, they strongly endorsed the perceived benefits of screening (mean score: 4.2), considering it an effective method for early detection and treatment of PCa. Family influence (mean score: 3.9) played a significant role in decision-making regarding screening, with a majority of men (89%) indicating they would follow their family's guidance on the matter	[46]

Table 1 (continued)

Country and geographic region	Study design	Participant characteristics	Sample size	Cultural beliefs and perceptions	Author(s) references
Uganda, Kampala	Descriptive cross-sectional study	Male participants, with the majority identifying as Christians (63.1%), followed by Muslims (31.7%), adherents of African traditional religion (2.4%), or other religious denominations (2.8%). Most respondents were unmarried (57.1%) or married (37.6%), with smaller proportions being divorced (2.6%) or categorized under other marital statuses (2.7%). The majority of participants had attained education up to the secondary level	545	Some confused PCa with gonorrhea and believed it was contagious. Few (10.3%) had good knowledge about symptoms or screening methods. Attitudes were influenced by the perception that PCa was less serious than HIV. While 14.9% of participants did not believe they were susceptible to PCa, 21.6% were unsure about their susceptibility. Additionally, most participants believed the disease was incurable, although some acknowledged their risk. Age was a significant factor influencing screening practices	[48]
Uganda, Kazo district	Descriptive cross-sectional study	Participants' ages ranged from 40 to 82 years old. About 44.3% had completed primary school education with 22% having no formal education. Most participants were married (88.7%), and a substantial number were self-employed (43.3%). The majority (56.3%) reported monthly earnings between 30,000 UGX and 200,000 (8–56 US dollars). Catholics (34.3%) and Protestants (54.3) were the major religious denominations of the study participants	300	Despite knowing about PCa, most men (96.67%) had not been screened. Being married increased the likelihood of screening. Information about PCa mainly came from media and friends rather than healthcare providers. Healthcare workers' attitudes and perceived affordability of screening tests also influenced screening decisions. The fear of embarrassment or intrusion into personal lives due to the vulnerability associated with the DRE was a significant factor that prevented participants from seeking screening services	[47]
Southwest Tanzania, Mbeya City Council	Cross-sectional study	Men (18 to 75 years) with the most common age group being 38–47 years (29.5%). The majority of participants (70.5%) were married, with only 13.6% being single. About half of the participants (47.0%) had completed secondary school, and 7.6% had no formal education. In terms of occupation, 36.4% were farmers, 18.9% were employed, and 15.2% were unemployed	132	Out of all participants, 22 (16.7%) strongly believed that PCa screening, particularly the DRE, can lead to a loss of dignity, while 18% thought it could cause side effects on the body. Additionally, 34.1% strongly disagreed that screening is a waste oftime	[37]

Table 1 (continued)

Country and geographic region	Study design	Participant characteristics	Sample size	Cultural beliefs and perceptions	Author(s) references
Zimbabwe, Kadoma District	Quantitative and qualitative research methods	68% of the respondents were under 40 years old. Adolescents made up 29% of the participants. 55% of respondents were married or cohabiting, and 39% had never married. A small proportion were either widowed or divorced, each accounting for 3%. The sample was highly educated, with 70% having completed secondary school and 17% completing primary education	500	The study found that most community members were unaware of PCa, with few knowing about it. Some believe PCa mostly affects sexually active men in their reproductive years. Only 11% knew that men over 50 should be screened, and none of the respondents aged 60 to 79 were aware they needed screening, despite being at higher risk. Most respondents (78%) got their information from friends, which may explain these beliefs	[45]
Cameroon, Bamenda	Qualitative research study	The average age of participants was 59.2 years. Sixty percent did not complete high school, and 48% were employed. The majority (92%) identified as Christian, and most were married (80%). Additionally, 60% earned less than 50,000 francs (83 USD) monthly. Notably, 84% reported that they had never been advised by a healthcare provider to get screened for PCa	35	Participants mostly relied on traditional medicine initially for PCa, driven by cultural beliefs and norms. Lack of awareness about the disease and its screening methods contributed to delayed diagnosis. Fear, stigma, and economic constraints also influenced attitudes and behaviors, leading to self-medication and barriers to seeking timely care	[26]

participants were farmers and casual workers who perceived PCa as linked to sexual activity [42, 48].

Five studies found that some men avoided PCa testing and care due to the perception of fatalism, believing that if they were destined to get the disease, they would, regardless of screening or treatment while some men even considered themselves immune due to their masculinity, viewing those susceptible to PCa as being 'less manly' [6, 42, 46, 48, 65]. Fatalistic attitudes were particularly strong in communities with lower access to formal education, such as Makueni County in Kenya, where high fatalistic beliefs were recorded [46]. In the Ashanti region of Ghana, where all participants were market women and about 81% had never attended school, there was a common belief that nothing could be done to save a prostate cancer patient [65]. In contrast, low fatalistic beliefs were observed in the Free State province of South Africa, where most participants had at least a secondary school education and a family history of cancer, which may have influenced their perception of PCa [6].

Three studies noted the significant role of perceived benefits of screening and family influence in encouraging men to seek PCa care [6, 65, 67].

Four studies reported concerns about social stigma, particularly the fear that seeking PCa screening could reveal private health matters or sexual health status [6, 22, 26, 47]. In Kazo District, Uganda where education level was seen to be low among the study participants, there was limited knowledge and widespread misconceptions about PCa [47]. This lack of understanding heightened fear and stigma, leading some men to believe that undergoing screening would result in social rejection or discrimination. Also, the negative perception of cancer further reinforced their reluctance, as they associated a PCa diagnosis with a potential health decline, intensifying their fear of societal judgment [47]. In Mhondoro-Ngezi, Zimbabwe, the fear and stigma surrounding PCa screening stemmed from deep-rooted associations between prostate cancer, masculinity, and sexual health [26]. The study participants believed that a PCa diagnosis implied sexual weakness or loss of virility, causing reluctance to openly discuss or seek medical attention for the disease [26].

Additionally, some men feared that the testing process would be physically uncomfortable [37, 46], These misconceptions were largely shaped by their belief that the DRE is a painful procedure, a perception influenced by health misinformation and a lack of understanding about the test's actual procedure.

Others associated PCa with older age, leading them to believe they were not at risk [18, 45, 48, 67]. This misconception was driven by limited exposure to information about PCa, which reinforced the belief that it is a disease affecting only older men.

Religious beliefs also played a role, with some men believing that they could rely on a supreme being for help, others relating the disease to some unforeseen supernatural forces [2, 26, 49, 65]. In South Africa, over 80% of men from the Zion Christian Church believed that prayer alone could protect them from PCa, which reduced their likelihood of seeking medical screening [49]. In Nigeria, religious affiliation influenced risk perception, with Muslim participants being less likely to acknowledge their susceptibility to PCa, leading to lower screening rates [2].

For participants in Mhondoro-Ngezi, Zimbabwe, friends and social circles were the primary sources of PCa-related knowledge, which may have contributed to the spread of misconceptions and misinformation, reinforcing religious and supernatural explanations of the disease [26]. Interestingly, among participants in Kumasi, Ghana, only a few individuals associated PCa with a spiritual cause, even though the majority identified as Christians, suggesting that religious affiliation alone may not always determine PCa-related beliefs [65].

Some men related their susceptibility to PCa to their ancestry or family history of the disease [6, 7, 18, 65]. Men in Ghana and Nigeria who had a family history of PCa were more likely to recognize their own risk, yet many still avoided screening due to fear of diagnosis [7, 18]. Lastly, in a few cases, a group of men did not see any need for seeking PCa screening, considering it as a waste of time [2, 6, 18, 48]. This was particularly true among men from rural areas with limited healthcare access, where PCa screening was seen as unnecessary unless symptoms were severe.

3.5 Traditional medicine practices for prostate cancer care

Traditional medicinal plants have been relied on heavily in many parts of SSA over the years for the treatment of several health conditions, including PCa, due to a strong cultural preference for these over Western medicine [31, 40, 55]. In this section, we summarize studies that have explored the anti-cancer effects of these plants on PCa cell lines in vitro. These studies (Supplementary Table 1) suggest that certain traditional plants used in SSA contain active compounds with possible anti-cancer properties.

Given the cultural context in the SSA region, the data obtained from this review suggests that with further research, traditional medicines could play a complementary role in PCa management after proper diagnosis. However, it is important to emphasize that because some herbal medicines can have side effects, there should be medical supervision before use. Currently, some men

in the region start taking these medicines without a confirmed diagnosis, either believing they are not at risk of PCa or thinking that continuous use of these medicines offers protection against the disease [2, 6, 18, 48]. This behavior poses a significant public health concern as certain herbal formulations may be toxic and could lead to adverse effects, including liver damage.

3.6 Recommended programs for promoting prostate cancer awareness and early detection

Strong cultural beliefs among men in SSA, along with limited access to healthcare, continue to hinder the early detection of PCa. There is a pressing need for comprehensive awareness and early detection programs across all countries in the region. These programs must be supported by strong political commitments to raise awareness among men about the importance of PCa screening and care. The goals of these programs should be to educate men about prostate health, dispel myths and stigmas surrounding the disease, and encourage regular screening. This section summarizes several recommended programs from the reviewed studies that are designed to boost PCa awareness and promote early detection in the SSA region.

3.6.1 Community engagement and education

Several studies in this review identified community-based interventions as effective in improving PCa awareness and early detection in SSA. These interventions focus on increasing the scientific knowledge of key community stakeholders, such as traditional leaders and faith-based organizations, enabling them to promote screening and early detection within their communities effectively [18]. One study emphasized the importance of involving men in planning cancer prevention and control programs, given that PCa primarily affects men [42]. Educational interventions that empower men with accurate information about PCa have been recommended to increase screening uptake [37, 42]. Targeting health campaigns and sensitization programs for men with lower levels of education, who are at higher risk of late-stage diagnosis, may also be beneficial [48].

Additionally, addressing cultural beliefs and societal expectations of gender expectations is particularly important, as these factors often lead men to downplay their health concerns [17]. A study by [56] suggests that considering men's emotional states during educational processes may be important, given their tendency to be stoic due to cultural norms. The majority of the studies reported that educational levels influence men's health-seeking behavior, with men who receive pre-operative counseling before PCa surgeries better managing pain expectations and post-procedure recovery [22]. Younger men often do not perceive themselves to be at risk for PCa, highlighting the need for age-specific intervention programs [37]. However, knowledge alone may be insufficient to improve health-seeking behavior; attitudes must also be addressed [37]. Studies by [5] and [45] advocate for aggressive educational campaigns, while another study [26] recommend contextually based health education tailored to fill the knowledge gaps and address men's perceptions of PCa.

3.6.2 Media and outreach initiatives

The reviewed studies suggest that media campaigns can be effective in raising PCa awareness in SSA. Television, radio, and social media platforms have played a role in helping shape public knowledge about PCa. However, awareness levels in SSA remain relatively low, and most individuals who had heard about PCa cited mass media as their primary source of information. One study recommended integrating PCa screening advertisements into routine medical examination promotions [67]. Sponsoring radio and TV stations to air PCa-related enlightenment programs may help expand outreach efforts [18]. Furthermore, health promotion could be achieved through various mass media platforms, including short message service (SMS), posters, and flyers, which provide extensive information about PCa to encourage screening behaviors [2, 67].

Because knowledge about PCa has been linked to screening behavior, one study recommended that outreach programs assess the knowledge levels of target populations and include recommendations from doctors, as medical professionals are generally trusted more than common media advertisements [7]. Some studies also suggest that unmarried men and widowers are less likely to undergo screening compared to married men, who often opt for screening due to personal reasons or spousal recommendations hence, PCa campaign messages should target these groups as it may help increase their willingness to participate in screening [47].

Media awareness programs should highlight the benefits of PCa screening and provide information about specific health centers where screening is available [5]. Additionally, to overcome language barriers, advertisements and outreach initiatives should be presented in languages that are easily understood by the target population with the choice of media platforms being based on their accessibility and relevance to the target population to ensure effective dissemination of information [57].

3.6.3 Prostate cancer healthcare training for educators and healthcare providers

Healthcare providers should be trained on to develop patient-centered care approaches that considers the

psychological and religious concerns of PCa survivors [49]. Medical professionals should also be encouraged to recommend PCa screening in a more approachable manner and stay updated on global PCa screening guidelines [42]. Healthcare workers should also focus on sensitizing and educating partners to continue this encouragement [6, 16, 47, 50].

In terms of educators, two studies conducted in Ghana found that teachers had a relatively high level of awareness and knowledge about PCa, which increased their willingness to screen for the disease [5, 67]. Similarly, high levels of PCa awareness were observed among male university students in Ghana and staff in Nigeria, suggesting that education level may influence knowledge and screening behavior [5].

3.6.4 Accessible screening services

The review identified critical barriers to PCa screening, particularly in rural areas, including the distance to screening facilities and the lack of cancer health education. Ensuring that screening centers are accessible and not congested may improve participation [18]. One study in Ghana found that the cost of diagnosing non-metastatic PCa was $290.58, while metastatic PCa cost $1185.09, highlighting financial constraints as a significant barrier to care [64]. Therefore, as a result, studies recommend creating free and affordable testing centers and providing cost-effective treatment options for those affected [16, 19]. Imaging centers should also be made easily accessible as it may help increase screening behaviors [47]. Some studies also suggest that assessing the knowledge of screening methods in a population is assessed through the use of different forms of screening methods as it may help to better understand which methods people are aware of [37]. Also, PCa screening services should be extended to rural areas, and government agencies in charge of PCa management should focus on where patients live as this could help address both the supply and demand sides simultaneously [61].

One study also suggested that researchers partnering with governments and local authorities to conduct whole genome sequencing studies for high-risk PCa in men could help account for ethnic and environmental differences and also potentially help choose the best screening methods for specific populations [23]. There should be aggressive screening for symptomatic men, and those with non-modifiable risk factors should be routinely screened [6, 19]. Additionally, screening men who present with lower urinary tract infections may also help detect PCa early, as these infections may be an early sign of PCa [6].

Efforts should focus on reaching men who have never been screened before and addressing the mindset about masculinity that deters them from screening [17]. Since there are differences in the effectiveness of various tests (PSA, DRE, and imaging), more studies are needed in different settings to evaluate what works best for them [68].

3.6.5 Use of culturally relevant tools

A pilot study has highlighted the development of an Akan PCa awareness tool in Ghana, specifically designed to assess knowledge, awareness, and perception among Ghanaians [65]. This tool, validated and piloted for its high reliability, was found to be effective in communicating information about PCa to the local community using the Akan language [65]. Tailored to the linguistic and cultural context of the Akan-speaking population, the tool ensures relevance and effectiveness, making it a promising model for adoption and expansion to other countries in SSA. It was suggested that this tool be expanded to different local languages to increase PCa awareness and ensure effective communication across diverse cultural settings.

Additionally, recommendations have been made for using the theory of planned behavior in various SSA contexts to address the diverse cultural aspects of participant populations [46]. Culturally sensitive methods could also be employed to target asymptomatic men with localized tumors, as it could reduce mortality [67]. Furthermore, the health belief model (HBM) has been recommended to help individuals make behavior changes based on their perceptions of the severity and susceptibility to PCa, the benefits of behavioural change, and the barriers to such changes [16].

3.7 Discussion

This systematic review provides an overview of the current state of PCa in SSA and how it is influenced by various cultural factors. With projections from GLOBOCAN indicating that the cases of PCa in SSA will double by 2040, addressing this urgent public health concern requires comprehensive strategies aimed at reducing PCa incidence in the region. Our analysis of 34 studies across diverse SSA countries, including South Africa, Ghana, Nigeria, Uganda, Tanzania, Burkina Faso, Cameroon, Kenya, and Zimbabwe, reveals the complex interplay between cultural beliefs and PCa care. The significant impact of cultural beliefs on when men seek PCa care is evident. Fatalism and masculinity are major barriers, with most men believing that if they are destined to get PCa, they will get it regardless of their actions [6, 41, 42, 48, 65]. This finding aligns with studies on Black men in the U.S. and Europe, where fatalism and constructs of masculinity similarly hinder PCa screening [12, 27].

The social stigma associated with PCa also deters men from seeking screening, fearing that their health status

will be publicly known [6, 12, 22, 26, 47]. This stigma is consistent with findings from studies on Black and Latino men in Philadelphia and men in Newfoundland and Labrador [10, 60]. Religious beliefs and the association of PCa with older age further complicate timely screening [2, 18, 26, 45, 48, 49, 65, 67]. Religious beliefs can both hinder and empower men regarding PCa treatment, as seen in African American communities [38]. Age-related beliefs, combined with varying recommendations on screening ages across different organizations, necessitate clearer guidelines and awareness campaigns in SSA [11, 28, 63].

Educational level and urban versus rural residence significantly influence PCa awareness and screening attitudes. Men with higher education and those in urban areas were more informed and proactive about screening, while men with lower educational levels and men from rural backgrounds were linked to limited knowledge and negative perceptions. This pattern is supported by studies on African American men [14]. Encouraging educated individuals to disseminate PCa knowledge within their communities can help raise awareness. Positive influences, such as family support and perceived benefits of screening, play an important role in encouraging men to seek PCa care.

To better understand the barriers to prostate cancer PCa care in SSA, sociological perspectives such as the HBM and Social Determinants of Health (SDH) can provide an additional layer of information and understanding into the perceptions identified in this study. The HBM includes four key factors; perceived susceptibility, perceived severity, perceived barriers, and perceived benefits influences an individual's willingness to seek PCa care [24, 29]. In Ghana, this model was used to examine PCa screening behaviors, but its predictive power was limited, suggesting that public awareness about PCa remains low [65]. In Egypt, an educational intervention based on the HBM was introduced to assess PCa knowledge and beliefs among men. By comparing survey results before, immediately after, and months after the intervention, researchers found that perceptions and knowledge about PCa had improved significantly [29]. A similar study in Iran among military personnel showed that within three months of an HBM-based educational program, their awareness, perceived risk, benefits, and self-efficacy related to PCa screening had improved considerably [1]. These findings suggest that HBM-based educational programs in SSA could play a vital role in changing perceptions and increasing awareness about PCa.

Additionally, social determinants of health (SDH) such as socioeconomic status, education level, healthcare access, and living conditions are known to strongly influence PCa risks and outcomes [13]. The disparities in these factors across SSA contributed to the perceptions identified in this review. Addressing these challenges requires targeted interventions that consider the social and environmental context of PCa patients. Expanding outreach to remote areas, improving healthcare accessibility, and increasing public education efforts are critical steps in reducing PCa disparities in SSA. Our review identifies major interventions to improve PCa perceptions in SSA, including community-based programs, engagement with traditional leaders and faith-based organizations, and media campaigns. A study in Greater Boston and Cambridge showed that church-based interventions could enhance informed decision-making regarding PCa care [15]. Integrating traditional medicine with modern healthcare and using culturally relevant tools can increase community participation in screening and treatment programs. Training healthcare providers to address patients' psychological and religious needs, alongside advocating for regular screening, is essential for improving PCa management in the region.

The major interventions identified in this review must be sustained and evaluated to assess their long-term impact on PCa awareness and screening programs in SSA. This would require community involvement, policy integration, and funding support. Community-based interventions can be sustained by training civil society organizations (CSOs), traditional leaders, and faith-based groups to lead PCa education and outreach efforts [58, 59]. Embedding PCa awareness into existing national cancer programs and securing consistent government and NGO funding will help maintain these efforts. PCa awareness should be integrated into public health programs, schools, and workplaces. Schools can include PCa topics in health curricula, while employers can promote screening through workplace wellness programs. Public health campaigns should also incorporate PCa education alongside existing disease prevention efforts like HIV screening. In SSA, most rural areas lack access to health centers, and those with some available are community clinics [30]. Nonetheless, these community clinics should be equipped and leveraged to improve screening services in these areas and governments should adopt policies for free or subsidized screening and incorporate screening into national health insurance plans. There should be government-backed policies to ensure free or subsidized screening in healthcare centers and encourage the use of mobile screening units to reach underserved populations. Also, since these healthcare systems are responsible for providing the health needs of people seeking prostate cancer care, they should be equipped with affordable and effective PCa screening tools to expand access, especially in rural areas. Healthcare providers should also offer culturally sensitive counseling to address fears, stigma, and

misinformation about screening. The interventions they put in place should be tailored to patient needs and they should ensure that the needs of patients are met.

Strengthening community health providers (CHPs) through formal training and financial incentives can ensure continued patient education and follow-up support. CHPs should also be provided with continuous training as this could position them with knowledge on PCa care and help them develop patient-centered counseling services to address stigma and misinformation. A review assessing the impact of communication skills training (CST) for CHPs found that CST likely helps CHPs develop empathy and improves some aspects of their communication with patients [44]. Additionally, understanding the unique communication needs of patients allows healthcare professionals to design better interventions to support cancer patients. Another study highlighted that a key role of CHPs is to ensure that patients, families, and individuals coming for routine screening receive clear and accurate information [32]. Feeling heard and well-informed can encourage individuals to seek care and follow through with screening. Therefore, training CHPs in effective communication is essential to ensure they provide the right support, guidance, and reassurance to those at risk of PCa.

Lastly, media campaigns should be expanded through SMS, radio, and TV ads, with messages adapted to local languages to maximize outreach and these campaigns should adopt a culturally sensitive approach to avoid discrimination. Government, through their national health authorities must lead these efforts to ensure consistent public engagement beyond short-term projects. These programs must also be evaluated to ensure that they are effective and lead to impactful outcomes and as such evaluation metrics should be incorporated to track progress and effectiveness. For the purposes of PCa awareness key performance indicators could include tracking the increase in PCa screening rates over time in communities where interventions are implemented. Also, monthly and yearly surveys could be conducted to assess changes in PCa awareness, risk perception, and understanding of screening benefits. The number of events held, attendance rates and engagement levels in outreach programs led by CSOs and health workers should also be measured.

3.8 Strengths and limitations

The findings presented in this review can help guide targeted interventions to improve awareness, screening, and treatment in the region. A key strength of this review is the systematic approach used in identifying and analyzing studies, ensuring a comprehensive assessment of cultural perspectives on PCa in SSA. However, despite a robust search strategy, the number of studies retrieved was limited, which may not fully capture the diversity of cultural beliefs and healthcare experiences across all SSA countries. As a result, the findings may not provide a complete picture of PCa-related cultural perceptions in the region. More research involving diverse populations and broader geographic coverage is needed to strengthen understanding and inform more effective interventions.

4 Conclusion

This review highlights the urgent need to address cultural barriers and enhance healthcare access to improve PCa outcomes in SSA. An understanding of the cultural, socio-demographic, and systemic barriers to PCa care in SSA is necessary for developing effective strategies to enhance early detection and treatment. Comprehensive and culturally sensitive interventions, combined with education and community engagement, can significantly improve PCa outcomes in SSA.

Supplementary Information

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Additional file 1.

Additional file 2.

Author contribution
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