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Understanding cervical cancer prevention in Africa: a qualitative systematic review of the role of men

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Abstract

Background

Cervical cancer is a preventable non-communicable disease, if detected early through screening for precancers and appropriately managed. The causal link with high-risk Human Papillomavirus infection is established, making elimination possible through the WHO multi-pronged 90:70:90 strategy. However, practical cervical cancer elimination efforts need to address issues within the socio-cultural context that can facilitate or hinder prevention strategies. In this regard, the role of men in promoting reproductive health especially in Africa cannot be over-emphasized.

Objective

This systematic review examined the extent of involvement of males in cervical cancer prevention in Africa and its impact on the WHO cervical cancer elimination strategy.

Methods

A comprehensive search for relevant literature was conducted in the following electronic databases: Embase, Medline, Global Health, APA PsycINFO, Scopus, Web of Science, CINAHL Plus and the WHO Website from 2008 to 2023. Eligible studies explored the views of n= 592 men. Screening of abstracts and titles, data extraction and quality assessment were performed in duplicate. A narrative synthesis was performed as developed by the Economic and Social Research Council (ESRC) Methods Programme to synthesise the qualitative data.

Results

Out of the 1961 studies identified through the electronic database search, 16 studies met all inclusion criteria. This review found varied levels of awareness of cervical cancer; while some men were unfamiliar, others had a comprehensive understanding. There were gaps in knowledge and perception of cervical cancer across studies. Both Individual and systemic

challenges influenced the perspectives of males on screening as a preventive measure, resulting in a range of attitudes and concerns regarding human papillomavirus vaccination.

Conclusions

This review highlights the need for interventions to improve awareness, knowledge, and perception of cervical cancer among men. This will help men understand their crucial role in cervical cancer elimination within the African context.

Keywords: Africa, Cervical cancer prevention, male involvement, men, qualitative systematic review

PROSPERO registration

The review protocol was registered on 26th June 2023 in PROSPERO with registration number CRD42023437100

Strengths and Limitations

- A major strength of this systematic review and narrative synthesis is that no previous review has reported the role of men in cervical cancer prevention in Africa.
- The study selection and data extraction were independently done in duplicate to decrease bias.
- The search strategy was restricted to studies published in English. In doing so, studies published only in other languages within the African context might have been excluded.
- The included studies had varied qualitative designs and data collection methods. This could potentially affect the interpretations.

Background

Cervical cancer is a preventable non-communicable disease, if detected early through screening for precancers and appropriately managed (Mboumba Bouassa et al., 2017). The Global Strategy for cervical cancer elimination by the World Health Assembly in 2020 mandates countries to develop programmes to reach and maintain a cervical cancer incidence rate of below four per 100,000 women (WHO, 2022). This can be achieved by accelerating efforts towards WHO multi-pronged 90:70:90 strategy by ensuring that 90% of girls are fully vaccinated against high-risk Human Papilloma Virus (hr-HPV) by the age of 15 years, 70% of women get screened with a high-performance test by the age of 35 years, and again by the age of 45 years and 90% of women with precancers receive treatment, and 90% of those with invasive carcinoma are appropriately managed (WHO, 2022).

Effective cervical cancer elimination efforts need to address issues within the socio-cultural context that can facilitate or hinder prevention strategies. The role of men in promoting reproductive health cannot be over-emphasized. Male involvement in cervical cancer prevention and treatment is imperative in achieving the World Health Organization's target to eliminate cervical cancer by 2030 (WHO, 2022). Although there have been several empirical studies on the role of men in cervical cancer prevention in some developing countries (Binka et al., 2019; Enyan et al., 2022), evidence from a systematic review regarding their involvement is lacking. Given the immense influence men have on household-level decision-making, particularly in matters that affect the well-being of their families in certain developing countries, it is critical to have sufficient evidence to develop interventions that encourage men to support their partners in seeking cervical precancer screening, HPV vaccination and treatment of precancerous lesions of the cervix. Men have enormous potential to contribute to reducing the burden of HPV infection by taking measures to protect themselves and their partners, as well as supporting decisions that promote their general/overall health regarding

HPV infections and cervical cancer (Castellsagué et al., 2003; Maree et al., 2011). Therefore, it is important to put together a higher level of evidence to guide interventions aimed at male involvement in cervical cancer prevention. This qualitative systematic review examined the extent of involvement of males in cervical cancer prevention in Africa and its impact on the WHO cervical cancer elimination strategy.

The following questions guided this systematic review:

1. What are the perceptions of males regarding cervical cancer and its prevention in Africa?
2. How do males support and facilitate vaccination, screening and follow-up on treatment of cervical precancer lesions?
3. What role do males play in the decision-making process related to screening and HPV vaccination?

Methods

Design

A systematic review and narrative synthesis were conducted to understand the role of men in cervical cancer prevention in Africa. Prior to this review, a protocol was developed based on the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) protocol checklist (Page et al., 2021) and registered in PROSPERO on 26th June 2023. A comprehensive search for relevant literature was conducted in the following electronic databases: Embase, Medline, Global Health, APA PsycINFO, Scopus, Web of Science, CINAHL Plus and the WHO Website. The search was conducted in June 2023.

Search Strategy and Eligibility Criteria

The search strategy followed the PICO model: (1) Population: all adult males, (2) Phenomenon of interest: screening/prevention of cervical cancer, (3) Context: Africa, (4) Outcome: involvement of males non-medical professionals/partners/husbands, examining influence, support, facilitate, decision making, knowledge, experiences, attitudes, perceptions, and any barriers. The following subject index terms were used: Africa, Early Detection of Cancer, Female, Humans, Male, Papillomavirus Infections, Uterine Cervical Neoplasms, and Vaccination. See supplementary file 1 for the search strategies used for the databases.

Qualitative research papers published in English with full text from 2008 to 2023 and in peer-reviewed journals that received ethical approval were included in this study. However, the views of male medical professionals were excluded from the study.

Data Extraction

Two researchers independently screened titles, abstracts, and full texts using the software Covidence. Discrepancies observed were resolved by consensus or through further discussion with the rest of the research team. Microsoft Excel was used to extract data from the studies including year of publication, country, geographical region, sample size, focus of study, key themes/subthemes and quotations. Contextual and methodological characteristics of each study were presented in a table format.

Quality Assessment

The Joanna Briggs Institute (JBI) critical appraisal checklist for qualitative research was used to assess the methodological quality of the included studies and determine the extent to which each study addressed the possibility of bias in its design, conduct and analysis (Lockwood et al., 2015).

Data Analysis

A narrative synthesis was utilised as developed by the Economic and Social Research Council (ESRC) Methods Programme to synthesize the qualitative data of the included studies using a range of tools and techniques (Popay et al., 2005). A textual description of each study and an exploration of relationships within and between the studies were conducted. Tabulation and visual representations of findings were presented. We assessed the robustness of the synthesis to ensure rigour was maintained and the findings were credible. This includes assessing the potential for bias across studies.

Overview of findings

In total, 1961 records were identified through the electronic databases search, from which 16 studies successfully met all inclusion criteria. The process of identification, eligibility assessment, and reasons of exclusion is illustrated in Figure 1.

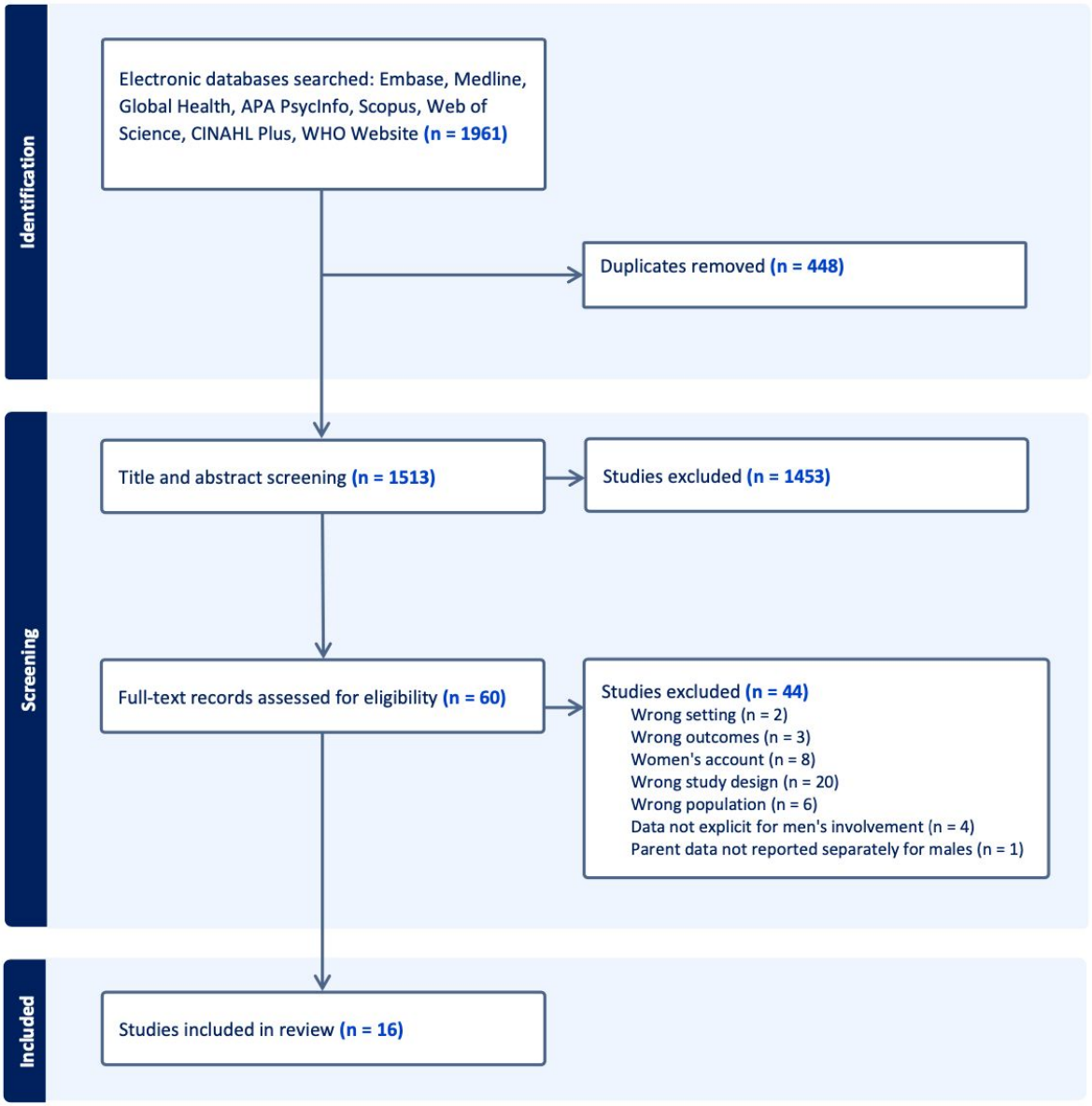

Figure 1. PRISMA Flow Diagram illustrating the systematic study selection process.

The included studies were published between 2008 and 2023 and explored the views of n= 592 men residing in Ghana (n = 3), Nigeria (n= 3), Uganda (n = 3), Cameroon (n = 2), Ethiopia (n = 2), Kenya (n = 2) and Malawi (n = 1) using focus group discussions and individual in-depth interviews. The participants in the included studies encompassed a diverse range of male roles, including males non-medical professionals, male partners, fathers, male teachers,

adolescent boys, male community and faith leaders. Table 1 presents a summary of the key characteristics of the 16 qualitative studies included in this systematic review.

Six thematic categories were identified in the present review, unravelling the role of males in understanding cervical cancer prevention in Africa. The interlinking themes revolved around: awareness of cervical cancer, knowledge of cervical cancer, perception of preventive measures, screening as a preventive measure, HPV vaccination as a preventive measure, and males' involvement. An overview of themes and corresponding evidence sources is illustrated in Table 2 The following section will elaborate on each theme, complemented by illustrative excerpts from the participants' interviews.

1) Awareness of cervical cancer

The majority of the studies included in the analysis depicted a notable variability in awareness levels related to cervical cancer. Among males, awareness ranged from complete unfamiliarity to a comprehensive understanding. In some cases, this variation was more pronounced between urban and rural populations, with urban participants demonstrating a notably higher level of awareness compared to their rural counterparts (e.g., Birhanu et al., 2012). However, it is worth noting that other studies did not observe such marked differences based on participants' place of residence (e.g., de Fouw et al., 2023).

"I have never heard of cervical cancer disease. Is it also a disease that affects women? Then women are really suffering." (Male partner; Binka et al., 2019)

Remarkably, recent studies have revealed a notable upward trend in awareness levels, underscoring the impact of educational initiatives and public health campaigns. This upward trend was particularly evident when comparing studies conducted within similar socio-contextual settings, such as those conducted by Williams & Amoateng in 2012 and that of Enyan et al. in 2022, both conducted in urban and peri-urban areas of Ghana. Within a decade, a discernible evolution in awareness could be noticed, with the latter demonstrating markedly higher levels ("*most of the participants (12 out of 15) indicated they were aware of cervical cancer*," p.4, Enyan et al., 2022) in contrast to the former ("*the majority of the participants indicated that they had never heard of the disease*," p.148, Williams & Amoateng,

2012). Participants consistently identified media outlets such as radio and television, along with places of worship, as their primary sources for gaining awareness about cervical cancer.

"I heard of it on the television. I don't know how it is, but it was being discussed that a woman who has it may not be able to tell whether she has it or not...unless she is examined by the doctor." (Male partner; Enyan et al., 2022)

Furthermore, participants' level of awareness seemed to be closely linked with the use of local language descriptors. The presence or absence of accurate terminology in local languages significantly impacted participants' understanding of cancer in general and cervical cancer specifically (Birhanu et al., 2012; Binka et al., 2019; Demissie et al., 2022; Katahoire et al., 2008; Mwaka et al., 2014). Nonetheless, even though there were initial awareness gaps concerning the term "cervical cancer", most males recognised the prevalence of cervical cancer within their communities when researchers provided thorough descriptions of "the disease'' signs and symptoms (Williams & Amoateng, 2012).

"I have heard of cancers generally but not that of the cervix, I haven´t heard of it or seen anyone affected except this one you are asking" (Male partner; Okedo-Alex et al., 2020)

"In fact, I had no knowledge about the disease and how it is caused, but all I knew was that it could kill. And I do not even know its local name." (Male partner; Binka et al., 2019)

2) Knowledge of cervical cancer

Across all sixteen studies, a prevailing landscape of limited and often inaccurate knowledge surrounding cervical cancer was observed. This dearth of knowledge extended across all facets of cervical cancer, spanning its etiology, risk factors, clinical manifestations, progression and prognosis, regardless of the participants' level of awareness.

"I did not know anything about this disease. I did not have any idea about the cause, symptoms or any risk factor of the disease. I only overheard it on the television being debated in Parliament as to whether it should be covered in the national health insurance scheme. That is all I know". (Male partner; Binka et al., 2019

Widespread misconceptions permeated participants' understanding of the causes and risk factors of cervical cancer. These misconceptions encompassed a wide range of beliefs,

including, but not limited to, attributing cervical cancer solely to female promiscuity rather than considering male promiscuity, suboptimal hygiene practices, exposure to chemicals, history of abortions, use of contraception, the notion of 'devil's intervention', engagement in harmful traditional rituals and adherence to Westernized diets (e.g., Lewis et al., 2020; Demissie et al., 2022; Balogun & Omotade, 2018; Vermandere et al., 2015; Birhanu et al., 2012; de Fouw et al., 2023; Mwaka et al., 2014).

"We know that the kind of oil that is used to lubricate the condoms can cause this condition (cervical cancer) especially if it causes reaction to your body and if you use it for a long time" (Male partner; Mwaka et al., 2014)

". . .Istihada, meaning punishment that occurs when the devil kicks a woman's womb. This is an explanation from religious book." (Religious leader; Birhanu et al., 2012)

Interestingly, male participants often associated cervical cancer with sexually transmitted diseases. However, this perceived cause was frequently framed in the context of promiscuity rather than recognizing it as a viral infection. This highlights the cultural beliefs that are intertwined with the understanding, disclosure and consequently, prevention and early treatment of cervical cancer (Adedimeji et al., 2021; De Fouw et al., 2023; Balogun & Omotade, 2018; Birhanu et a., 2012; Katahoire et al., 2008; Lewis et al., 2020). For example, the following quotes highlight the complex interplay of cultural beliefs and the stigma attached to holding women responsible for cervical cancer, a perception perpetuated by both men and the wider community.

"This infection is through sexual intercourse so the man will know that his wife cheated on him, that is why she has cervical cancer (..) Now the man will start doubting his wife and he may chase her from his home." (Male partner; de Fouw et al., 2023)

". . .when a woman is promiscuous, . . .there is no way she will not have the cancer, so that is what I think can cause the cervical cancer" (Fathers of adolescents; Balogun & Omotade, 2018)

". . .many women rely on home based traditional treatment as they do not like to disclose the disease to the community owing to its perceived association the diseases with frequent sexual intercourse and multiple sexual partners." (Community leader; Birhanu et al., 2012)

The role of education level emerged as pivotal in shaping participants' knowledge, as those with higher education levels tended to exhibit a more refined and accurate understanding of cervical cancer (e.g., Adedimeji et al., 2021).

3) Perception of preventive measures

Participants' perspectives on cervical cancer prevention ranged from perceiving the disease as incurable (e.g., Demissie et a., 2022; Birhanu et al., 2012) to considering it a 'normal', non-spiritual disease (e.g., Enyan et al., 2022; Lewis et al., 2020), as exemplified in the following statements.

"what is the point of screening? After all, cancer is a killer; better off not knowing cancer will kill you" (Male partner; Demissie et al., 2022)

"I think it is a disease just like malaria and the others. I believe the lifestyle of women can either make them get the disease or not. It is not a spiritual illness or disease." (Male partner; Enyan et al., 2022)

A significant proportion of males embraced the belief that cancer was an inherently fatal condition, rendering it resistant to both prevention measures and treatment efforts. Aligned with this perspective is a distinct subset of participants, who maintained that seeking medical attention was unwarranted unless visible symptoms or signs were present. This perception posed a challenge in fostering proactive and timely preventive actions, which, as reported by Datchoua Moukam et al., (2021), resulted in delays in the decision to undergo screening.

". . . in our community there is a habit of going to health institutions when it reaches a stage where they are unable to tolerate the pain." (Male partner, Birhanu et al., 2012)

"...Illiteracy is the major problem that may...if the husbands are illiterate, because they will say 'why? Why are you going, don't say that you have it'...when somebody is an illiterate they may not see the need to go for screening" (Male partner; Onyenwenyi & Mchunu, 2018)

Many participants lacked awareness of preventive services, mistakenly considering behaviours, such as abstinence and traditional remedies, which were inaccurately described as risk factors, as preventive strategies to forestall cervical cancer. In a few cases, respondents expressed that both men and women could contribute to the prevention of cervical cancer.

"[Wife and husband] should have protected sex so that they do not get any sexually transmitted diseases from each other." (Male partner; Lewis et al., 2020)

Nonetheless, due to the limited access to information on cervical cancer screening services, some men, while acknowledging the potential for prevention and the importance of screening, faced uncertainty on the 'how' and 'where' aspects of accessing these services (e.g., Demissie et al.,2022; Okedo-Alex et al., 2020; Datchoua Moukam et al., 2021).

"I don´t know if it can be prevented but i know of cancers of the breast and eye as i had a relative who had cancer of the eye and it was treated/prevented. It will be good for me if you [the researcher] explain more" (Male partner; Okedo-Alex et al., 2020).

"If I understand why the test is being done then I will pay happily." (Male partner; Williams & Amoateng, 2012)

The reviewed studies delved into two preventive measures: 1) screening and 2) HPV vaccination. These measures, which constitute integral components of cervical cancer prevention strategies, are further explored in the subsequent sections.

a. Screening as a preventive measure

The examination of cervical cancer screening as a preventive measure brought to light a range of factors that seemed to shape male partners' perspectives, engagement and access to this process. These factors included challenges at both the individual and systemic levels, as comprehensively explored by Adedimeji et al. (2021), Datchoua Moukam et al. (2021), and Onyenwenyi & Mchunu, (2018).

Prominent challenges arose dues to delays in accessing screening centres, primarily influenced by financial constraints and geographical location. Particularly, in societies where men often assume the role of the primary financial providers and transportation facilitators, the burden of covering expenses and arranging transportation introduced an additional layer of complexity to their partners' decision-making process (Binka et al., 2019; Birhanu et al., 2012; Datchoua Moukam et al., 2021; Onyenwenyi & Mchunu, 2018). As a result, financial considerations, intertwined with the broader societal role of men and limited availability of screening centres in certain areas, magnified the barriers to timely screening participation,

especially among those from socioeconomically disadvantaged backgrounds and residing in rural areas.

". . .Women have to go to modern and expensive health facilities in Addis Ababa to get treatment. However, they cannot afford to go to Addis Ababa and most remain suffering from the diseases." (Male participant; Birhanu et al., 2012)

"Well, the lack of availability of screening centres is also a critical issue." (Male partner; Onyenwenyi & Mchunu, 2018)

Psychological barriers encompassed fears of and stigma related to screening procedures and outcomes, including anxiety over positive results and subsequent actions. Sociocultural factors, such as gender dynamics, religious beliefs and cultural taboos, appeared to influence male attitudes towards screening uptake. Interestingly, contradictory viewpoints were shared among male participants, even within the same research study, on topics, such as being examined by male doctors (Demissie et al., 2022; Lewis et al., 2020; Enyan et al., 2022; Datchoua Moukam et al., 2021; Onyenwenyi & Mchunu, 2018). For instance, one participant voiced concerns, stating:

"I have heard that male doctors have sexual relations with female patients. If men hear that their wives will be undressed and put on an exam table by a male doctor ... we know that once a man sees a woman naked they will want to have sexual intercourse with her. Because of that men hesitate to tell their wives to get screened for cervical cancer." (Male partner; Lewis et al., 2020)

However, contrasting these hesitations, another participant from the same study, emphasised the importance of professionalism, stating:

"Doctors learn confidentiality in their work, and have a responsibility to do their job. It is not like a female doctor is supposed to treat female patients only." (Male partner; Lewis et al., 2020)

In line with these concerns, some participants expressed preference for the self-sampling method as a way to protect their partners:

"I choose the method where it is the woman herself who takes it. [Laughs] When she samples it herself, she's not even ashamed since she's doing it alone. But there are women who are even ashamed to examine their sexual parts in private." (Male partner; Datchoua Moukam et al., 2021)

b. HPV vaccination as a preventive measure

Similarly, drawing insights from five research studies (Balogun & Omotade, 2018; de Fouw et al., 2023; Katahoire et al., 2008; Vermandere et al., 2015; Watson-Jones et al., 2015), the exploration of HPV vaccination as a preventive measure, revealed a diverse range of attitudes and concerns among fathers, male teachers and male community and religious leaders. Overall, a significant subset of male participants exhibited favourable inclinations toward HPV vaccination for adolescents. Nonetheless, barriers to HPV vaccination were also evident, often rooted in concerns about safety and side effects, distrust, high cost, infertility and concerns about promoting promiscuity (de Fouw et al., 2023; Balogun & Omotade, 2018; Watson-Jones et al., 2015).

"*Others say that the plan is that doctors want to vaccinate our girls, daughters and end their productivity. That is why some parents do not want to vaccinate and circumcise their children, because many people are saying that they want women to have few children, so we need awareness" (Father, de Fouw et al., 2023)*

"We have not heard about people who have been vaccinated so we think they are starting with our children, they are used as guinea pigs or something, people try to see if it can work." (Male teacher; Vermandere et al., 2015)

With regards to the decision-making process related to HPV vaccination within specific groups, the consensus leaned toward a shared decision-making approach involving both parents. Nevertheless, alternative viewpoints emerged, with some suggesting that either the mother or the school headteacher should hold the authority to decide (de Fouw et al., 2023), while in certain instances, the ultimate decision rested with fathers, whose perspectives were significantly influenced by traditional and religious leaders (Balogun & Omotade, 2018). Moreover, teachers, given their substantial influence within school environments, were identified as key figures contributing to increased vaccination acceptability.

"Teachers spent almost all their time with the children and children really listen to the teachers. Whatever teachers say, a child does not doubt. They can go home and convince the parent 'this is what the teacher said'." (Male teacher; Vermandere et al., 2015)

Lastly, there was a clear call for increased information dissemination and support for HPV vaccination initiatives in schools. Many groups endorsed school-based immunisation

programmes as the most convenient and effective means of reaching pre-adolescent girls (de Fouw et al., 2023; Balogun & Omotade, 2018; Katahoire et al., 2008).

"Also going to the hospital will encourage bribing so we want to avoid that by taking it to school...because somebody tells you, bring something small so that I attend to you faster. And you might not even get the right vaccine even after giving out your bribes." *(Male teacher; Vermandere et al., 2015)*

"It is a good idea but I suggest, I think the government should do a bit of educating the masses because, if we teachers do not know what cervical cancer is, then how about that mother in the village, she will not accept; so education is very important." (Male teacher; Vermandere et al., 2015)

4) Males' involvement

The Participants' perspectives exhibited an evolution after receiving explanatory information. While many initially held reservations about the relevance of preventive measures within their communities, a considerable number shifted towards acknowledging the benefits of these measures. Across the analysed studies, a consensus emerged among participants, indicating their willingness to actively participate in cervical cancer prevention efforts in various African settings. As their understanding deepened, concerns and anxieties surrounding preventive measures steadily dwindled, underscoring the profound impact of accurate information. Despite these positive shifts, certain participants remained apprehensive due to concerns about the potential stigma negative side effects associated with prevention.

"Because of the prevalence of poverty in this community, some women would not like to go for screening. I will encourage and support her to go for the screening because the disease is dangerous". (Male partner; Binka et al., 2019)

Males frequently expressed eagerness to provide emotional support to their female partners and daughters, encouraging them to undergo screenings and embrace the preventive measures (Enyan et al., 2022; Binka et al., 2019; Lewis et al., 2020). Understanding the importance of prevention, males exhibited increased willingness to provide practical support, such as arranging transportation and offering financial assistance.

'This is a condition that can bring problems to the woman so if screening can be done and there is money, then I will encourage her to go and do it so that in the near future if something like that happens, we don't

spend so much on her treatment... You know I can't divorce her too. So, all is about money. If there is money, I will support her because I need to protect her. I will not wait for her to suffer.' (Male partner; Enyan et al., 2022)

"The husband has a very important responsibility because he has the capacity to encourage the woman to get tested more often for cervical cancer." (Male partner; Lewis et al., 2020).

Males' engagement extended to the realm of decision-making, where reports indicated varying degrees of influence. In specific instances, as illustrated by the study conducted by Adedimeji et al. (2021), men recognised a shared responsibility between genders in preventing cervical cancer. They emphasised the importance of both men and women actively participating in the prevention process, which encompassed actions like reducing sexually transmitted infections, addressing risk factors, and pursuing screening when feasible.

"Preventing cervical cancer is a responsibility both men and women should share equally; it should begin with preventing sexually transmitted infections, avoiding risk factors and obtaining screening when possible". (Male partner; Adedimeji et al., 2021)

However, in other studies, prevailing gender norms and societal expectations played a pivotal role in influencing women's decisions regarding preventive measures, with husbands' viewpoint exerting a significant impact. These dynamics were succinctly captured in one participant's reflection:

"Male involvement is very important as women listen to their husbands more than even the health care workers. They do whatever their husbands tell them as they see their husbands as their second 'god'". (Male participant; Okedo-Alex et al., 2020)

Finally, in specific studies, male participants acknowledged their role in raising awareness within their social circles (Enyan et al., 2022; de Fouw et al., 2023; Williams & Amoateng, 2012). Male participants indicated that the knowledge they acquired from their respective studies about cervical cancer increased their likelihood and enthusiasm to engage proactively in discussions about the topic with their peers and families, thereby contributing to a wider dissemination of knowledge.

"I will entreat all men not to take the health of their wives for granted. If their wives complain of any pain they should encourage them to seek medical attention." (Male partner; Williams & Amoateng, 2012)

"I will not be different from my colleague. For me, I will be a speaker who will be a voice to move this message to my fellow men because we should not be silent. I will first talk to my family about today's meeting." (Male partner; de Fouw et al., 2023)

Table 1. Key characteristics of the sixteen studies included in the present systematic review.

Study/Publication year	Country	Geographical region	Sample size (only males)	Sample characteristics	Data collection method
Adedimeji et al., 2021	Cameroon	Coastal town of Limbe in Southwest Cameron	N= 20	Male partners of women living with and without HIV	Focus group discussions and individual in-depth interviews
Balogun & Omotade, 2018	Nigeria	Five settlements of Ibadan North Local Government Area (urban and semi-urban settings)	N= 110	Junior and senior boys in public and private schools, fathers of adolescents, male teachers of adolescents, traditional and religious healers	Focus group discussions and key informant interviews
Binka et al., 2019	Ghana	North Tongu District (rural setting)	N= 26	Male partners of women living with and without cervical cancer	Focus group discussions and individual in-depth interviews
Birhanu et al., 2012	Ethiopia	Two districts of Jimma zone (urban and rural settings)	N= 112	Fathers and community leaders	Focus group discussions
De Fouw et al., 2023	Uganda	Three subcounties of Kagadi district (urban, suburban, and rural settings)	N= 67	Male partners and fathers	Focus group discussions
Demissie et al., 2022	Ethiopia	Two districts of Wolaita Zone (urban and rural settings)	N= 17	Male partners	Focus group discussions and key informant interviews
Enyan et al., 2022	Ghana	Cape Coast Metropolis suburb in southern Ghana	N= 15	Male partners	Individual in-depth interviews

Katahoire et al., 2008	Uganda	Five districts from the four major regions of Uganda	Unclear how many male participants (N= 178 interviews)	Fathers, school-aged boys, community leaders, local council and opinion leaders, cold chain technicians, health service providers, national political leaders and stakeholders	Focus group discussions and key informant interviews
Lewis et al., 2020	Malawi	Lilongwe (urban setting)	N= 125	HIV-positive men	Individual interviews (mixed methods)
Datchoua Moukam et al., 2021	Cameroon	Dschang district, west of Cameroon	N= 12	Male partners	Focus group discussions
Mwaka et al., 2014	Uganda	Two sites in Gulu district (urban and rural settings)	Unclear how many male participants (N= 13 focus groups with men)	Male partners and community leaders	Focus group discussions and key informant interviews
Okedo-Alex et al., 2020	Nigeria	Izzi Local Government Area of Ebonyi State, South-Eastern Nigeria (rural setting)	N= 16	Male partners	Focus group discussions (mixed methods)
Onyenwenyi & Mchunu, 2018	Nigeria	Fourteen communities of Ado-Odo Ota, Ogun State (rural setting)	N= 13	Male partners	Focus group discussions and individual in-depth interviews
Vermandere et al., 2015	Kenya	Eldoret	N= 30	Fathers and male teachers	Focus group discussions

Watson-Jones et al., 2015	Kenya	Maasai nomadic pastoralist communities in Kajiado County and in Korogocho informal settlement in Nairobi city	Unclear how many male participants in total (N= 42 interviews)	Fathers, teachers, school-aged boys, community leaders, religious leaders, health workers and stakeholders	Focus group discussions and individual in-depth interviews
Williams & Amoateng, 2012	Ghana	Kumasi, Ashanti region (urban setting)	N= 29	Male partners	Focus group discussions

Table 2. Thematic domains versus corresponding evidence sources.

Source	*Adedimeji et al., 2021*	*Balogun & Omotade, 2018*	*Binka et al., 2019*	*Birhanu et al., 2012*	*de Fouw et al., 2023*	*Demissie et al., 2022*	*Enyan et al., 2022*	*Katahoire et al., 2008*	*Lewis et al., 2020*	*Datchoua Moukam et al., 2021*	*Mwaka et al., 2014*	*Okedo-Alex et al., 2020*	*Onyenwenyi & Mchunu, 2018*	*Vermandere et al., 2015*	*Watson-Jones et al., 2015*	*Williams & Amoateng, 2012*	*Total no. of sources*
Awareness of cervical cancer	●	●		●	●	●	●	●			●		●		●	●	11
Knowledge of cervical cancer	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	16
Perception of preventive measures		●		●	●	●	●		●		●					●	8
Screening				●	●	●				●			●			●	6
HPV vaccination		●			●			●						●	●		5
Male involvement			●					●	●			●	●			●	6

Discussion

This systematic review aimed to understand the role of men in cervical cancer prevention in Africa. The themes that emerged from the analysed studies were: awareness of cervical cancer; knowledge of cervical cancer; perception of preventive measures and male involvement. These themes are critical in efforts to prevent and possibly eliminate cervical cancer on the African continent. In most of the studies reviewed 11/16, awareness of cervical cancer was an important theme that originated from the findings. Studies reported varied levels of awareness ranging from a lack of awareness to a comprehensive understanding of the disease, with a general improvement in awareness over a decade in similar geographical contexts (Williams & Amoateng in 2012; Enyan et al. in 2022). The differences in awareness were apparent among rural and urban populations, whereas those in urban areas demonstrated increased awareness. Multiple awareness strategies, including the use of the media and places of worship and the use of local terminologies to describe the disease were useful in enhancing understanding. This evidence calls for context-specific and targeted interventions to generally heighten cervical cancer (CC) awareness campaigns, especially in rural communities of Africa.

The evidence showed gaps in knowledge of CC across the sixteen studies included in the review. Misconceptions were observed in all aspects of CC, including the cause, risk factors, signs and symptoms, progression and prognosis, irrespective of the level of awareness. For instance, according to the findings by Lewis et al. (2020); Demissie et al. (2022); Balogun & Omotade (2018); and Vermandere et al. (2015), males attributed CC to adherence to Westernised diet, multiple sexual partners, suboptimal hygiene practices, exposure to chemicals, history of abortions, use of contraception and engagement in harmful traditional rituals. Although some have limited knowledge about CC, the misconceptions need to be

addressed to enhance supportive care towards CC prevention. Deliberate measures to improve men's knowledge of CC prevention are therefore paramount. In some developing settings, women have low autonomy in matters related to their health and wellbeing and may need approval from their partners (Osamor & Grady, 2016). Therefore, male empowerment in health issues affecting women, including CC will be an important step to prevent the disease. Furthermore, education level was found to be essential in influencing participants' knowledge, as those with higher education levels exhibited a more refined and accurate understanding of CC.

Evidence from half of the studies included in this review indicates that males hold varying perceptions of CC preventive measures, with some having inaccurate information. This probably could be attributed to lack of sufficient awareness about the disease. Regarding CC screening as a preventive measure, the review found that numerous factors influenced male partners' perceptions, involvement and access to this process, including individual and systemic influences as described by Adedim eji et al. (2021), Moukam et al. (2021), and Onyenwenyi & Mchunu, (2018). The review identified that financial and geographical barriers emerged as significant challenges to accessing CC screening, particularly in patriarchal societies where men primarily shoulder the family financial responsibility and transportation logistics. This situation makes worse the hurdle to early participation in screening, particularly affecting those from socioeconomically disadvantaged backgrounds and rural settings. Consequently, there is pressing need to address and improve the financial and geographical barriers to enhance screening uptake.

The findings of the review suggest the need for psychological interventions tailored to men, aimed at reducing fear and mitigating stigma associated with screening outcomes, including

anxiety over positive results and subsequent actions. Additional, sociocultural factors, such as gender dynamics and religious beliefs, played a pivotal role in shaping attitudes towards screening uptake. For example, male involvement in female health matters sometimes faced societal resistance, and religious beliefs, norms, and taboos influenced screening attitudes, particularly when women were to be examined by male doctors.

Furthermore, we found out that whereas fathers played an important role in decision-making and supported vaccination of their daughter, male teachers contributed to increasing vaccination acceptability. However, there were apprehensions among male caregivers, teachers and community leaders leading to vaccine hesitancy. Therefore, interventions to improve HPV vaccination among women and girls need to involve men as the role they play at the household and community levels in Africa could hinder HPV vaccination acceptance.

Conclusion

This review has provided a broad overview of males' role in the prevention of cervical cancer in Africa and contributed to a better understanding of the impact of male support on cervical screening uptake and decision-making processes regarding cervical cancer prevention. Additionally, it has identified gaps in awareness, knowledge, perception and prevention, underscoring the need for future research, particularly in the realm of psychosocial interventions aimed at males regarding cervical cancer prevention.

Strengths and Limitations of this Study

This review is unique in contributing to the evidence on cervical cancer prevention since no previous review has reported the role of men in cervical cancer prevention in Africa. The risk of bias is decreased in this review as the study selection and data extraction were independently done in duplicate. Also, the search strategy was restricted to studies published

in English. In doing so, studies published only in other languages within the African context might have been excluded. A major weakness is that the included studies had varied qualitative designs and data collection methods. This could potentially affect the interpretations.

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Competing interests statements

None declared

Author contributions

NIEE, DOY, PKA and SKA were involved in the conceptualisation of the study. NIEE created the inclusion criteria which was revised by all the authors. All authors developed the study's protocol. AR registered the protocol. AR, MKO and LD searched for the relevant studies and did the screening. All authors were involved in the final study selection, data extraction and quality assessment of the included studies. NIEE and AR drafted the initial manuscript which was revised by all the authors for important intellectual content.

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Supplementary file 1

Database:

1) Ovid

APA PsycInfo <1806 to June Week 3 2023>,
Embase Classic+Embase <1947 to 2023 June 28>,
Global Health <1910 to 2023 Week 25>,
Ovid MEDLINE(R) ALL <1946 to June 28, 2023>

Search Strategy:

1 africa* (1234587)

2 (man or men or male or males or partner* or husband* or spous*) (20266902)

3 ((prevent* or test* or smear* or vaccinat* or "health promot*" or educat* or awareness or screen* or monitor*) adj3 ("cervi* neoplasm*" or "cervi* cancer*" or "cancer of the cervix" or "cancer of the uterine cervix" or "cervi* tumo*" or "cervi* lesion*" or "cervi* precancer*" or "cervi* pre cancer*")) (26820198)

4 1 and 2 and 3 (1673)

5 limited to humans (1643)

6 limited to English language (1614)

7 deduplicate (1359)

N of papers = 1359

2) Scopus

Search Strategy:

africa*

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AND ((prevent* or test* or smear* or vaccinat* or "health promot*" or educat* or awareness or screen* or monitor*) W/3 ("cervi* neoplasm*" or "cervi* cancer*" or "cancer of the cervix" or "cancer of the uterine cervix" or "cervi* tumo*" or "cervi* lesion*" or "cervi* precancer*" or "cervi* pre cancer*"))

N of papers = 220

3) Web of Science

africa*

AND (man or men or male or males or partner* or husband* or spous*)

AND ((prevent* or test* or smear* or vaccinat* or "health promot*" or educat* or awareness or screen* or monitor*) NEAR/3 ("cervi* neoplasm*" or "cervi* cancer*" or "cancer of the cervix" or "cancer of the uterine cervix" or "cervi* tumo*" or "cervi* lesion*" or "cervi* precancer*" or "cervi* pre cancer*"))

N of papers = 219

4) Cochrane library

africa*

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N of papers = 29

5) CINAHL Plus

africa*

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N of papers = 134

6) WHO Website

cervical cancer

filtered for African countries

N of papers = 0

After de-duplication, final number of papers to screen = **1513**

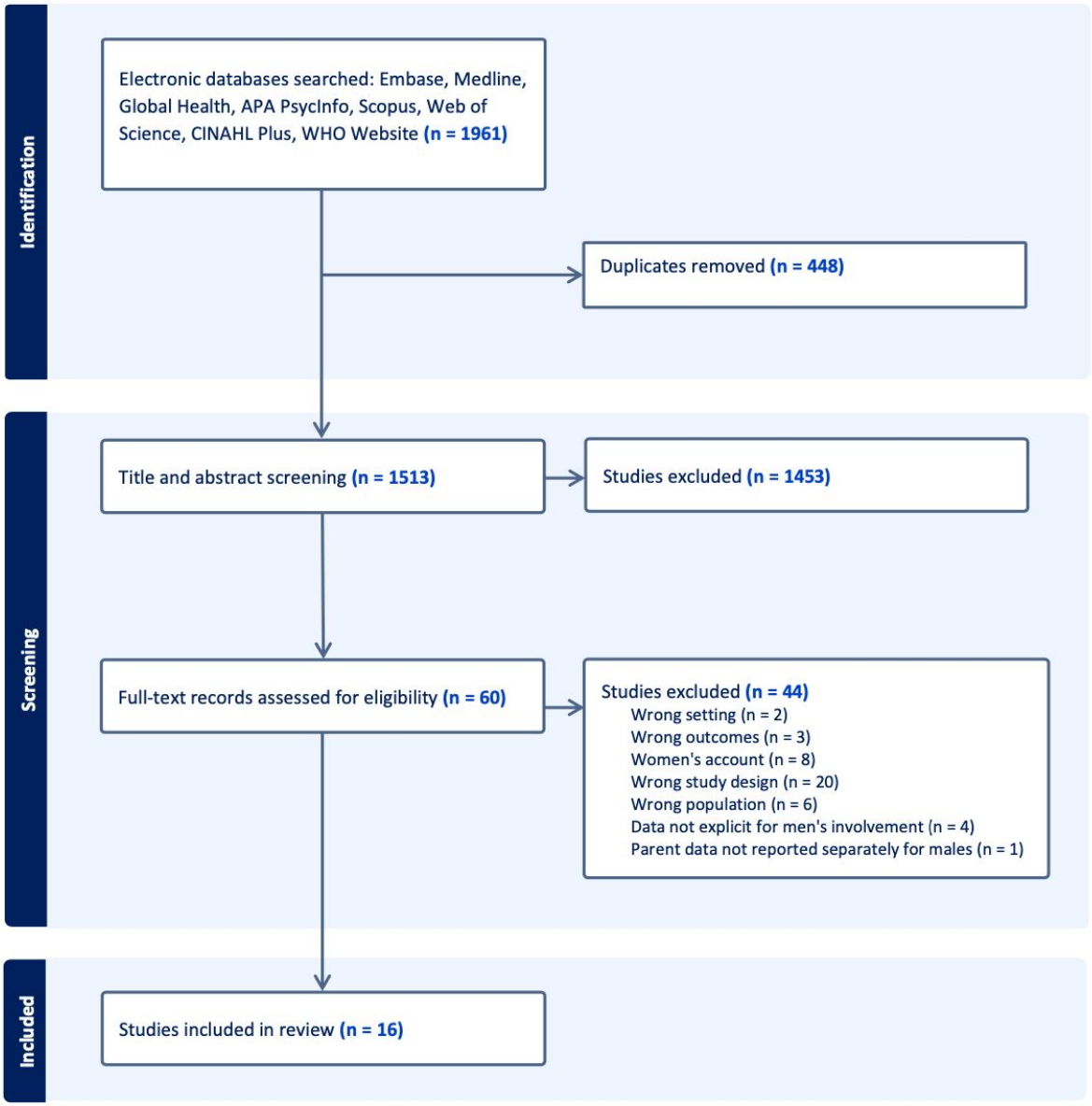

Figure 1. PRISMA Flow Diagram illustrating the systematic study selection process.

Table 1. Key characteristics of the sixteen studies included in the present systematic review.

Study/Publication year	Country	Geographical region	Sample size (only males)	Sample characteristics	Data collection method
Adedimeji et al., 2021	Cameroon	Coastal town of Limbe in Southwest Cameron	N= 20	Male partners of women living with and without HIV	Focus group discussions and individual in-depth interviews
Balogun & Omotade, 2018	Nigeria	Five settlements of Ibadan North Local Government Area (urban and semi-urban settings)	N= 110	Junior and senior boys in public and private schools, fathers of adolescents, male teachers of adolescents, traditional and religious healers	Focus group discussions and key informant interviews
Binka et al., 2019	Ghana	North Tongu District (rural setting)	N= 26	Male partners of women living with and without cervical cancer	Focus group discussions and individual in-depth interviews
Birhanu et al., 2012	Ethiopia	Two districts of Jimma zone (urban and rural settings)	N= 112	Fathers and community leaders	Focus group discussions
De Fouw et al., 2023	Uganda	Three subcounties of Kagadi district (urban, suburban, and rural settings)	N= 67	Male partners and fathers	Focus group discussions
Demissie et al., 2022	Ethiopia	Two districts of Wolaita Zone (urban and rural settings)	N= 17	Male partners	Focus group discussions and key informant interviews
Enyan et al., 2022	Ghana	Cape Coast Metropolis suburb in southern Ghana	N= 15	Male partners	Individual in-depth interviews

Katahoire et al., 2008	Uganda	Five districts from the four major regions of Uganda	Unclear how many male participants (N= 178 interviews)	Fathers, school-aged boys, community leaders, local council and opinion leaders, cold chain technicians, health service providers, national political leaders and stakeholders	Focus group discussions and key informant interviews
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Mwaka et al., 2014	Uganda	Two sites in Gulu district (urban and rural settings)	Unclear how many male participants (N= 13 focus groups with men)	Male partners and community leaders	Focus group discussions and key informant interviews
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Awareness of cervical cancer	●	●		●	●	●	●	●			●		●		●	●	11
Knowledge of cervical cancer	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	16
Perception of preventive measures		●		●	●	●	●		●		●					●	8
Screening				●	●	●				●			●			●	6
HPV vaccination		●			●			●						●	●		5
Male involvement			●					●	●			●	●			●	6

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2) Scopus

Search Strategy:

africa*

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N of papers = 220

3) Web of Science

africa*

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N of papers = 219

4) Cochrane library

africa*

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N of papers = 29

5) CINAHL Plus

africa*

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cervical cancer

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BMJ Open

Understanding cervical cancer prevention in Africa: a qualitative systematic review of the role of men

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2023-080416.R1
Article Type:	Original research
Date Submitted by the Author:	15-Oct-2024
Complete List of Authors:	Ebu Enyan, Nancy ; University of Cape Coast, Department of Public Health Nursing Raouna, Aigli; The University of Edinburgh, Department of Clinical Psychology KING-OKOYE, MICHELLE; The University of Edinburgh, Department of Nursing Studies Ken-Amoah, Sebastian; University of Cape Coast, Department of Obstetrics and Gynaecology AKAKPO , PATRICK; University of Cape Coast, Department of Anatomic Pathology Doi, Lawrence; The University of Edinburgh, Department of Nursing Studies, School of Health in Social Science, The University of Edinburgh, Scotland Obiri-Yeboah, Dorcas ; University of Cape Coast, Department of Microbiology and Immunology
Primary Subject Heading:	Oncology
Secondary Subject Heading:	Public health, Oncology
Keywords:	Gynaecological oncology < GYNAECOLOGY, Reproductive medicine < GYNAECOLOGY, Public health < INFECTIOUS DISEASES, Adult oncology < ONCOLOGY, Systematic Review

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Understanding cervical cancer prevention in Africa: a qualitative systematic review of the role of men

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Abstract

Background

Cervical cancer is a preventable non-communicable disease, if detected early through screening for precancers and appropriately managed. The causal link with high-risk Human Papillomavirus infection is established, making elimination possible through the World Health Organization multi-pronged 90:70:90 strategy. However, practical cervical cancer elimination efforts need to address issues within the socio-cultural context that can facilitate or hinder prevention strategies. In this regard, the role of men in promoting reproductive health, especially in Africa, cannot be over-emphasized.

Objective

This systematic review examined the extent of involvement of men in cervical cancer prevention in Africa and its impact on the WHO cervical cancer elimination strategy.

Methods

A comprehensive search for relevant literature was conducted in the following electronic databases: Embase, Medline, Global Health, APA PsycINFO, Scopus, Web of Science, CINAHL Plus and the WHO Website from 2008 to 2023. Eligible studies explored the views of n=592 men. Screening of abstracts and titles, data extraction and quality assessment were performed in duplicate. A narrative synthesis was performed, as developed by the Economic and Social Research Council (ESRC) Methods Programme, to synthesise the qualitative data.

Results

Out of the 1961 studies identified through the electronic database search, 16 studies met all inclusion criteria. This review revealed varying levels of awareness of cervical cancer among men; while some had little to no knowledge, others demonstrated a comprehensive understanding. Gaps in knowledge and perception of cervical cancer were evident across

studies. Both Individual and systemic challenges shaped the perspectives of men on screening as a preventive measure, resulting in a range of attitudes and concerns regarding human papillomavirus vaccination. Though male participation in CC prevention was generally low, it was noted that males were willing to play an active role in CC screening and vaccination by supporting the process. Men believed that aggressive education and awareness creation among men was required.

Conclusions

This review highlights the need for targeted interventions to improve awareness, knowledge and perception of cervical cancer among men. Such efforts are essential to help men recognize their crucial role in supporting cervical cancer elimination within the African context.

Keywords: Africa, Cervical cancer prevention, men involvement, men, qualitative systematic review

PROSPERO registration

The review protocol was registered on 26th June 2023 in PROSPERO with registration number CRD42023437100

Strengths and Limitations

- A major strength of this systematic review and narrative synthesis is that no previous review has reported the role of men in cervical cancer prevention in Africa.
- The study selection and data extraction were independently done in duplicate to decrease bias.

- The search strategy was limited to studies published in English, which may have led to the exclusion of relevant studies published in other languages within the African context.
- The included studies employed varied qualitative designs and data collection methods, which could potentially affect the interpretation of findings.

Background

Cervical cancer (CC) is a preventable non-communicable disease, if detected early through screening for precancers and appropriately managed[1]. The Global Strategy for CC elimination by the World Health Assembly in 2020 mandates countries to develop programmes to reach and maintain a CC incidence rate of below four per 100,000 women[2,3]. This can be accomplished by accelerating efforts towards WHO's multi-pronged 90:70:90 strategy, which aims to ensure that 90% of girls are fully vaccinated against high-risk Human Papillomavirus (hr-HPV) by the age of 15 years, 70% of women get screened with a high-performance test by the age of 35 years and again by the age of 45 years and 90% of women with precancerous lesions receive treatment, with 90% of those with invasive carcinoma receiving appropriate management[3].

Effective CC elimination efforts need to address socio-cultural factors that either facilitate or hinder prevention strategies. The role of men in promoting reproductive health is crucial and cannot be over-emphasized. Their involvement in CC prevention and treatment is imperative in achieving the World Health Organization's goal of eliminating CC by 2030[4, 5]. Although several empirical studies have explored the role of men in CC prevention in some developing countries[6, 7], there is a lack of systematic review on their involvement. Given the immense

influence men often have on household decision-making, particularly in matters affecting the well-being of their families in certain developing countries, it is critical to generate sufficient evidence to design interventions that encourage men to support their partners in seeking cervical precancer screening, HPV vaccination and treatment of precancerous lesions of the cervix. Men have enormous potential to contribute to reducing the burden of HPV infection by taking measures to protect themselves and their partners, as well as supporting decisions that promote their general/overall health regarding HPV infections and CC[8, 9]. Therefore, it is important to compile higher-level evidence to guide interventions focused on men's involvement in CC prevention. This qualitative systematic review examined the extent of involvement of men in CC prevention in Africa and its implications for the WHO CC elimination strategy.

The following questions guided this systematic review:

1. What are men's awareness and knowledge regarding CC?
2. What are the perceptions of men regarding CC and its prevention in Africa?
3. How do men support and facilitate vaccination, screening and follow-up on treatment of cervical precancerous lesions?
4. What role do men play in the decision-making process regarding screening and HPV vaccination?

Methods

Design

A systematic review and narrative synthesis were conducted to understand the role of men in CC prevention in Africa. Prior to this review, a protocol was developed based on the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) protocol

checklist[10] and registered in PROSPERO on 26th June 2023. A comprehensive search for relevant literature was conducted in the following electronic databases: Embase, Medline, Global Health, APA PsycINFO, Scopus, Web of Science, CINAHL Plus and the WHO Website. The search was conducted in June 2023.

Search Strategy and Eligibility Criteria

The search strategy followed the PICO model: (1) Population: all adult men in Africa, involvement of men (non-medical professionals), male partners or husbands, (2) Phenomenon of interest: screening/prevention of CC, (3) Context: Africa, (4) Outcome: examining influence, support, facilitate, decision making, knowledge, experiences, attitudes, perceptions, and any barriers. The following subject index terms were used: Africa, Early Detection of Cancer, Female, Humans, Male, Papillomavirus Infections, Uterine Cervical Neoplasms, and Vaccination. See supplementary file 1 for the search strategies used for the databases.

Qualitative research papers published in English with full text from 2008 to 2023 and in peer-reviewed journals that received ethical approval were included in this study. However, the views of male medical professionals were excluded from the study. This is because male medical professionals are likely to have positive perceptions about the condition by virtue of being health workers that could affect the results of this review if mixed with the general population of men.

Data Extraction

Two researchers independently screened titles, abstracts, and full texts using the software Covidence. Discrepancies observed were resolved by consensus or through further discussion with the rest of the research team. Microsoft Excel was used to extract data from the studies,

including year of publication, country, geographical region, sample size, focus of study, key themes/subthemes and quotations. The contextual and methodological characteristics of each study were presented in a table format.

Quality Assessment

The Joanna Briggs Institute (JBI) critical appraisal checklist for qualitative research was used to assess the methodological quality of the included studies and determine the extent to which each study addressed the possibility of bias in its design, conduct and analysis[11].

Data Analysis

A narrative synthesis was conducted, guided by the Economic and Social Research Council (ESRC) narrative synthesis framework[12]. The framework involves developing a preliminary synthesis, which we did by tabulation of the findings of included studies and clustering studies based on the aspects of our review questions they addressed. We then moved to the next stage which involves an exploration of relationships within and between the included studies by scrutinising the characteristics of the studies and their reported findings and factors that explained any differences across them. Finally, we assessed the robustness of the synthesis to ensure rigour was maintained and the findings were credible. This includes assessing the potential for bias across studies.

Patient and Public Involvement

It was not appropriate or possible to involve patients or the public in the design, or conduct, or reporting, or dissemination plans of our research.

Results

In total, 1961 records were identified through the electronic database search, with 16 studies meeting all inclusion criteria. The identification process, eligibility assessment, and reasons for exclusion is illustrated in Figure 1.

The included studies were published between 2008 and 2023 and examined the perspectives of n= 592 men residing in Ghana (n = 3), Nigeria (n= 3), Uganda (n = 3), Cameroon (n = 2), Ethiopia (n = 2), Kenya (n = 2) and Malawi (n = 1). Data were collected through focus group discussions and individual in-depth interviews. The participants represented a diverse range of male roles, including non-medical professionals, partners, fathers, teachers, adolescent boys and community and faith leaders. Supplementary file 2 provides a summary of the key characteristics of the 16 qualitative studies included in this systematic review.

Five thematic categories were identified in this review, shedding light on the role of men in understanding CC prevention in Africa. The interconnected themes included: awareness and knowledge of CC, perception of preventive measures, screening as a preventive measure, HPV vaccination as a preventive measure and men's involvement. An overview of themes and their corresponding evidence sources is presented in supplementary file 3. The following section will elaborate on each theme, supported by illustrative excerpts from the participants' interviews.

1) Awareness and knowledge of cervical cancer

The majority of the studies included in the analysis revealed a notable variability in awareness levels regarding CC among men. Awareness ranged from complete unfamiliarity to a comprehensive understanding. In some cases, this variation was more pronounced between urban and rural populations, with urban participants generally demonstrating a notably higher level of awareness compared to their rural counterparts (e.g., Birhanu et al.)[13]. However, it is worth noting that other studies did not find such marked differences based on participants' place of residence (e.g., de Fouw et al.)[14].

"I have never heard of cervical cancer disease. Is it also a disease that affects women? Then women are really suffering." (Male partner; Binka et al.[6])

Remarkably, recent studies have revealed a notable upward trend in awareness levels, underscoring the impact of educational initiatives and public health campaigns. This upward trend was particularly evident when comparing studies conducted within similar socio-contextual settings, such as those conducted by Williams & Amoateng[15] and that of Enyan et al.[7], both in urban and peri-urban areas of Ghana. Over the course of a decade, a discernible evolution in awareness emerged, with the latter study showing that 12 out of 15 participants were aware of CC, compared to the majority of the participants in the earlier study by Williams & Amoateng[15], who had never heard of the disease. Participants consistently identified media outlets such as radio and television, as well as places of worship, as their primary sources of information about CC.

"I heard of it on the television. I don't know how it is, but it was being discussed that a woman who has it may not be able to tell whether she has it or not...unless she is examined by the doctor." (Male partner; Enyan et al.[7])

Furthermore, participants' level of awareness seemed to be closely linked to the use of local language descriptors. The availability of accurate terminology in local languages significantly impacted participants' understanding of cancer in general and CC specifically (Birhanu et al.[13]; Binka et al.[6]; Demissie et al.[16]; Katahoire et al.[17]; Mwaka et al.[18]). Despite initial awareness gaps regarding the term "cervical cancer", most men recognized the prevalence of CC within their communities when researchers provided thorough descriptions of the disease's signs and symptoms (Williams & Amoateng[15]).

"I have heard of cancers generally but not that of the cervix, I haven´t heard of it or seen anyone affected except this one you are asking" (Male partner; Okedo-Alex et al.[19]).

Across all sixteen studies, a prevailing landscape of limited and often inaccurate knowledge surrounding CC was observed. This dearth of knowledge extended across all facets of CC, including its etiology, risk factors, clinical manifestations, progression and prognosis, regardless of the participants' level of awareness.

"I did not know anything about this disease. I did not have any idea about the cause, symptoms or any risk factor of the disease. I only overheard it on the television being debated in Parliament as to whether it should be covered in the national health insurance scheme. That is all I know". (Male partner; Binka et al.[6]).

"In fact, I had no knowledge about the disease and how it is caused, but all I knew was that it could kill. And I do not even know its local name." (Male partner; Binka et al.[6]).

Widespread misconceptions permeated participants' understanding of the causes and risk factors of CC. These misconceptions encompassed a wide range of beliefs, including, but not limited to, attributing CC solely to female promiscuity rather than considering men promiscuity, suboptimal hygiene practices, exposure to chemicals, history of abortions, use of contraception, the notion of 'devil's intervention', engagement in harmful traditional rituals and adherence to Westernized diets (e.g., Lewis et al.[4]; Demissie et al.[16]; Balogun & Omotade[20]; Vermandere et al.[21]; Birhanu et al.[13]; de Fouw et al.[14]; Mwaka et al.[18]).

"We know that the kind of oil that is used to lubricate the condoms can cause this condition (cervical cancer) especially if it causes reaction to your body and if you use it for a long time" (Male partner; Mwaka et al.[18])

". . .Istihada, meaning punishment that occurs when the devil kicks a woman's womb. This is an explanation from religious book." (Religious leader; Birhanu et al.[13])

Interestingly, male participants often associated CC with sexually transmitted diseases. However, this perceived cause was frequently framed in the context of promiscuity rather than recognizing it as a viral infection. This highlights how cultural beliefs are intertwined with the understanding, disclosure and consequently, prevention and early treatment of CC (Adedimeji et al.[22]; de Fouw et al.[14]; Balogun & Omotade[20]; Birhanu et al.[13]; Katahoire et al.[17]; Lewis et al.[4]). For example, the following quotes illustrate the complex interplay of cultural beliefs and the stigma attached to holding women responsible for CC, a perception perpetuated by both men and the wider community.

"This infection is through sexual intercourse so the man will know that his wife cheated on him, that is why she has cervical cancer (..) Now the man will start doubting his wife and he may chase her from his home." (Male partner; de Fouw et al.[14])

". . .when a woman is promiscuous, . . .there is no way she will not have the cancer, so that is what I think can cause the cervical cancer" (Fathers of adolescents; Balogun & Omotade[20])

". . .many women rely on home based traditional treatment as they do not like to disclose the disease to the community owing to its perceived association the diseases with frequent sexual intercourse and multiple sexual partners." (Community leader; Birhanu et al.[13])

The role of education level emerged as pivotal in shaping participants' knowledge, as those with higher education levels tended to exhibit a more refined and accurate understanding of CC (e.g., Adedimeji et al.[22]).

2) Perception of cervical cancer

Participants' perspectives on CC prevention ranged from perceiving the disease as incurable (e.g., Demissie et al.[16]; Birhanu et al.[13]) to considering it a 'normal', non-spiritual disease (e.g., Enyan et al.[7]; Lewis et al.[4]), as exemplified in the following statements.

"what is the point of screening? After all, cancer is a killer; better off not knowing cancer will kill you" (Male partner; Demissie et al.[16])

"I think it is a disease just like malaria and the others. I believe the lifestyle of women can either make them get the disease or not. It is not a spiritual illness or disease." (Male partner; Enyan et al.[7])

A significant proportion of men held the belief that cancer is an inherently fatal, rendering it resistant to both prevention measures and treatment efforts. Aligned with this perspective is a distinct subset of participants, who maintained that seeking medical attention was unnecessary unless visible symptoms or signs were present. Such beliefs pose enormous challenges in fostering proactive and timely preventive interventions, leading to dealys in decisions regarding screening, as reported by Datchoua Moukam et al.[23].

". . . in our community there is a habit of going to health institutions when it reaches a stage where they are unable to tolerate the pain." (Male partner, Birhanu et al.[13])

"...Illiteracy is the major problem that may...if the husbands are illiterate, because they will say 'why? Why are you going, don't say that you have it'...when somebody is an illiterate they may not see the need to go for screening" (Male partner; Onyenwenyi & Mchunu[24])

3) Perception of preventive measures

Many participants were unaware of available preventive services and mistakenly regarded behaviours, such as abstinence and traditional remedies, which were inaccurately described as risk factors, as preventive strategies to forestall CC. In a few cases, participants expressed that both men and women could contribute to the prevention of CC.

"[Wife and husband] should have protected sex so that they do not get any sexually transmitted diseases from each other." (Male partner; Lewis et al.[4])

Nonetheless, due to the limited access to information on CC screening services, some men, while acknowledging the potential for prevention and the importance of screening, faced uncertainty on the 'how' and 'where' aspects of accessing these services (e.g., Demissie et al.[16]; Okedo-Alex et al.[19]; Datchoua Moukam et al.[23]).

"I don´t know if it can be prevented but i know of cancers of the breast and eye as i had a relative who had cancer of the eye and it was treated/prevented. It will be good for me if you [the researcher] explain more" (Male partner; Okedo-Alex et al.[19]).

"If I understand why the test is being done then I will pay happily." (Male partner; Williams & Amoateng[15])

The reviewed studies delved into two preventive measures: 1) screening and 2) HPV vaccination. These measures, which constitute integral components of CC prevention strategies, are further explored in the subsequent sections.

a. Screening as a preventive measure

The examination of CC screening as a preventive measure revealed a range of factors that seemed to shape male partners' perspectives, engagement and access to this process. These factors included challenges at both the individual and systemic levels, as comprehensively explored by Adedimeji et al.[22], Datchoua Moukam et al.[23] and Onyenwenyi & Mchunu[24].

Significant challenges emerged due to delays in accessing screening centres, primarily influenced by financial constraints and geographical location. Particularly, in societies where men often assume the role of the primary financial providers and transportation facilitators, the burden of covering expenses and arranging transportation introduced an additional layer of complexity to their partners' decision-making process (Binka et al.[6]; Birhanu et al.[13]; Datchoua Moukam et al.[23]; Onyenwenyi & Mchunu[24]). As a result, financial considerations, intertwined with the broader societal role of men and the limited availability of screening centres in certain areas, magnified the barriers to timely screening participation, especially among those from socioeconomically disadvantaged backgrounds and residing in rural areas.

". . .Women have to go to modern and expensive health facilities in Addis Ababa to get treatment. However, they cannot afford to go to Addis Ababa and most remain suffering from the diseases." (Male participant; Birhanu et al.[13])

"Well, the lack of availability of screening centres is also a critical issue." (Male partner; Onyenwenyi & Mchunu[24])

Psychological barriers encompassed fears of and stigma related to screening procedures and outcomes, including anxiety over positive results and subsequent actions. Sociocultural factors, such as gender dynamics, religious beliefs and cultural taboos, appeared to shape men's attitudes towards screening uptake. Interestingly, contradictory viewpoints were shared among male participants, even within the same research study, on topics like being examined by male doctors (Demissie et al.[16]; Lewis et al.[4]; Enyan et al.[7]; Datchoua Moukam et al.[23]; Onyenwenyi & Mchunu[24]). For instance, one participant voiced concerns, stating:

"I have heard that male doctors have sexual relations with female patients. If men hear that their wives will be undressed and put on an exam table by a male doctor ... we know that once a man sees a woman naked they will want to have sexual intercourse with her. Because of

that men hesitate to tell their wives to get screened for cervical cancer." (Male partner; Lewis et al.[4])

However, contrasting these hesitations, another participant from the same study, emphasised the importance of professionalism, stating:

"Doctors learn confidentiality in their work, and have a responsibility to do their job. It is not like a female doctor is supposed to treat female patients only." (Male partner; Lewis et al.[4])

In line with these concerns, some participants expressed a preference for the self-sampling method as a way to protect their partners:

"I choose the method where it is the woman herself who takes it. [Laughs] When she samples it herself, she's not even ashamed since she's doing it alone. But there are women who are even ashamed to examine their sexual parts in private." (Male partner; Datchoua Moukam et al.[23])

b. HPV vaccination as a preventive measure

Similarly, drawing insights from five research studies (Balogun & Omotade[20]; de Fouw et al.[14]; Katahoire et al.[17]; Vermandere et al.[21]; Watson-Jones et al.[25]), the exploration of HPV vaccination as a preventive measure, revealed a diverse range of attitudes and concerns among fathers, male teachers and male community and religious leaders. Overall, a significant subset of male participants exhibited favourable inclinations toward HPV vaccination for adolescents. Nonetheless, barriers to HPV vaccination were also evident, often rooted in concerns about safety and side effects, distrust, high cost, infertility and concerns about promoting promiscuity (de Fouw et al.[14]; Balogun & Omotade[20]; Watson-Jones et al.[25]).

"*Others say that the plan is that doctors want to vaccinate our girls, daughters and end their productivity. That is why some parents do not want to vaccinate and circumcise their children, because many people are saying that they want women to have few children, so we need awareness" (Father, de Fouw et al.[14])*

"We have not heard about people who have been vaccinated so we think they are starting with our children, they are used as guinea pigs or something, people try to see if it can work." (Male teacher; Vermandere et al.[21])

4) Male involvement in decision-making related to HPV vaccination

With regard to the decision-making process related to HPV vaccination within specific groups, the consensus leaned toward a shared decision-making approach involving both parents. Nevertheless, alternative viewpoints emerged, with some suggesting that either the mother or the school headteacher should hold the authority to decide (de Fouw et al.[14]), while in certain instances, the ultimate decision rested with fathers, whose perspectives were significantly influenced by traditional and religious leaders (Balogun & Omotade[20]). Moreover, teachers, given their substantial influence within school environments, were identified as key figures contributing to increased vaccination acceptability.

"Teachers spent almost all their time with the children and children really listen to the teachers. Whatever teachers say, a child does not doubt. They can go home and convince the parent 'this is what the teacher said'." (Male teacher; Vermandere et al.[21])

Finally, there was a clear call for increased information dissemination and support for HPV vaccination initiatives in schools. Many groups endorsed school-based immunisation programmes as the most convenient and effective means of reaching pre-adolescent girls (de Fouw et al.[14]; Balogun & Omotade[20]; Katahoire et al.[17]).

"Also going to the hospital will encourage bribing so we want to avoid that by taking it to school...because somebody tells you, bring something small so that I attend to you faster. And you might not even get the right vaccine even after giving out your bribes." *(Male teacher; Vermandere et al.[21])*

"It is a good idea but I suggest, I think the government should do a bit of educating the masses because, if we teachers do not know what cervical cancer is, then how about that mother in the village, she will not accept; so education is very important." (Male teacher; Vermandere et al.[21])

5. Male support

The participants' perspectives exhibited an evolution after receiving explanatory information. While many initially held reservations about the relevance of preventive measures within their communities, a considerable number shifted towards acknowledging the benefits of these measures. Across the analysed studies, a consensus emerged among participants, indicating their willingness to participate in CC prevention efforts in various African settings actively. As their understanding deepened, concerns and anxieties surrounding preventive measures steadily dwindled, underscoring the profound impact of accurate information. Despite these positive shifts, certain participants remained apprehensive due to concerns about potential stigma and negative side effects associated with prevention.

"Because of the prevalence of poverty in this community, some women would not like to go for screening. I will encourage and support her to go for the screening because the disease is dangerous". (Male partner; Binka et al.[6])

Men frequently expressed eagerness to provide emotional support to their female partners and daughters, encouraging them to undergo screenings and embrace the preventive measures (Enyan et al.[7]; Binka et al.[6]; Lewis et al.[4]). Understanding the importance of prevention, men exhibited an increased willingness to provide practical support, such as arranging transportation and offering financial assistance.

'This is a condition that can bring problems to the woman so if screening can be done and there is money, then I will encourage her to go and do it so that in the near future if something like that happens, we don't spend so much on her treatment... You know I can't divorce her too. So, all is about money. If there is money, I will support her because I need to protect her. I will not wait for her to suffer.' (Male partner; Enyan et al.[7])

"The husband has a very important responsibility because he has the capacity to encourage the woman to get tested more often for cervical cancer." (Male partner; Lewis et al.[4]).

Male engagement extended to the realm of decision-making, where reports indicated varying degrees of influence. In specific instances, as illustrated by the study conducted by Adedimeji et al.[22], men recognised a shared responsibility between genders in preventing CC. They

emphasised the importance of both men and women actively participating in the prevention process, which encompassed actions like reducing sexually transmitted infections, addressing risk factors, and pursuing screening when feasible.

"Preventing cervical cancer is a responsibility both men and women should share equally; it should begin with preventing sexually transmitted infections, avoiding risk factors and obtaining screening when possible". (Male partner; Adedimeji et al.[22])

However, in other studies, prevailing gender norms and societal expectations played a pivotal role in shaping women's decisions regarding preventive measures, with husbands' viewpoint exerting a significant impact. These dynamics were succinctly captured in one participant's reflection:

"Male involvement is very important as women listen to their husbands more than even the health care workers. They do whatever their husbands tell them as they see their husbands as their second 'god'". (Male participant; Okedo-Alex et al.[19])

Finally, in specific studies, male participants acknowledged their role in raising awareness within their social circles (Enyan et al.[7]; de Fouw et al.[14]; Williams & Amoateng[15]). Male participants indicated that the knowledge they acquired from their respective studies about CC increased their likelihood and enthusiasm to engage proactively in discussions about the topic with their peers and families, thereby contributing to a wider dissemination of knowledge.

"I will entreat all men not to take the health of their wives for granted. If their wives complain of any pain they should encourage them to seek medical attention." (Male partner; Williams & Amoateng[15])

"I will not be different from my colleague. For me, I will be a speaker who will be a voice to move this message to my fellow men because we should not be silent. I will first talk to my family about today's meeting." (Male partner; de Fouw et al.[14])

Discussion

This systematic review aimed to understand the role of men in CC prevention in Africa. The themes that emerged from the analysed studies were: awareness of CC; knowledge of CC; perception of preventive measures and men's involvement. These themes are critical in efforts to eliminate CC on the African continent. Awareness of CC was an important theme that originated from eleven out of the sixteen studies reviewed. Studies reported varied levels of awareness ranging from a lack of awareness to a comprehensive understanding of the disease, with a general improvement in awareness over a decade in similar geographical contexts [7,15]. The differences in awareness were apparent among rural and urban populations, whereas those in urban areas demonstrated increased awareness. Multiple awareness strategies, including the use of the media, places of worship and local terminologies to describe the disease, were useful in enhancing understanding. This evidence calls for context-specific and targeted interventions to generally heighten CC awareness campaigns, especially in rural communities of Africa.

The evidence showed gaps in knowledge of CC across the sixteen studies included in the review. Misconceptions were observed in all aspects of CC, including the cause, risk factors, signs and symptoms, progression and prognosis, irrespective of the level of awareness. For example, according to the findings by Lewis et al.[4]; Demissie et al.[16]; Balogun & Omotade[20]; and Vermandere et al.[21], males attributed CC to adherence to Westernised diet, multiple sexual partners, suboptimal hygiene practices, exposure to chemicals, history of abortions, use of contraception and engagement in harmful traditional rituals. Although some have limited knowledge about CC, the misconceptions need to be addressed to enhance supportive care towards cc prevention. Deliberate measures to improve men's knowledge of CC prevention are therefore paramount. In some developing settings, women have low

autonomy in matters related to their health and wellbeing and may need approval from their partners[26, 27, 28]. Therefore, male empowerment in health issues affecting women, including CC will be an important step to prevent the disease. Furthermore, education level was found to be essential in influencing participants' knowledge, as those with higher education levels exhibited a more refined and accurate understanding of CC.

Evidence from half of the studies included in this review indicates that males hold varying perceptions of CC preventive measures, with some having inaccurate information. This probably could be attributed to a lack of sufficient awareness about the disease. Regarding CCS as a preventive measure, the review found that numerous factors influenced male partners' perceptions, involvement and access to this process, including individual and systemic influences as described by Adedimeji et al.[22], Datchousa Moukam et al.[23], and Onyenwenyi & Mchunu[24]. The review identified that financial and geographical barriers emerged as significant challenges to accessing CC screening, particularly in patriarchal societies where men primarily shoulder the family's financial responsibility and transportation logistics. This situation creates hurdles to early participation in screening, particularly affecting those from socioeconomically disadvantaged backgrounds and rural settings. Consequently, there is a pressing need to address and improve the financial and geographical barriers to enhance screening uptake.

The findings of the review suggest the need for psychological interventions tailored to men, aimed at reducing fear and mitigating stigma associated with screening outcomes, including anxiety over positive results and subsequent actions. Additionally, sociocultural factors, such as gender dynamics and religious beliefs, plays a pivotal role in shaping attitudes towards screening uptake. For example, male involvement in female health matters sometimes faces

societal resistance and religious beliefs, norms, and taboos influence screening attitudes, particularly when women are to be examined by male doctors.

Furthermore, we found out that whereas fathers played an important role in decision-making and supported the vaccination of their daughters, male teachers contributed to increasing vaccination acceptability. However, there were apprehensions among male caregivers, teachers and community leaders leading to vaccine hesitancy. Therefore, interventions to improve HPV vaccination among women and girls need to involve men, as the role they play at the household and community levels in Africa could hinder HPV vaccination acceptance.

Strengths and Limitations of this Study

This review is unique in contributing to the evidence on CC prevention since no previous review has reported the role of men in CC prevention in Africa. The risk of bias is decreased in this review as the study selection and data extraction were independently done in duplicate. Also, the search strategy was restricted to studies published in English. In doing so, studies published only in other languages within the African context might have been excluded. A major weakness is that the included studies had varied qualitative designs and

Conclusion

This review has provided a broad overview of the role of men in the prevention of CC in Africa and contributed to a better understanding of the impact of male support on cervical screening uptake and decision-making processes regarding cc prevention. Additionally, it has identified gaps in awareness, knowledge, perception and prevention, underscoring the need for future research, particularly in the realm of psychosocial interventions aimed at males regarding CC prevention.

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Competing interests statements

None declared

Author contributions

NIEE, DOY, PKA and SKA were involved in the conceptualisation of the study. NIEE created the inclusion criteria which was revised by all the authors. All authors developed the study's protocol. AR registered the protocol. AR, MKO and LD searched for the relevant studies and did the screening. All authors were involved in the final study selection, data extraction and quality assessment of the included studies. NIEE and AR drafted the initial manuscript, which was revised by all the authors for important intellectual content. NIEE is responsible for the overall content as a guarantor.

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Figure legends:

Figure 1. PRISMA Flow Diagram illustrating the systematic study selection process.

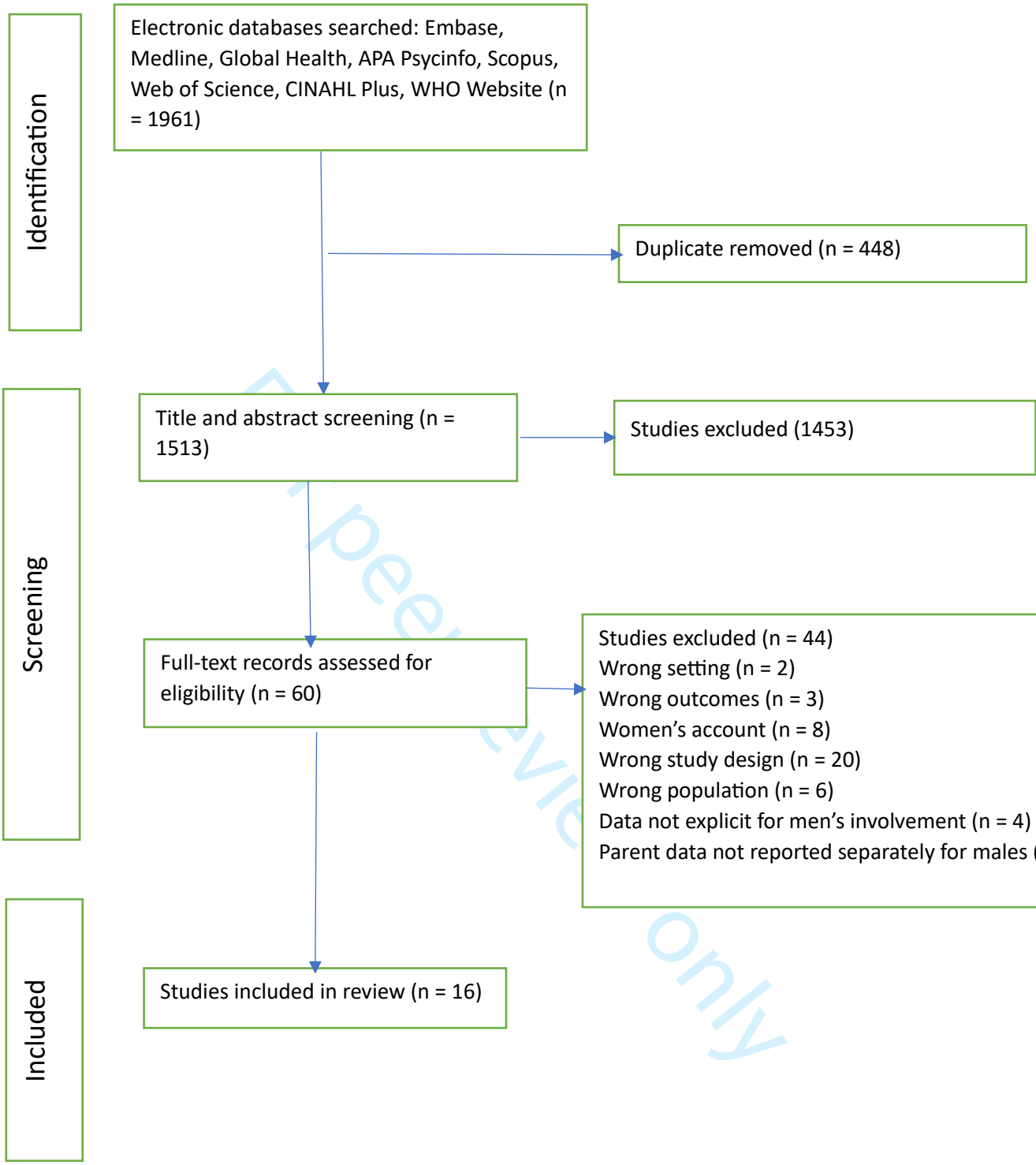

Figure 1. PRISMA Flow Diagram illustrating the systematic study selection process.

Supplementary file 1

Database:

1) Ovid

APA PsycInfo <1806 to June Week 3 2023>,
Embase Classic+Embase <1947 to 2023 June 28>,
Global Health <1910 to 2023 Week 25>,
Ovid MEDLINE(R) ALL <1946 to June 28, 2023>

Search Strategy:

1 africa* (1234587)

2 (man or men or male or males or partner* or husband* or spous*) (20266902)

3 ((prevent* or test* or smear* or vaccinat* or "health promot*" or educat* or awareness or screen* or monitor*) adj3 ("cervi* neoplasm*" or "cervi* cancer*" or "cancer of the cervix" or "cancer of the uterine cervix" or "cervi* tumo*" or "cervi* lesion*" or "cervi* precancer*" or "cervi* pre cancer*")) (26820198)

4 1 and 2 and 3 (1673)

5 limited to humans (1643)

6 limited to English language (1614)

7 deduplicate (1359)

N of papers = 1359

2) Scopus

Search Strategy:

africa*

AND (man or men or male or males or partner* or husband* or spous*)

AND ((prevent* or test* or smear* or vaccinat* or "health promot*" or educat* or awareness or screen* or monitor*) W/3 ("cervi* neoplasm*" or "cervi* cancer*" or "cancer of the cervix" or "cancer of the uterine cervix" or "cervi* tumo*" or "cervi* lesion*" or "cervi* precancer*" or "cervi* pre cancer*"))

N of papers = 220

3) Web of Science

africa*

AND (man or men or male or males or partner* or husband* or spous*)

AND ((prevent* or test* or smear* or vaccinat* or "health promot*" or educat* or awareness or screen* or monitor*) NEAR/3 ("cervi* neoplasm*" or "cervi* cancer*" or "cancer of the cervix" or "cancer of the uterine cervix" or "cervi* tumo*" or "cervi* lesion*" or "cervi* precancer*" or "cervi* pre cancer*"))

N of papers = 219

4) Cochrane library

africa*

AND (man or men or male or males or partner* or husband* or spous*)

AND (prevent* or test* or smear* or vaccinat* or (health NEXT promot*) or educat* or awareness or screen* or monitor*)

AND (cervi* NEXT neoplasm*) or (cervi* NEXT cancer*) or "cancer of the cervix" or "cancer of the uterine cervix" or (cervi* NEXT tumo*) or (cervi* NEXT lesion*) or (cervi* NEXT precancer*) or (cervi* NEXT pre cancer*)

N of papers = 29

5) CINAHL Plus

africa*

AND (man or men or male or males or partner* or husband* or spous*)

AND ((prevent* or test* or smear* or vaccinat* or "health promot*" or educat* or awareness or screen* or monitor*)

AND ("cervi* neoplasm*" or "cervi* cancer*" or "cancer of the cervix" or "cancer of the uterine cervix" or "cervi* tumo*" or "cervi* lesion*" or "cervi* precancer*" or "cervi* pre cancer*"))

N of papers = 134

6) WHO Website

cervical cancer

filtered for African countries

N of papers = 0

After de-duplication, final number of papers to screen = **1513**

Supplementary material 2. Key characteristics of the sixteen studies included in the present systematic review.

Study/Publication year	Country	Geographical region	Sample size (only males)	Sample characteristics	Data collection method	Findings
Adedimeji et al., 2021	Cameroon	Coastal town of Limbe in Southwest Cameron	N= 20	Male partners of women living with and without HIV	Focus group discussion and individual in-depth interviews	1. A lack of awareness of CC 2. Poor knowledge of CC
Balogun & Omotade, 2018	Nigeria	Five settlements of Ibadan North Local Government Area (urban and semi-urban settings)	N= 110	Junior and senior boys in public and private schools, fathers of adolescents, male teachers of adolescents, traditional and religious healers	Focus group discussion and key informant interviews	1. Awareness of CC by male teachers of adolescents 2. The cause of CC was framed around promiscuity. 2. There was a belief that the cause of CC was due to a curse. 3. Men linked CC to frequent sexual intercourse. 4. Misperception about the prevention of CC by fathers of adolescents.
Binka et al., 2019	Ghana	North Tongu District (rural setting)	N= 26	Male partners of women living with and without cervical cancer	Focus group discussions and individual in-depths interviews	1. The participants had little or no knowledge of CC. 2. Men provided emotional, financial, material and social support during screening and treatment.
Birhanu et al., 2012	Ethiopia	Two districts of Jimma zone (urban and rural settings)	N= 112	Fathers and community leaders	Focus group discussion	1. Awareness of CC.

						2. Participants perceived CC as incurable disease. 3. Participants in urban areas showed a higher level of awareness compared to their rural counterparts. 4. Participants held the belief that sociocultural and religious factors contribute to CC. Perception of prevention of CC.
De Fouw et al., 2023	Uganda	Three subcounties of Kagadi district (urban, suburban, and rural settings)	N= 67	Male partners and fathers	Focus group discussions	1. Awareness of CC 2. Gaps in knowledge of CC 3. Men willing to support cervical cancer screening (CCS) and HPV vaccination. 4. There were misperceptions in screening and HPV vaccination. .
Demissie et al., 2022	Ethiopia	Two districts of Wolaita Zone (urban and rural settings)	N= 17	Male partners	Focus group discussions and key informant interviews	1. Lack of awareness about CC and its treatment 2. Misconceptions about the disease. 3. Perceived seriousness of cancer. 4. Participants willing to learn about CC prevention.

Enyan et al., 2022	Ghana	Cape Coast Metropolis suburb in southern Ghana	N= 15	Male partners	Individual in-depth interviews	1. Awareness was high among the participants 2. Lack of knowledge about cervical cancer 3. Cervical cancer was perceived as a normal disease 4. Perception of prevention of CC 5. Men willing to support through financial assistance and encouragement.
Katahoire et al., 2008	Uganda	Five districts from the four major regions of Uganda	Unclear how many male participants (N= 178 interviews)	Fathers, school-aged boys, community leaders, local council and opinion leaders, cold chain technicians, health service providers, national political leaders and stakeholders	Focus group discussions and key informant interviews	1. Low awareness and knowledge of CC 2. HPV vaccination 3. Male involvement
Lewis et al., 2020	Malawi	Lilongwe (urban setting)	N= 125	HIV-positive men	Individual interviews (mixed methods)	1. Participants had knowledge of CC risk factors. 2. Participants demonstrated little understanding of preventive measures, including screening. 3. Men willing to support partners to seek screening
Datchoua Moukam et al., 2021	Cameroon	Dschang district, west of Cameroon	N= 12	Male partners	Focus group discussions	1. Knowledge of CC

						2. Men perceived HPV sampling as a method of protecting their wives nakedness. 3. Support for self-sampling
Mwaka et al., 2014	Uganda	Two sites in Gulu district (urban and rural settings)	Unclear how many male participants (N= 13 focus groups with men)	Male partners and community leaders	Focus group discussions and key informant interviews	1. Awareness of CC 2. Misconceptions about the cause of cervical cancer 3. Perception of prevention of CC.
Okedo-Alex et al., 2020	Nigeria	Izzi Local Government Area of Ebonyi State, South-Eastern Nigeria (rural setting)	N= 16	Male partners	Focus group discussion (mixed methods)	1. Poor knowledge of CC 2. Men made important decisions regarding CCS 3. Men willing to support spouses in CCS
Onyenwenyi & Mchunu, 2018	Nigeria	Fourteen communities of Ado-Odo Ota, Ogun State (rural setting)	N= 13	Male partners	Focus group discussions and individual in-depth interviews	1. Awareness and knowledge 2. Men support for CCS
Vermandere et al., 2015	Kenya	Eldoret	N= 30	Fathers and male teachers	Focus group discussions	1. Poor knowledge of CC 2. Support for HPV vaccination
Watson-Jones et al., 2015	Kenya	Maasai nomadic pastoralist communities in Kajiado County and in Korogocho informal settlement in Nairobi city	Unclear how many male participants in total (N= 42 interviews)	Fathers, teachers, school-aged boys, community leaders, religious leaders, health workers and stakeholders	Focus group discussions and individual in-depth interviews	1. Awareness and knowledge of CC 2. Support for HPV vaccination

Williams & Amoateng, 2012	Ghana	Kumasi, Ashanti region (urban setting)	N= 29	Male partners	Focus group discussions	1. Awareness of CC was low 2. Poor knowledge of CC 3. Men willing to encourage their wives to seek CCS if educated about CC and methods for screening.

Supplementary material 3. Thematic domains versus corresponding evidence sources.

Themes	*Evidence Sources*															
	Adedimeji et al., 2021	Balogun & Omotade, 2018	Binka et al., 2019	Birhanu et al., 2012	de Fouw et al., 2023	Demissie et al., 2022	Enyan et al., 2022	Katahoire et al., 2008	Lewis et al., 2020	Datchoua Moukam et al., 2021	Mwaka et al., 2014	Okedo-Alex et al., 2020	Onyiriuka & Ehiemunu 2021	Vermandere et al., 2015	Watson-Jones et al., 2015	Williams & Amoateng, 2012	Total no. of sources
Awareness of cervical cancer	●	●		●	●	●	●	●			●				●	●	11
Knowledge of cervical cancer	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	16
Perception of preventive measures		●		●	●	●	●		●		●					●	8
Screening				●	●	●				●						●	6
HPV vaccination		●			●			●						●	●		5
Male involvement			●				●	●	●			●				●	6

BMJ Open

Understanding cervical cancer prevention in Africa: a qualitative systematic review of the role of men

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Primary Subject Heading:	Oncology
Secondary Subject Heading:	Public health, Oncology
Keywords:	Gynaecological oncology < GYNAECOLOGY, Reproductive medicine < GYNAECOLOGY, Public health < INFECTIOUS DISEASES, Adult oncology < ONCOLOGY, Systematic Review

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Understanding cervical cancer prevention in Africa: a qualitative systematic review of the role of men

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Abstract

Background

Cervical cancer (CC) is a preventable non-communicable disease, if detected early through screening for precancers and appropriately managed. The causal link with high-risk Human Papillomavirus infection is established, making elimination possible through the World Health Organization (WHO) multi-pronged 90:70:90 strategy. However, practical cervical cancer elimination efforts need to address issues within the socio-cultural context that can facilitate or hinder prevention strategies. In this regard, the role of men in promoting reproductive health, especially in Africa, cannot be over-emphasized.

Objective

This systematic review examined the extent of involvement of men in cervical cancer prevention in Africa and its impact on the WHO cervical cancer elimination strategy.

Methods

A comprehensive search for relevant literature was conducted in the following electronic databases: Embase, Medline, Global Health, APA PsycINFO, Scopus, Web of Science, CINAHL Plus and the WHO Website from 2008 to 2023. Eligible studies explored the views of n=592 men. Screening of abstracts and titles, data extraction and quality assessment were performed in duplicate. A narrative synthesis was performed, as developed by the Economic and Social Research Council (ESRC) Methods Programme, to synthesise the qualitative data.

Results

Out of the 1961 studies identified through the electronic database search, 16 studies met all inclusion criteria. This review revealed varying levels of awareness of cervical cancer among men; while some had little to no knowledge, others demonstrated a comprehensive understanding. Gaps in knowledge and perception of cervical cancer were evident across

studies. Both Individual and systemic challenges shaped the perspectives of men on screening as a preventive measure, resulting in a range of attitudes and concerns regarding human papillomavirus vaccination. Though male participation in CC prevention was generally low, it was noted that males were willing to play an active role in CC screening and vaccination by supporting the process. Men believed that aggressive education and awareness creation among men was required.

Conclusions

This review highlights the need for targeted interventions to improve awareness, knowledge and perception of cervical cancer among men. Such efforts are essential to help men recognize their crucial role in supporting cervical cancer elimination within the African context.

Keywords: Africa, Cervical cancer prevention, men involvement, men, qualitative systematic review

PROSPERO registration

The review protocol was registered on 26th June 2023 in PROSPERO with registration number CRD42023437100

Strengths and Limitations

- A major strength of this systematic review and narrative synthesis is that no previous review has reported the role of men in cervical cancer prevention in Africa.
- The study selection and data extraction were independently done in duplicate to decrease bias.

- The search strategy was limited to studies published in English, which may have led to the exclusion of relevant studies published in other languages within the African context.
- The included studies employed varied qualitative designs and data collection methods, which could potentially affect the interpretation of findings.

Background

Cervical cancer (CC) is a preventable non-communicable disease, if detected early through screening for precancers and appropriately managed[1]. The Global Strategy for CC elimination by the World Health Assembly in 2020 mandates countries to develop programmes to reach and maintain a CC incidence rate of below four per 100,000 women[2,3]. This can be accomplished by accelerating efforts towards the World Health Organization's multi-pronged 90:70:90 strategy, which aims to ensure that 90% of girls are fully vaccinated against high-risk Human Papillomavirus (hr-HPV) by the age of 15 years, 70% of women get screened with a high-performance test by the age of 35 years and again by the age of 45 years and 90% of women with precancerous lesions receive treatment, with 90% of those with invasive carcinoma receiving appropriate management[3].

Effective CC elimination efforts need to address socio-cultural factors that either facilitate or hinder prevention strategies. The role of men in promoting reproductive health is crucial and cannot be over-emphasized. Their involvement in CC prevention and treatment is imperative in achieving the World Health Organization's goal of eliminating CC by 2030[4, 5]. Although several empirical studies have explored the role of men in CC prevention in some developing countries[6, 7], there is a lack of systematic review on their involvement. Given the immense

influence men often have on household decision-making, particularly in matters affecting the well-being of their families in certain developing countries, it is critical to generate sufficient evidence to design interventions that encourage men to support their partners in seeking cervical precancer screening, HPV vaccination and treatment of precancerous lesions of the cervix. Men have enormous potential to contribute to reducing the burden of HPV infection by taking measures to protect themselves and their partners, as well as supporting decisions that promote their general/overall health regarding HPV infections and CC[8, 9]. Therefore, it is important to compile higher-level evidence to guide interventions focused on men's involvement in CC prevention. This qualitative systematic review examined the extent of involvement of men in CC prevention in Africa and its implications for the World Health Organization's CC elimination strategy.

The following questions guided this systematic review:

1. What are men's awareness and knowledge regarding CC?
2. What are the perceptions of men regarding CC and its prevention in Africa?
3. How do men support and facilitate vaccination, screening and follow-up on treatment of cervical precancerous lesions?
4. What role do men play in the decision-making process regarding screening and HPV vaccination?

Methods

Design

A systematic review and narrative synthesis were conducted to understand the role of men in CC prevention in Africa. Prior to this review, a protocol was developed based on the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) protocol

checklist[10] and registered in PROSPERO on 26th June 2023. A comprehensive search for relevant literature was conducted in the following electronic databases: Embase, Medline, Global Health, APA PsycINFO, Scopus, Web of Science, CINAHL Plus and the WHO Website. The search was conducted in June 2023.

Search Strategy and Eligibility Criteria

The search strategy followed the PICO model: (1) Population: all adult men in Africa, involvement of men (non-medical professionals), male partners or husbands, (2) Phenomenon of interest: screening/prevention of CC, (3) Context: Africa, (4) Outcome: examining influence, support, facilitate, decision making, knowledge, experiences, attitudes, perceptions, and any barriers. The following subject index terms were used: Africa, Early Detection of Cancer, Female, Humans, Male, Papillomavirus Infections, Uterine Cervical Neoplasms, and Vaccination. See supplementary file 1 for the search strategies used for the databases.

Qualitative research papers published in English with full text from 2008 to 2023 and in peer-reviewed journals that received ethical approval were included in this study. However, the views of male medical professionals were excluded from the study. This is because male medical professionals are likely to have positive perceptions about the condition by virtue of being health workers and that could affect the results of this review if mixed with the general population of men.

Data Extraction

Two researchers independently screened titles, abstracts, and full texts using the software Covidence. Discrepancies observed were resolved by consensus or through further discussion with the rest of the research team. Microsoft Excel was used to extract data from the studies,

including year of publication, country, geographical region, sample size, focus of study, key themes/subthemes and quotations. The contextual and methodological characteristics of each study were presented in a table format.

Quality Assessment

The Joanna Briggs Institute (JBI) critical appraisal checklist for qualitative research was used to assess the methodological quality of the included studies and determine the extent to which each study addressed the possibility of bias in its design, conduct and analysis[11].

Data Analysis

A narrative synthesis was conducted, guided by the Economic and Social Research Council (ESRC) narrative synthesis framework[12]. The framework involves developing a preliminary synthesis, which we did by tabulation of the findings of included studies and clustering studies based on the aspects of our review questions they addressed. We then moved to the next stage which involves an exploration of relationships within and between the included studies by scrutinising the characteristics of the studies and their reported findings and factors that explained any differences across them. Finally, we assessed the robustness of the synthesis to ensure rigour was maintained and the findings were credible. This includes assessing the potential for bias across studies.

Patient and Public Involvement

It was not appropriate or possible to involve patients or the public in the design, or conduct, or reporting, or dissemination plans of our research.

Results

In total, 1961 records were identified through the electronic database search, with 16 studies meeting all inclusion criteria. The identification process, eligibility assessment, and reasons for exclusion are illustrated in Figure 1.

The included studies were published between 2008 and 2023 and examined the perspectives of n= 592 men residing in Ghana (n = 3), Nigeria (n= 3), Uganda (n = 3), Cameroon (n = 2), Ethiopia (n = 2), Kenya (n = 2) and Malawi (n = 1). Data were collected through focus group discussions and individual in-depth interviews. The participants represented a diverse range of male roles, including non-medical professionals, partners, fathers, teachers, adolescent boys and community and faith leaders. Supplementary file 2 provides a summary of the key characteristics of the 16 qualitative studies included in this systematic review.

Five thematic categories were identified in this review, shedding light on the role of men in understanding CC prevention in Africa. The interconnected themes included: awareness and knowledge of CC, perception of preventive measures, screening as a preventive measure, HPV vaccination as a preventive measure and men's involvement. An overview of themes and their corresponding evidence sources is presented in supplementary file 3. The following section will elaborate on each theme, supported by illustrative excerpts from the participants' interviews.

1) Awareness and knowledge of cervical cancer

The majority of the studies included in the analysis revealed a notable variability in awareness levels regarding CC among men. Awareness ranged from complete unfamiliarity to a comprehensive understanding. In some cases, this variation was more pronounced between urban and rural populations, with urban participants generally demonstrating a notably higher level of awareness compared to their rural counterparts (e.g., Birhanu et al.)[13]. However, it is worth noting that other studies did not find such marked differences based on participants' place of residence (e.g., de Fouw et al.)[14].

"I have never heard of cervical cancer disease. Is it also a disease that affects women? Then women are really suffering." (Male partner; Binka et al.[6])

Remarkably, recent studies have revealed a notable upward trend in awareness levels, underscoring the impact of educational initiatives and public health campaigns. This upward trend was particularly evident when comparing studies conducted within similar socio-contextual settings, such as those conducted by Williams & Amoateng[15] and that of Enyan et al.[7], both in urban and peri-urban areas of Ghana. Over the course of a decade, a discernible evolution in awareness emerged, with the latter study showing that 12 out of 15 participants were aware of CC, compared to the majority of the participants in the earlier study by Williams & Amoateng[15], who had never heard of the disease. Participants consistently identified media outlets such as radio and television, as well as places of worship, as their primary sources of information about CC.

"I heard of it on the television. I don't know how it is, but it was being discussed that a woman who has it may not be able to tell whether she has it or not...unless she is examined by the doctor." (Male partner; Enyan et al.[7])

Furthermore, participants' level of awareness seemed to be closely linked to the use of local language descriptors. The availability of accurate terminology in local languages significantly impacted participants' understanding of cancer in general and CC specifically (Birhanu et al.[13]; Binka et al.[6]; Demissie et al.[16]; Katahoire et al.[17]; Mwaka et al.[18]). Despite initial awareness gaps regarding the term "cervical cancer", most men recognized the prevalence of CC within their communities when researchers provided thorough descriptions of the disease's signs and symptoms (Williams & Amoateng[15]).

"I have heard of cancers generally but not that of the cervix, I haven´t heard of it or seen anyone affected except this one you are asking" (Male partner; Okedo-Alex et al.[19]).

Across all sixteen studies, a prevailing landscape of limited and often inaccurate knowledge surrounding CC was observed. This dearth of knowledge extended across all facets of CC, including its etiology, risk factors, clinical manifestations, progression and prognosis, regardless of the participants' level of awareness.

"I did not know anything about this disease. I did not have any idea about the cause, symptoms or any risk factor of the disease. I only overheard it on the television being debated in Parliament as to whether it should be covered in the national health insurance scheme. That is all I know". (Male partner; Binka et al.[6]).

"In fact, I had no knowledge about the disease and how it is caused, but all I knew was that it could kill. And I do not even know its local name." (Male partner; Binka et al.[6]).

Widespread misconceptions permeated participants' understanding of the causes and risk factors of CC. These misconceptions encompassed a wide range of beliefs, including, but not limited to, attributing CC solely to female promiscuity rather than considering men promiscuity, suboptimal hygiene practices, exposure to chemicals, history of abortions, use of contraception, the notion of 'devil's intervention', engagement in harmful traditional rituals and adherence to Westernized diets (e.g., Lewis et al.[4]; Demissie et al.[16]; Balogun & Omotade[20]; Vermandere et al.[21]; Birhanu et al.[13]; de Fouw et al.[14]; Mwaka et al.[18]).

"We know that the kind of oil that is used to lubricate the condoms can cause this condition (cervical cancer) especially if it causes reaction to your body and if you use it for a long time" (Male partner; Mwaka et al.[18])

". . .Istihada, meaning punishment that occurs when the devil kicks a woman's womb. This is an explanation from religious book." (Religious leader; Birhanu et al.[13])

Interestingly, male participants often associated CC with sexually transmitted diseases. However, this perceived cause was frequently framed in the context of promiscuity rather than recognizing it as a viral infection. This highlights how cultural beliefs are intertwined with the understanding, disclosure and consequently, prevention and early treatment of CC (Adedimeji et al.[22]; de Fouw et al.[14]; Balogun & Omotade[20]; Birhanu et al.[13]; Katahoire et al.[17]; Lewis et al.[4]). For example, the following quotes illustrate the complex interplay of cultural beliefs and the stigma attached to holding women responsible for CC, a perception perpetuated by both men and the wider community.

"This infection is through sexual intercourse so the man will know that his wife cheated on him, that is why she has cervical cancer (..) Now the man will start doubting his wife and he may chase her from his home." (Male partner; de Fouw et al.[14])

". . .when a woman is promiscuous, . . .there is no way she will not have the cancer, so that is what I think can cause the cervical cancer" (Fathers of adolescents; Balogun & Omotade[20])

". . .many women rely on home based traditional treatment as they do not like to disclose the disease to the community owing to its perceived association the diseases with frequent sexual intercourse and multiple sexual partners." (Community leader; Birhanu et al.[13])

The role of education level emerged as pivotal in shaping participants' knowledge, as those with higher education levels tended to exhibit a more refined and accurate understanding of CC (e.g., Adedimeji et al.[22]).

2) Perception of cervical cancer

Participants' perspectives on CC prevention ranged from perceiving the disease as incurable (e.g., Demissie et al.[16]; Birhanu et al.[13]) to considering it a 'normal', non-spiritual disease (e.g., Enyan et al.[7]; Lewis et al.[4]), as exemplified in the following statements.

"what is the point of screening? After all, cancer is a killer; better off not knowing cancer will kill you" (Male partner; Demissie et al.[16])

"I think it is a disease just like malaria and the others. I believe the lifestyle of women can either make them get the disease or not. It is not a spiritual illness or disease." (Male partner; Enyan et al.[7])

A significant proportion of men held the belief that cancer is an inherently fatal, rendering it resistant to both prevention measures and treatment efforts. Aligned with this perspective is a distinct subset of participants, who maintained that seeking medical attention was unnecessary unless visible symptoms or signs were present. Such beliefs pose enormous challenges in fostering proactive and timely preventive interventions, leading to delays in decisions regarding screening, as reported by Datchoua Moukam et al.[23].

". . . in our community there is a habit of going to health institutions when it reaches a stage where they are unable to tolerate the pain." (Male partner, Birhanu et al.[13])

"...Illiteracy is the major problem that may...if the husbands are illiterate, because they will say 'why? Why are you going, don't say that you have it'...when somebody is an illiterate they may not see the need to go for screening" (Male partner; Onyenwenyi & Mchunu[24])

3) Perception of preventive measures

Many participants were unaware of available preventive services and mistakenly regarded behaviours, such as abstinence and traditional remedies, which were inaccurately described as risk factors, as preventive strategies to forestall CC. In a few cases, participants expressed that both men and women could contribute to the prevention of CC.

"[Wife and husband] should have protected sex so that they do not get any sexually transmitted diseases from each other." (Male partner; Lewis et al.[4])

Nonetheless, due to the limited access to information on CC screening services, some men, while acknowledging the potential for prevention and the importance of screening, faced uncertainty on the 'how' and 'where' aspects of accessing these services (e.g., Demissie et al.[16]; Okedo-Alex et al.[19]; Datchoua Moukam et al.[23]).

"I don´t know if it can be prevented but i know of cancers of the breast and eye as i had a relative who had cancer of the eye and it was treated/prevented. It will be good for me if you [the researcher] explain more" (Male partner; Okedo-Alex et al.[19]).

"If I understand why the test is being done then I will pay happily." (Male partner; Williams & Amoateng[15])

The reviewed studies delved into two preventive measures: 1) screening and 2) HPV vaccination. These measures, which constitute integral components of CC prevention strategies, are further explored in the subsequent sections.

a. Screening as a preventive measure

The examination of CC screening as a preventive measure revealed a range of factors that seemed to shape male partners' perspectives, engagement and access to this process. These factors included challenges at both the individual and systemic levels, as comprehensively explored by Adedimeji et al.[22], Datchoua Moukam et al.[23] and Onyenwenyi & Mchunu[24].

Significant challenges emerged due to delays in accessing screening centres, primarily influenced by financial constraints and geographical location. Particularly, in societies where men often assume the role of the primary financial providers and transportation facilitators, the burden of covering expenses and arranging transportation introduced an additional layer of complexity to their partners' decision-making process (Binka et al.[6]; Birhanu et al.[13]; Datchoua Moukam et al.[23]; Onyenwenyi & Mchunu[24]). As a result, financial considerations, intertwined with the broader societal role of men and the limited availability of screening centres in certain areas, magnified the barriers to timely screening participation, especially among those from socioeconomically disadvantaged backgrounds and residing in rural areas.

". . .Women have to go to modern and expensive health facilities in Addis Ababa to get treatment. However, they cannot afford to go to Addis Ababa and most remain suffering from the diseases." (Male participant; Birhanu et al.[13])

"Well, the lack of availability of screening centres is also a critical issue." (Male partner; Onyenwenyi & Mchunu[24])

Psychological barriers encompassed fears of and stigma related to screening procedures and outcomes, including anxiety over positive results and subsequent actions. Sociocultural factors, such as gender dynamics, religious beliefs and cultural taboos, appeared to shape men's attitudes towards screening uptake. Interestingly, contradictory viewpoints were shared among male participants, even within the same research study, on topics like being examined by male doctors (Demissie et al.[16]; Lewis et al.[4]; Enyan et al.[7]; Datchoua Moukam et al.[23]; Onyenwenyi & Mchunu[24]). For instance, one participant voiced concerns, stating:

"I have heard that male doctors have sexual relations with female patients. If men hear that their wives will be undressed and put on an exam table by a male doctor ... we know that once a man sees a woman naked they will want to have sexual intercourse with her. Because of

that men hesitate to tell their wives to get screened for cervical cancer." (Male partner; Lewis et al.[4])

However, contrasting these hesitations, another participant from the same study, emphasised the importance of professionalism, stating:

"Doctors learn confidentiality in their work, and have a responsibility to do their job. It is not like a female doctor is supposed to treat female patients only." (Male partner; Lewis et al.[4])

In line with these concerns, some participants expressed a preference for the self-sampling method as a way to protect their partners:

"I choose the method where it is the woman herself who takes it. [Laughs] When she samples it herself, she's not even ashamed since she's doing it alone. But there are women who are even ashamed to examine their sexual parts in private." (Male partner; Datchoua Moukam et al.[23])

b. HPV vaccination as a preventive measure

Similarly, drawing insights from five research studies (Balogun & Omotade[20]; de Fouw et al.[14]; Katahoire et al.[17]; Vermandere et al.[21]; Watson-Jones et al.[25]), the exploration of HPV vaccination as a preventive measure, revealed a diverse range of attitudes and concerns among fathers, male teachers and male community and religious leaders. Overall, a significant subset of male participants exhibited favourable inclinations toward HPV vaccination for adolescents. Nonetheless, barriers to HPV vaccination were also evident, often rooted in concerns about safety and side effects, distrust, high cost, infertility and concerns about promoting promiscuity (de Fouw et al.[14]; Balogun & Omotade[20]; Watson-Jones et al.[25]).

"*Others say that the plan is that doctors want to vaccinate our girls, daughters and end their productivity. That is why some parents do not want to vaccinate and circumcise their children, because many people are saying that they want women to have few children, so we need awareness" (Father, de Fouw et al.[14])*

"We have not heard about people who have been vaccinated so we think they are starting with our children, they are used as guinea pigs or something, people try to see if it can work." (Male teacher; Vermandere et al.[21])

4) Male involvement in decision-making related to HPV vaccination

With regard to the decision-making process related to HPV vaccination within specific groups, the consensus leaned toward a shared decision-making approach involving both parents. Nevertheless, alternative viewpoints emerged, with some suggesting that either the mother or the school headteacher should hold the authority to decide (de Fouw et al.[14]), while in certain instances, the ultimate decision rested with fathers, whose perspectives were significantly influenced by traditional and religious leaders (Balogun & Omotade[20]). Moreover, teachers, given their substantial influence within school environments, were identified as key figures contributing to increased vaccination acceptability.

"Teachers spent almost all their time with the children and children really listen to the teachers. Whatever teachers say, a child does not doubt. They can go home and convince the parent 'this is what the teacher said'." (Male teacher; Vermandere et al.[21])

Finally, there was a clear call for increased information dissemination and support for HPV vaccination initiatives in schools. Many groups endorsed school-based immunisation programmes as the most convenient and effective means of reaching pre-adolescent girls (de Fouw et al.[14]; Balogun & Omotade[20]; Katahoire et al.[17]).

"Also going to the hospital will encourage bribing so we want to avoid that by taking it to school...because somebody tells you, bring something small so that I attend to you faster. And you might not even get the right vaccine even after giving out your bribes." *(Male teacher; Vermandere et al.[21])*

"It is a good idea but I suggest, I think the government should do a bit of educating the masses because, if we teachers do not know what cervical cancer is, then how about that mother in the village, she will not accept; so education is very important." (Male teacher; Vermandere et al.[21])

5. Male support

The participants' perspectives exhibited an evolution after receiving explanatory information. While many initially held reservations about the relevance of preventive measures within their communities, a considerable number shifted towards acknowledging the benefits of these measures. Across the analysed studies, a consensus emerged among participants, indicating their willingness to participate in CC prevention efforts in various African settings actively. As their understanding deepened, concerns and anxieties surrounding preventive measures steadily dwindled, underscoring the profound impact of accurate information. Despite these positive shifts, certain participants remained apprehensive due to concerns about potential stigma and negative side effects associated with prevention.

"Because of the prevalence of poverty in this community, some women would not like to go for screening. I will encourage and support her to go for the screening because the disease is dangerous". (Male partner; Binka et al.[6])

Men frequently expressed eagerness to provide emotional support to their female partners and daughters, encouraging them to undergo screenings and embrace the preventive measures (Enyan et al.[7]; Binka et al.[6]; Lewis et al.[4]). Understanding the importance of prevention, men exhibited an increased willingness to provide practical support, such as arranging transportation and offering financial assistance.

'This is a condition that can bring problems to the woman so if screening can be done and there is money, then I will encourage her to go and do it so that in the near future if something like that happens, we don't spend so much on her treatment... You know I can't divorce her too. So, all is about money. If there is money, I will support her because I need to protect her. I will not wait for her to suffer.' (Male partner; Enyan et al.[7])

"The husband has a very important responsibility because he has the capacity to encourage the woman to get tested more often for cervical cancer." (Male partner; Lewis et al.[4]).

Male engagement extended to the realm of decision-making, where reports indicated varying degrees of influence. In specific instances, as illustrated by the study conducted by Adedimeji et al.[22], men recognised a shared responsibility between genders in preventing CC. They

emphasised the importance of both men and women actively participating in the prevention process, which encompassed actions like reducing sexually transmitted infections, addressing risk factors, and pursuing screening when feasible.

"Preventing cervical cancer is a responsibility both men and women should share equally; it should begin with preventing sexually transmitted infections, avoiding risk factors and obtaining screening when possible". (Male partner; Adedimeji et al.[22])

However, in other studies, prevailing gender norms and societal expectations played a pivotal role in shaping women's decisions regarding preventive measures, with husbands' viewpoint exerting a significant impact. These dynamics were succinctly captured in one participant's reflection:

"Male involvement is very important as women listen to their husbands more than even the health care workers. They do whatever their husbands tell them as they see their husbands as their second 'god'". (Male participant; Okedo-Alex et al.[19])

Finally, in specific studies, male participants acknowledged their role in raising awareness within their social circles (Enyan et al.[7]; de Fouw et al.[14]; Williams & Amoateng[15]). Male participants indicated that the knowledge they acquired from their respective studies about CC increased their likelihood and enthusiasm to engage proactively in discussions about the topic with their peers and families, thereby contributing to a wider dissemination of knowledge.

"I will entreat all men not to take the health of their wives for granted. If their wives complain of any pain they should encourage them to seek medical attention." (Male partner; Williams & Amoateng[15])

"I will not be different from my colleague. For me, I will be a speaker who will be a voice to move this message to my fellow men because we should not be silent. I will first talk to my family about today's meeting." (Male partner; de Fouw et al.[14])

Discussion

This systematic review aimed to understand the role of men in CC prevention in Africa. The themes that emerged from the analysed studies were: awareness of CC; knowledge of CC; perception of preventive measures and men's involvement. These themes are critical in efforts to eliminate CC on the African continent. Awareness of CC was an important theme that originated from eleven out of the sixteen studies reviewed. Studies reported varied levels of awareness ranging from a lack of awareness to a comprehensive understanding of the disease, with a general improvement in awareness over a decade in similar geographical contexts [7,15]. The differences in awareness were apparent among rural and urban populations, whereas those in urban areas demonstrated increased awareness. Multiple awareness strategies, including the use of the media, places of worship and local terminologies to describe the disease, were useful in enhancing understanding. This evidence calls for context-specific and targeted interventions to generally heighten CC awareness campaigns, especially in rural communities of Africa.

The evidence showed gaps in knowledge of CC across the sixteen studies included in the review. Misconceptions were observed in all aspects of CC, including the cause, risk factors, signs and symptoms, progression and prognosis, irrespective of the level of awareness. For example, according to the findings by Lewis et al.[4]; Demissie et al.[16]; Balogun & Omotade[20]; and Vermandere et al.[21], males attributed CC to adherence to Westernised diet, multiple sexual partners, suboptimal hygiene practices, exposure to chemicals, history of abortions, use of contraception and engagement in harmful traditional rituals. Although some have limited knowledge about CC, the misconceptions need to be addressed to enhance supportive care towards cc prevention. Deliberate measures to improve men's knowledge of CC prevention are therefore paramount. In some developing settings, women have low

autonomy in matters related to their health and wellbeing and may need approval from their partners[26, 27, 28]. Therefore, male empowerment in health issues affecting women, including CC will be an important step to prevent the disease. Furthermore, education level was found to be essential in influencing participants' knowledge, as those with higher education levels exhibited a more refined and accurate understanding of CC.

Evidence from half of the studies included in this review indicates that males hold varying perceptions of CC preventive measures, with some having inaccurate information. This probably could be attributed to a lack of sufficient awareness about the disease. Regarding CCS as a preventive measure, the review found that numerous factors influenced male partners' perceptions, involvement and access to this process, including individual and systemic influences as described by Adedimeji et al.[22], Datchousa Moukam et al.[23], and Onyenwenyi & Mchunu[24]. The review identified that financial and geographical barriers emerged as significant challenges to accessing CC screening, particularly in patriarchal societies where men primarily shoulder the family's financial responsibility and transportation logistics. This situation creates hurdles to early participation in screening, particularly affecting those from socioeconomically disadvantaged backgrounds and rural settings. Consequently, there is a pressing need to address and improve the financial and geographical barriers to enhance screening uptake.

The findings of the review suggest the need for psychological interventions tailored to men, aimed at reducing fear and mitigating stigma associated with screening outcomes, including anxiety over positive results and subsequent actions. Additionally, sociocultural factors, such as gender dynamics and religious beliefs, plays a pivotal role in shaping attitudes towards screening uptake. For example, male involvement in female health matters sometimes faces

societal resistance and religious beliefs, norms, and taboos influence screening attitudes, particularly when women are to be examined by male doctors.

Furthermore, we found out that whereas fathers played an important role in decision-making and supported the vaccination of their daughters, male teachers contributed to increasing vaccination acceptability. However, there were apprehensions among male caregivers, teachers and community leaders leading to vaccine hesitancy. Therefore, interventions to improve HPV vaccination among women and girls need to involve men, as the role they play at the household and community levels in Africa could hinder HPV vaccination acceptance.

Strengths and Limitations of this Study

This review is unique in contributing to the evidence on CC prevention since no previous review has reported the role of men in CC prevention in Africa. The risk of bias is decreased in this review as the study selection and data extraction were independently done in duplicate. Also, the search strategy was restricted to studies published in English. In doing so, studies published only in other languages within the African context might have been excluded. A major weakness is that the included studies had varied qualitative designs and data collection methods, which could potentially affect the interpretation of findings.

Conclusion

This review has provided a broad overview of the role of men in the prevention of CC in Africa and contributed to a better understanding of the impact of male support on cervical screening uptake and decision-making processes regarding cc prevention. Additionally, it has identified gaps in awareness, knowledge, perception and prevention, underscoring the need for future

research, particularly in the realm of psychosocial interventions aimed at males regarding CC prevention.

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Competing interests statements

None declared

Author contributions

NIEE, DOY, PKA and SKA were involved in the conceptualisation of the study. NIEE created the inclusion criteria which was revised by all the authors. All authors developed the study's protocol. AR registered the protocol. AR, MKO and LD searched for the relevant studies and did the screening. All authors were involved in the final study selection, data extraction and quality assessment of the included studies. NIEE and AR drafted the initial manuscript, which was revised by all the authors for important intellectual content. NIEE is responsible for the overall content as a guarantor.

Figure 1. PRISMA Flow Diagram illustrating the systematic study selection process.

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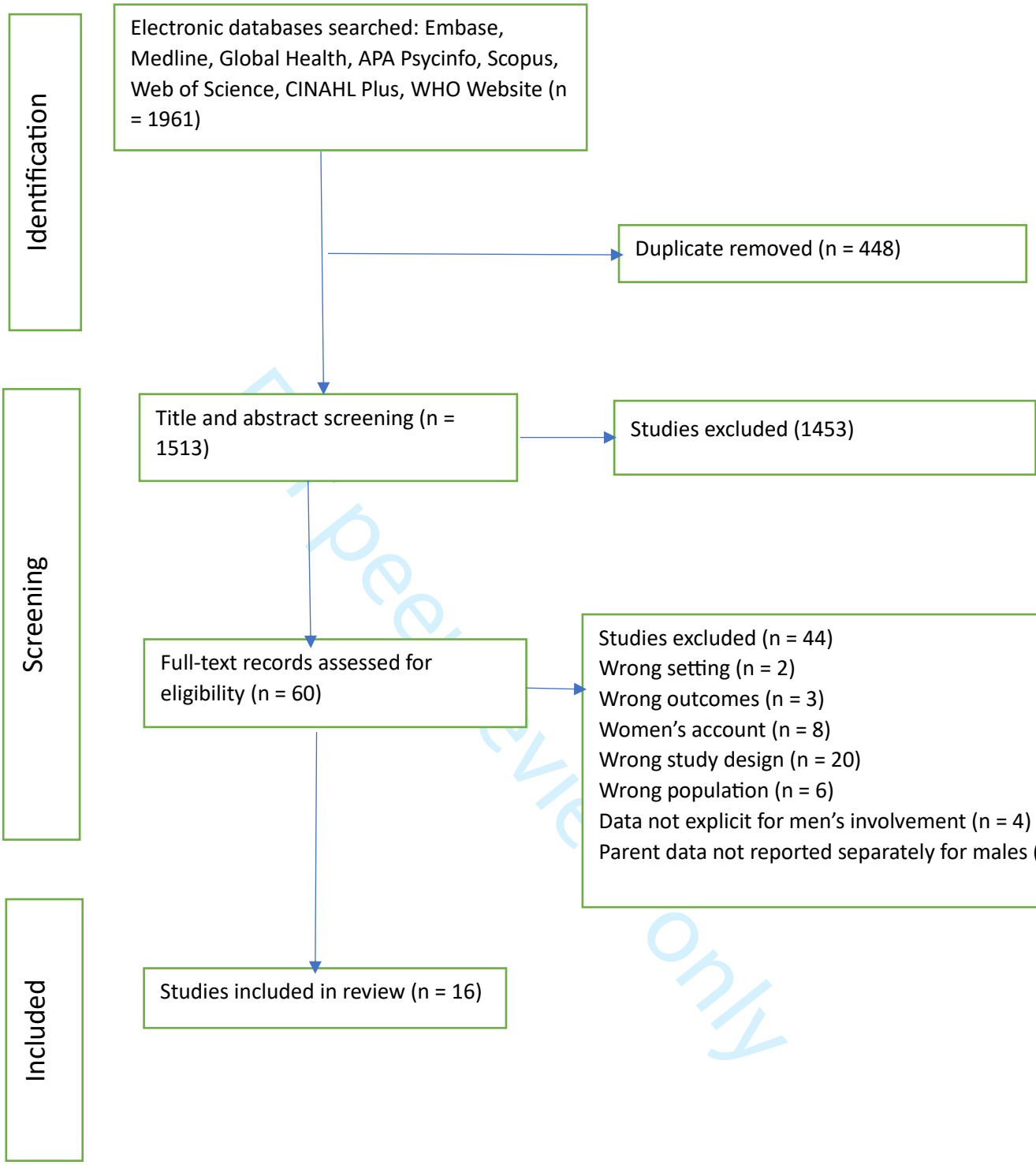

Figure 1. PRISMA Flow Diagram illustrating the systematic study selection process.

Supplementary file 1

Database:

1) Ovid

APA PsycInfo <1806 to June Week 3 2023>,
Embase Classic+Embase <1947 to 2023 June 28>,
Global Health <1910 to 2023 Week 25>,
Ovid MEDLINE(R) ALL <1946 to June 28, 2023>

Search Strategy:

1 africa* (1234587)

2 (man or men or male or males or partner* or husband* or spous*) (20266902)

3 ((prevent* or test* or smear* or vaccinat* or "health promot*" or educat* or awareness or screen* or monitor*) adj3 ("cervi* neoplasm*" or "cervi* cancer*" or "cancer of the cervix" or "cancer of the uterine cervix" or "cervi* tumo*" or "cervi* lesion*" or "cervi* precancer*" or "cervi* pre cancer*")) (26820198)

4 1 and 2 and 3 (1673)

5 limited to humans (1643)

6 limited to English language (1614)

7 deduplicate (1359)

N of papers = 1359

2) Scopus

Search Strategy:

africa*

AND (man or men or male or males or partner* or husband* or spous*)

AND ((prevent* or test* or smear* or vaccinat* or "health promot*" or educat* or awareness or screen* or monitor*) W/3 ("cervi* neoplasm*" or "cervi* cancer*" or "cancer of the cervix" or "cancer of the uterine cervix" or "cervi* tumo*" or "cervi* lesion*" or "cervi* precancer*" or "cervi* pre cancer*"))

N of papers = 220

3) Web of Science

africa*

AND (man or men or male or males or partner* or husband* or spous*)

AND ((prevent* or test* or smear* or vaccinat* or "health promot*" or educat* or awareness or screen* or monitor*) NEAR/3 ("cervi* neoplasm*" or "cervi* cancer*" or "cancer of the cervix" or "cancer of the uterine cervix" or "cervi* tumo*" or "cervi* lesion*" or "cervi* precancer*" or "cervi* pre cancer*"))

N of papers = 219

4) Cochrane library

africa*

AND (man or men or male or males or partner* or husband* or spous*)

AND (prevent* or test* or smear* or vaccinat* or (health NEXT promot*) or educat* or awareness or screen* or monitor*)

AND (cervi* NEXT neoplasm*) or (cervi* NEXT cancer*) or "cancer of the cervix" or "cancer of the uterine cervix" or (cervi* NEXT tumo*) or (cervi* NEXT lesion*) or (cervi* NEXT precancer*) or (cervi* NEXT pre cancer*)

N of papers = 29

5) CINAHL Plus

africa*

AND (man or men or male or males or partner* or husband* or spous*)

AND ((prevent* or test* or smear* or vaccinat* or "health promot*" or educat* or awareness or screen* or monitor*)

AND ("cervi* neoplasm*" or "cervi* cancer*" or "cancer of the cervix" or "cancer of the uterine cervix" or "cervi* tumo*" or "cervi* lesion*" or "cervi* precancer*" or "cervi* pre cancer*"))

N of papers = 134

6) WHO Website

cervical cancer

filtered for African countries

N of papers = 0

After de-duplication, final number of papers to screen = **1513**

Supplementary material 2. Key characteristics of the sixteen studies included in the present systematic review.

Study/Publication year	Country	Geographical region	Sample size (only males)	Sample characteristics	Data collection method	Findings
Adedimeji et al., 2021	Cameroon	Coastal town of Limbe in Southwest Cameron	N= 20	Male partners of women living with and without HIV	Focus group discussion and individual in-depth interviews	1. A lack of awareness of CC 2. Poor knowledge of CC
Balogun & Omotade, 2018	Nigeria	Five settlements of Ibadan North Local Government Area (urban and semi-urban settings)	N= 110	Junior and senior boys in public and private schools, fathers of adolescents, male teachers of adolescents, traditional and religious healers	Focus group discussion and key informant interviews	1. Awareness of CC by male teachers of adolescents 2. The cause of CC was framed around promiscuity. 2. There was a belief that the cause of CC was due to a curse. 3. Men linked CC to frequent sexual intercourse. 4. Misperception about the prevention of CC by fathers of adolescents.
Binka et al., 2019	Ghana	North Tongu District (rural setting)	N= 26	Male partners of women living with and without cervical cancer	Focus group discussions and individual in-depths interviews	1. The participants had little or no knowledge of CC. 2. Men provided emotional, financial, material and social support during screening and treatment.
Birhanu et al., 2012	Ethiopia	Two districts of Jimma zone (urban and rural settings)	N= 112	Fathers and community leaders	Focus group discussion	1. Awareness of CC.

						2. Participants perceived CC as incurable disease. 3. Participants in urban areas showed a higher level of awareness compared to their rural counterparts. 4. Participants held the belief that sociocultural and religious factors contribute to CC. Perception of prevention of CC.
De Fouw et al., 2023	Uganda	Three subcounties of Kagadi district (urban, suburban, and rural settings)	N= 67	Male partners and fathers	Focus group discussions	1. Awareness of CC 2. Gaps in knowledge of CC 3. Men willing to support cervical cancer screening (CCS) and HPV vaccination. 4. There were misperceptions in screening and HPV vaccination. .
Demissie et al., 2022	Ethiopia	Two districts of Wolaita Zone (urban and rural settings)	N= 17	Male partners	Focus group discussions and key informant interviews	1. Lack of awareness about CC and its treatment 2. Misconceptions about the disease. 3. Perceived seriousness of cancer. 4. Participants willing to learn about CC prevention.

Enyan et al., 2022	Ghana	Cape Coast Metropolis suburb in southern Ghana	N= 15	Male partners	Individual in-depth interviews	1. Awareness was high among the participants 2. Lack of knowledge about cervical cancer 3. Cervical cancer was perceived as a normal disease 4. Perception of prevention of CC 5. Men willing to support through financial assistance and encouragement.
Katahoire et al., 2008	Uganda	Five districts from the four major regions of Uganda	Unclear how many male participants (N= 178 interviews)	Fathers, school-aged boys, community leaders, local council and opinion leaders, cold chain technicians, health service providers, national political leaders and stakeholders	Focus group discussions and key informant interviews	1. Low awareness and knowledge of CC 2. HPV vaccination 3. Male involvement
Lewis et al., 2020	Malawi	Lilongwe (urban setting)	N= 125	HIV-positive men	Individual interviews (mixed methods)	1. Participants had knowledge of CC risk factors. 2. Participants demonstrated little understanding of preventive measures, including screening. 3. Men willing to support partners to seek screening
Datchoua Moukam et al., 2021	Cameroon	Dschang district, west of Cameroon	N= 12	Male partners	Focus group discussions	1. Knowledge of CC

						2. Men perceived HPV sampling as a method of protecting their wives nakedness. 3. Support for self-sampling
Mwaka et al., 2014	Uganda	Two sites in Gulu district (urban and rural settings)	Unclear how many male participants (N= 13 focus groups with men)	Male partners and community leaders	Focus group discussions and key informant interviews	1. Awareness of CC 2. Misconceptions about the cause of cervical cancer 3. Perception of prevention of CC.
Okedo-Alex et al., 2020	Nigeria	Izzi Local Government Area of Ebonyi State, South-Eastern Nigeria (rural setting)	N= 16	Male partners	Focus group discussion (mixed methods)	1. Poor knowledge of CC 2. Men made important decisions regarding CCS 3. Men willing to support spouses in CCS
Onyenwenyi & Mchunu, 2018	Nigeria	Fourteen communities of Ado-Odo Ota, Ogun State (rural setting)	N= 13	Male partners	Focus group discussions and individual in-depth interviews	1. Awareness and knowledge 2. Men support for CCS
Vermandere et al., 2015	Kenya	Eldoret	N= 30	Fathers and male teachers	Focus group discussions	1. Poor knowledge of CC 2. Support for HPV vaccination
Watson-Jones et al., 2015	Kenya	Maasai nomadic pastoralist communities in Kajiado County and in Korogocho informal settlement in Nairobi city	Unclear how many male participants in total (N= 42 interviews)	Fathers, teachers, school-aged boys, community leaders, religious leaders, health workers and stakeholders	Focus group discussions and individual in-depth interviews	1. Awareness and knowledge of CC 2. Support for HPV vaccination

Williams & Amoateng, 2012	Ghana	Kumasi, Ashanti region (urban setting)	N= 29	Male partners	Focus group discussions	1. Awareness of CC was low 2. Poor knowledge of CC 3. Men willing to encourage their wives to seek CCS if educated about CC and methods for screening.

Supplementary material 3. Thematic domains versus corresponding evidence sources.

Themes	*Evidence Sources*															
	Adedimeji et al., 2021	Balogun & Omotade, 2018	Binka et al., 2019	Birhanu et al., 2012	de Fouw et al., 2023	Demissie et al., 2022	Enyan et al., 2022	Katahoire et al., 2008	Lewis et al., 2020	Datchoua Moukam et al., 2021	Mwaka et al., 2014	Okedo-Alex et al., 2020	Onyiriuka & Ehiemunu 2021	Vermandere et al., 2015	Watson-Jones et al., 2015	Williams & Amoateng, 2012	Total no. of sources
Awareness of cervical cancer	●	●		●	●	●	●	●			●				●	●	11
Knowledge of cervical cancer	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	16
Perception of preventive measures		●		●	●	●	●		●		●					●	8
Screening				●	●	●				●						●	6
HPV vaccination		●			●			●						●	●		5
Male involvement			●				●	●	●			●				●	6