

Overview

A Narrative Synthesis of Literature on the Barriers to Timely Diagnosis and Treatment of Cancer in Sub-Saharan Africa

M. Mwamba^{*}, D.C. Lombe[†], S. Msadabwe[‡], V. Bond^{*§}, M. Simwinga^{*¶}, A. Sentoogo Ssemata[¶], R. Muhumuza[¶], J. Seeley[¶], A.D. Mwaka^{||}, A. Aggarwal^{§**}

^{*}Zambart, School of Public Health, Ridgeway Campus, University of Zambia, Lusaka, Zambia

[†]Regional Cancer Treatment Services MidCentral District Health Board, New Zealand

[‡]Cancer Diseases Hospital, Lusaka, Zambia

[§]London School of Hygiene & Tropical Medicine (LSHTM), London, UK

[¶]The Medical Research Council/Uganda Virus Research Institute and London School of Hygiene & Tropical Medicine (MRC/UVRI & LSHTM), Uganda Research Unit, Entebbe, Uganda

^{||}Department of Medicine, Faculty of Medicine, Gulu University, Gulu, Uganda

^{**}Institute of Cancer Policy, King's College London, London, UK

Abstract

Poor cancer survival outcomes in sub-Saharan Africa (SSA) have been linked to delays in diagnosis and treatment. Here we present a detailed overview of the qualitative literature evaluating the barriers to receiving timely diagnosis and treatment of cancer in SSA. The PubMed, EMBASE, CINAHL, PsycINFO databases were searched to identify qualitative studies reporting on barriers to timely diagnosis of cancer in SSA published between 1995 and 2020. A systematic review methodology was applied, including quality assessment and narrative data synthesis. We identified 39 studies, of which 24 focused on breast or cervical cancer. Only one study focused on prostate cancer and one on lung cancer. When exploring factors contributing to delays, six key themes emerged from the data. The first theme was health service barriers, which included: (i) inadequate numbers of trained specialists; (ii) limited knowledge of cancer among healthcare providers; (iii) poor co-ordination of care; (iv) inadequately resourced health facilities; (v) negative attitudes of healthcare providers towards patients; (vi) high cost of diagnostic and treatment services. The second key theme was patient preference for complementary and alternative medicine; the third was the limited understanding of cancer among the population. The fourth barrier was a patient's personal and family obligations; the fifth was the perceived impact of cancer and its treatment on sexuality, body image and relationships. Finally, the sixth was the stigma and discrimination faced by patients following a diagnosis of cancer. In conclusion, health system, patient level and societal factors all influence the likelihood of timely diagnosis and treatment for cancer in SSA. The results provide a focus for targeting health system interventions, particular with regards to awareness and understanding of cancer in the region.

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Key words: Barriers; cancer; diagnosis; sub-Saharan Africa; treatment

Introduction

It is estimated that in 2020 19.3 million people were diagnosed with cancer and 10 million died from cancer. Although sub-Saharan Africa (SSA) has a lower incidence of cancer than high-income countries, the incidence of cancer continues to increase and mortality rates after diagnosis are high [1]. In SSA, high levels of cancer

mortality are related to late presentation of cancers and inadequate treatment [2,3].

The exact disease burden is unknown due in part to a lack of cancer registries and where data are available it is often incomplete or lacks population coverage [4]. For example, a systematic review carried out by Adeloje *et al.* [5] found that even though prostate cancer greatly adds to the public health burden in Africa, the precise burden of prostate cancer is uncertain due to a lack of sufficient data.

Critical elements in cancer care include early diagnosis, timely referral for staging investigation and receipt of high-quality evidence-based therapies, including surgery, radiotherapy and systemic therapies. However, failure to meet

Author for correspondence: M. Mwamba, Zambart, School of Public Health, Ridgeway Campus, University of Zambia, Lusaka, Zambia.

E-mail address: monddeb@zambart.org.zm (M. Mwamba).

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these conditions contributes to advanced stage at diagnosis, inappropriate or ineffective treatment and ultimately poor patient outcomes and death. Individual-, community- and provider-level factors have been shown to play a critical part in the timely diagnosis and treatment of cancer [6,7].

In addition, the factors contributing to late presentation and suboptimal treatment are both context (country, region) and tumour specific [8]. To develop health system interventions to support earlier diagnosis, appropriate staging and timely initiation of treatment, it is essential to identify and understand the barriers to achieving this. In this regard, qualitative studies that elicit the experiences and perspectives of patients, community members and healthcare providers offer unique and granular insights into the factors that predispose to delays in the treatment pathway and present opportunities to tailor interventions at the individual, community and healthcare level.

We sought to undertake a narrative synthesis of studies that have explored barriers to the timely diagnosis and treatment of cancer in SSA and to develop interventions and policy recommendations to support effective implementation. In addition, we wished to identify specific tumours types or countries that remain under-represented in the literature given that individual tumour types have unique diagnostic and therapeutic pathways and that reasons for delays may vary according to the social cultural context of a country.

Methods

Conceptual Approach

We used the Three Delays Framework to inform our literature search strategy. The Three Delays Framework [9,10] considers three contexts and three delays. The three contexts are: the patient context (perceptions of disease, barriers to care, cost of illness); the specialist centre context (care process quality and outcome evaluation, healthcare workers perceived system barriers); and the community context (proximity and physical accessibility of services in the community). The three delays are: seeking care; reaching care; and receiving quality care. One of the main advantages of this framework compared with other models of delay is that it also considers factors that impact on the receipt of high-quality care, which is a major determinant of patient outcomes [11].

A systematic literature search was carried out for published full-text articles between 1995 and 2020 in four databases, i.e. PubMed, EMBASE, CINAHL, PsycINFO. The full search strategy terms can be found in [Table 1](#).

Inclusion Criteria

We included qualitative or mixed methods studies if they met the following inclusion criteria: studies that used qualitative methods describing reasons for the delays/barriers to diagnosis and treatment or receipt of high-quality

care. Studies published in the peer-reviewed literature that were conducted in any of the 48 SSA countries were included.

Exclusion Criteria

Studies that were not in the English language, review articles and conference proceedings were excluded. We also excluded studies focusing on paediatric and haematological malignancies.

Study Selection

Titles and abstracts were reviewed against the inclusion and exclusion criteria by two independent researchers to assess the suitability for a full-text review and inclusion in the final cohort of papers (MM, DL). Any discrepancies were resolved by a third author (AA). Data extraction was undertaken by MM and DL. We developed a standardised data extraction form (see [Supplementary Appendix 1](#)). Information extracted included study country, sample size, participants tumour type, age, marital status, education, employment status, study sites (hospital, community), qualitative method used, type of delay (see conceptual three delay framework outlined above).

Quality Assessment

We assessed the quality of studies using the Critical Appraisal Skills Program (CASP) for qualitative studies [12]. None of the selected full-text articles were excluded based on quality. This assessment tool is not a scoring system, but provides a structured framework for evaluating the risk of bias in the design, conduct and reporting of qualitative studies. CASP has 10–12 criteria with the options of 'yes', 'no', 'can't tell' and 'comments' (see [Supplementary Appendix 2](#)).

Methods of Synthesis

We used a narrative synthesis approach to examine the barriers and reasons for delays in seeking, reaching or receiving quality care. This was done through identifying themes to emerge from the original studies, collating these and then structuring the results into overarching themes for reporting [13].

Results

An initial search identified a total of 1868 articles. After removing 364 duplicates, 1504 titles and abstracts were screened, of which 1454 studies were not considered for full-text review. 50 full texts were subsequently assessed and 37 met the inclusion criteria. Two additional studies were identified through a manual search and therefore 39 studies were included in our final sample [14–52] (see [Supplementary Appendix 2](#)). A PRISMA flowchart of the included studies is shown in [Figure 1](#).

Table 1
Summary of search terms

Databases	PubMed, EMBASE, CINAHL, PsycINFO
Search terms	Synonyms
1. Cancer ti,ab	cancer:ti,ab OR tumour:ti,ab OR tumor:ti,ab OR neopla*:ti,ab OR malignan*:ti,ab OR carcinoma:ti,ab
2. Delay	barrier*:ti,ab OR delay*:ti,ab OR access:ti,ab OR late:ti,ab OR interval:ti,ab
3. Diagnosis and treatment ti, ab	diagnos*:ti,ab OR presentation:ti,ab OR intervention:ti,ab OR referral:ti,ab OR consult*:ti,ab OR treatment:ti,ab OR therap*:ti,ab
4. Sub-Saharan Africa ti, ab	angola:ti,ab OR benin:ti,ab OR botswana:ti,ab OR 'burkina faso':ti,ab OR burundi:ti,ab OR cameroon:ti,ab OR cameron:ti,ab OR 'cape verde':ti,ab OR 'cabo verde':ti,ab OR 'central african republic':ti,ab OR 'ubangi shari':ti,ab OR chad:ti,ab OR comoros:ti,ab OR 'comoro islands':ti,ab OR 'iles comores':ti,ab OR 'congo brazzaville':ti,ab OR 'congo democratic republic':ti,ab OR 'democratic republic congo':ti,ab OR congo:ti,ab OR zaire:ti,ab OR 'cote divoire':ti,ab OR 'cote d ivoire':ti,ab OR 'ivory coast':ti,ab OR djibouti:ti,ab OR 'french somaliland':ti,ab OR 'equatorial guinea':ti,ab OR eritrea:ti,ab OR ethiopia:ti,ab OR gabon:ti,ab OR 'gabonese republic':ti,ab OR gambia:ti,ab OR ghana:ti,ab OR 'gold coast':ti,ab OR guinea:ti,ab OR 'guinea bissau':ti,ab OR kenya:ti,ab OR lesotho:ti,ab OR basutoland:ti,ab OR liberia:ti,ab OR madagascar:ti,ab OR malagasy:ti,ab OR malawi:ti,ab OR nyasaland:ti,ab OR mali:ti,ab OR mauritania:ti,ab OR mauritius:ti,ab OR mozambique:ti,ab OR namibia:ti,ab OR niger:ti,ab OR nigeria:ti,ab OR réunion:ti,ab OR rwanda:ti,ab OR ruanda:ti,ab OR 'sao tome':ti,ab OR 'principe':ti,ab OR senegal:ti,ab OR seychelles:ti,ab OR 'sierra leone':ti,ab OR somalia:ti,ab OR 'south africa':ti,ab OR 'south sudan':ti,ab OR sudan:ti,ab OR swaziland:ti,ab OR tanzania:ti,ab OR tanganyika:ti,ab OR togo:ti,ab OR 'togolese republic':ti,ab OR uganda:ti,ab OR zambia:ti,ab OR zimbabwe:ti,ab OR africa:ti,ab OR african:ti,ab
5. Qualitative search terms	qualitative*:ti,ab OR narrative*:ti,ab OR interview*:ti,ab OR focus group*:ti,ab OR grounded theory*:ti,ab

With respect to the quality of the 39 included studies, we assessed the validity of the results, by assessing each study's research design, methodology, recruitment strategy, data collection, ethical conduct, analysis and results reporting. We found that all the studies had a clear statement of the aims of the research. For appropriateness of participant recruitment, all studies scored a 'yes' except for three. When reviewing how robustly the analysis was conducted, six studies were thought to have undertaken this inadequately and for one study it was unclear. Full details of which elements were missing from each study are available in [Supplementary Appendix 2](#).

Study Characteristics

The most common research methods used for data collection included in-depth interviews ($n = 20$) and focus group discussions ($n = 13$). The remaining studies ($n = 6$) used a variety of methods, including focus group discussions, key informant interviews, observations and field notes. Seven of the 39 studies were carried out in Kenya, six in Uganda, five in Ghana and four in Nigeria, Ethiopia and South Africa. The remaining studies were undertaken in seven countries (see [Figure 2](#)).

Sixteen (41%) of the 39 studies focused on breast cancer, with the remaining studies focused on the following types of cancer: cervical ($n = 8$; 21%), lung ($n = 1$; 3%), oesophageal ($n = 1$; 3%), prostate ($n = 1$; 3%). Seven studies (18%) looked at multiple tumour types and five studies (13%) did not have a specific cancer type but focused on cancer in general (see [Figure 3](#)).

We identified six themes in our systematic review: (i) health service barriers; (ii) preference for complementary and alternative medicine; (iii) limited understanding of cancer among the population; (iv) personal and family obligations; (v) perceived impact of cancer and its treatment on sexuality, body image and relationships; (vi) stigma and discrimination faced by patients following a diagnosis of cancer. Within health service barriers, six sub-themes were highlighted.

Theme 1: Health Service Barriers

Inadequate numbers of trained specialists

In six studies, a shortage of trained workforce necessary to manage patients presenting with cancer symptoms appropriately was highlighted as a major issue [14–22]. The few specialists that were present had to take on a high patient load with inadequate resources [23,52].

Limited knowledge of cancer among healthcare providers

Healthcare staff, including nurses and clinicians, highlighted inadequate or no formal training in cancer screening and treatment. Healthcare providers mentioned not having treatment guidelines or standardised operating procedures for cancer diagnosis and management.

Health workers also had limited knowledge on the causes and symptoms of cancer, leading to misdiagnosis and mismanagement of patients. This occurred when symptoms of cancer were treated with painkillers, antibiotics or prescribed creams. For example, symptoms were mistaken for an array of illnesses, such as boils, hypertension,

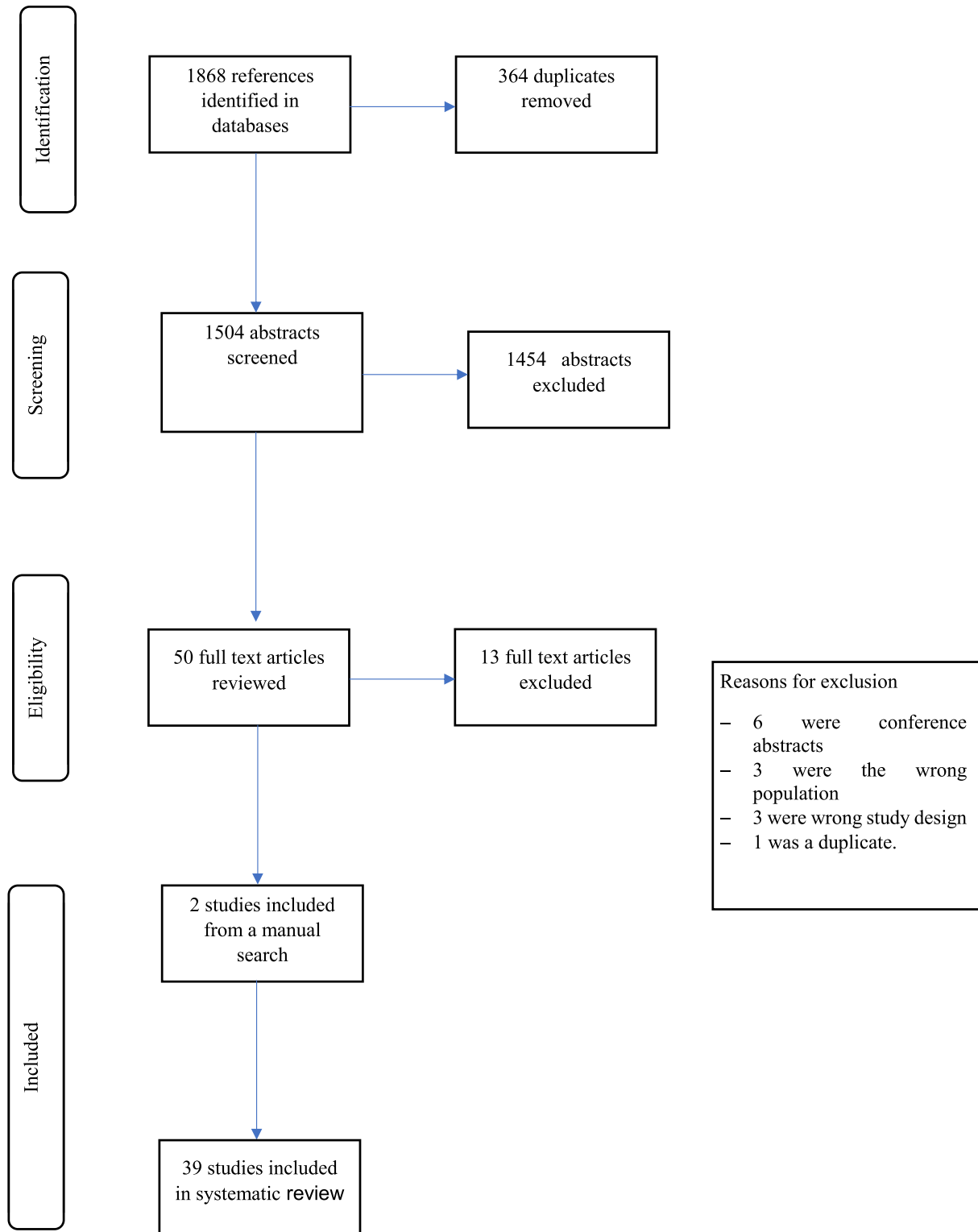


Fig 1. PRISMA flow diagram.

rheumatism, ulcers, sexually transmitted diseases or kidney stones [19,21,23–33]. Lack of knowledge of cancer services was more evident in primary health facilities [20–23,28]. Some patients were incorrectly reassured that there was nothing to worry about and they took several trips to the pharmacy or sought a second or third opinion before finally

being referred to an appropriate facility to get a formal diagnosis [29,34].

Poor coordination of care

There was evidence of ineffective referral systems between different health facilities such as primary and

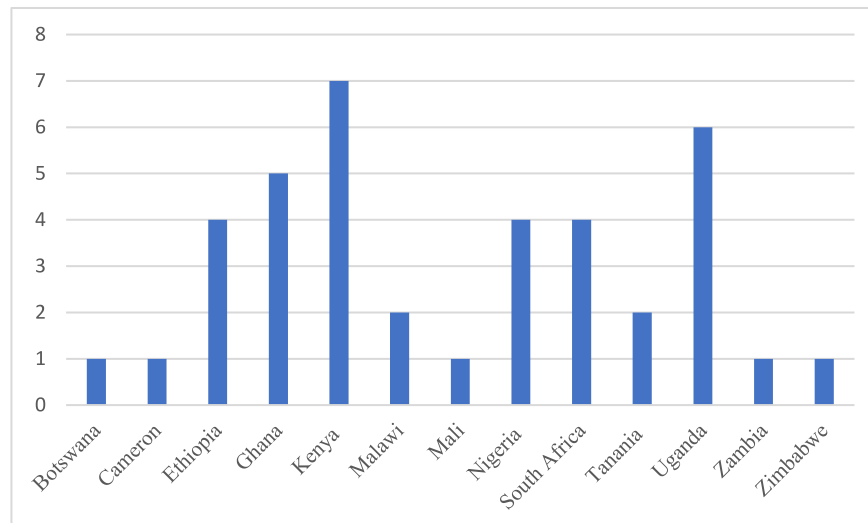


Fig 2. Descriptive characteristics of countries.

secondary facilities, as well as different health departments. Additionally, there were delays in receiving test results. If the test results were lost, patients had to retake the tests, which extended their waiting time [14–16,22,26,27,35–37].

As an illustration, in a study carried out in Malawi by Kohler *et al.* [26], one patient said the following:

It took 3 years for me to know that it was cancer because they took it (sample) to Blantyre. In the first year, it got lost. They took another sample. It got lost again. During the third time, that was when they diagnosed cancer of the breast.

Other factors in the health facility setting were the behaviour and actions of health providers, which acted as an obstacle to patients. This included patients being unclear about hospital processes and the different components of their care pathway that necessitated review and treatment

by several grades of staff and members of the multidisciplinary team. Patients also experienced poor provider to patient communication. For example, the patient was not informed about the procedures or the tests by the health provider, or the provider spoke English to the patient even though it was not the patient's primary language. Additionally, patients were not told what documents to bring to the health facility [14,16,22–26,28–30,36–38].

Inadequately resourced health facilities

There were challenges with availability of diagnostic services and screening tools for investigations, such as mammography. In addition, basic infrastructure was often problematic, with power outages delaying diagnosis and treatment.

One surgeon in a study carried out in Ethiopia [29] said the following:

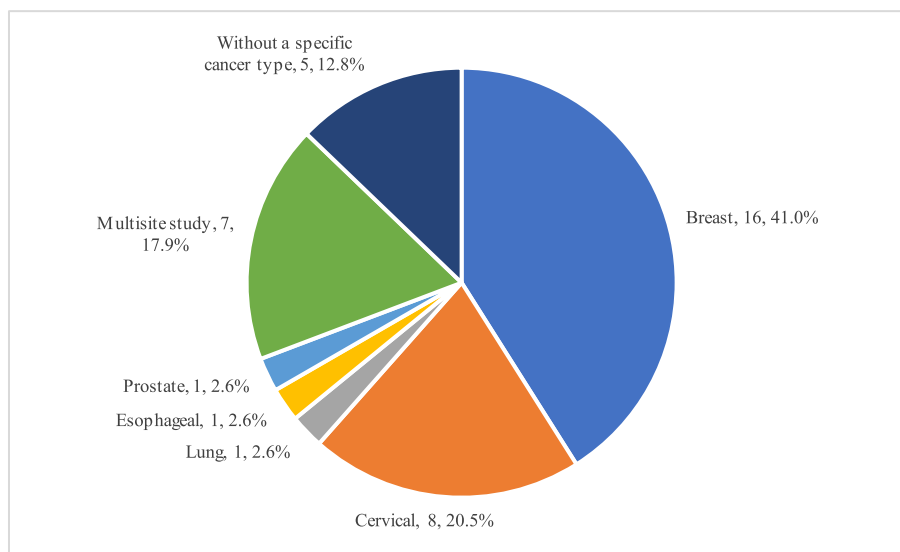


Fig 3. Descriptive characteristics of cancer types.

Our major challenge here is we have no diagnostic tests, standard treatments nor a screening tool. So we refer patients to Addis Ababa for pathologic tests and treatments but sometimes they come back without getting the service ..., so we cannot do anything for them because they have non-operable cancer then they will disappear or die in their home.

There was poor availability of radiotherapy machines due to constant breakdowns with no back up. Participants also mentioned insufficient operating capacity and outdated equipment leading to limited imaging investigations, pathological assessment of specimens and laboratory testing [14–17,24,36,39]. Two studies described shortages of medication in health facilities, resulting in patients being forced to buy chemotherapy medication from private pharmacies [14,26].

Technological challenges were also highlighted within the clinics. For example, inadequate computers in the health facilities and incomplete documentation. Internet access was suboptimal and there was a lack of space on the computer servers to store patient records [22].

Negative attitudes of healthcare providers towards patients

Participants highlighted that the attitudes and behaviours of healthcare workers towards them impacted the quality of care received. Some studies reported that health workers were not concerned about poor people and gave preferential treatment to the rich or those they knew personally. Patients reported that they were rude, judgmental and not empathetic. Additionally, they did not create time for proper diagnosis and did not respond to patients' questions. In a study carried out in Mali [19], a participant said the following:

If you don't have the financial power, neither you nor your husband, they don't care for you, even if you cry; but if they know you have money, they give you attention. That's why I am using traditional medicine.

High costs of diagnostic and treatment services

Thirteen studies reported on financial hardships as a barrier to starting or continuing treatment as well as the negative impact that the costs of treatment had on family resources [14,18,19,25,27,29,34,35,38,40–43].

As an illustration, one patient in a study carried out in Ghana [14] explained that:

The chemo is expensive ... If you do not have at least 200 Ghana Cedis, you cannot buy the drugs. When someone hears all this, the individual would opt for herbal medicine or prayer.

Long distances, the lack of transport options and the cost of traveling were a major barrier to accessing health facilities, particularly for patients living in rural settings [16,18,20–23,25–29,31,35,37]. The lack of accommodation also posed a challenge for patients and their care givers. This was exacerbated by the requirement for long hospital stays, long waiting times, overcrowded spaces, the need to

travel from out of town and the lack of free accommodation. Patients also reported further difficulties in paying for food, shelter or upkeep as they sought cancer treatment [22,25,28,35,36,39].

Two studies described doctors turning away patients or not attending to them due to a lack of funds for treatment [15,40]. One woman in a study reported by Mwaka *et al.* [37] said:

There is no money to pay for transport and medical bills. They (health professionals) ask you to buy gloves, razor blades; and when you do not have, they chase you away.

Healthcare providers were accused of offering preferential treatment based on a patient's economic status [31]. Private clinics also took advantage of patients, offering services at high prices and draining clients of resources [24,25,42], leaving them feeling frustrated [25,31,41]. Two studies described how patients had to raise funds for treatment by selling their property, begging or borrowing. They also attempted to access subsidised services, to fundraise and seek contributions from their employer [29,31].

Theme 2: Complementary and Alternative Medicine

One of the major reasons identified for patients not seeking attention from a medical practitioner when developing symptoms or accepting anticancer treatment was because of a patient's preference for complementary and alternative medicines. Reasons included its ease of accessibility within their community settings and affordability compared with conventional anticancer therapies, which often necessitated travelling long distances to receive these and were also of high cost [18,37,44–47]. Another paper reported that traditional medical practitioners were thought of as people who could uphold the confidentiality and privacy of patients as compared with the health facility [37].

There was also the belief that cancer was caused by witchcraft or a curse and could then only be successfully treated by complementary and alternative medicine [18,28,43,45]. In addition, there was a societal expectation/pressure to use complementary and alternative medicine, with patients citing encouragement by family members, pastors, health workers such as nurses and relatives [14,19,26,28,42].

In Cameroon, for example, in a study carried out by Kaninjing *et al.* [45], one participant said

You know not everyone just goes straight to the doctor. In Africa as a whole, there is this belief about witchcraft and all the like, when one is attacked by prostate cancer, the first thought is witchcraft, and the first place of instinct is going to meet a [traditional] practitioner.

Theme 3: Limited Understanding of Cancer among the Population

There was evidence among participants of a lack of knowledge/understanding as to the causes of cancer

[15,17,18,29,35,41,48,49]. In some instances, this resulted in participants expressing how they initially dismissed symptoms as not serious or being in denial [26,27,29,40]. Participants shared myths and perceptions related to cancer. For example, it is acquired by coming into contact with certain objects, such as insects, while breastfeeding or a woman dreaming that she is breastfeeding in her dreams. Other myths included the association of cancer with wearing tight clothes, manual labour or coming into contact with money if this is placed in a bra [14,26,27,36,48]. Cancer was also associated with spiritual causes, such as someone, usually a second wife or mistress, casting a spell and witchcraft [14,15,19,36,38–40]. The lack of knowledge around cancer was also seen to manifest in the behaviour of family members. For example, there was evidence of a blame culture amongst relatives such as in-laws for being diagnosed with cancer. Patients were accused of bringing cancer into the family [42].

In a study carried out in Ghana by Sanuade *et al.* [14] one participant reported that:

Up until now, I think it is a satanic disease because before it happened, I was at a Christian gathering where the Pastor said that if you have a dream and a child is sucking your breast it means you are being given breast cancer. At the time, I listened but I did not believe it completely. I used to have such dreams a lot.

Theme 4: Personal and Family Obligations

A number of commitments led to patients delaying going to the health facility [37], including employment [21,26,34] and caring commitments [27,29]. This is illustrated by the following quote from a study carried out in Ethiopia by Getachew *et al* [29]:

I had no money for medication and transportation since my husband has died and all the family responsibility is on me ... I came to this hospital after selling my farmland and borrowing some money from my family.

Participants had a fear of loss of livelihood as well as the loss of employment as they had to take time off from income-generating activities to access care. For those who were self-employed and were too sick to work, the lack of funds to pay for essentials such as transport or treatment consequently affected treatment intensity or adherence [28] and made them fear that they could not provide for their families [32].

Theme 5: Perceived Impact of Cancer and its Treatment on Sexuality, Body Image and Relationships

Having cancer or experiencing its symptoms led to a strain in family and social relationships. Symptoms such as smelly vaginal discharge impacted negatively on relationships with friends and this also led to gossip. In addition, limited social support, economic hardship and dependency on spouses for support led to strained marital relationships [27,30,35,41].

The strain of a cancer diagnosis on relationships with spouses, family and their wider social network were also key factors in explaining poor uptake of treatments. For example, studies found that partners/spouses often made it difficult or explicitly denied permission to undergo surgery [19,29,40,49,50].

The women were also dealing with fears of infertility associated with treatment such as removing the uterus. In addition, the loss of a breast after a mastectomy made women feel less feminine, impacting their self-image as they had worries about appearance and their sexuality. Symptoms and treatment also led to sexual difficulties such as uncomfortable sexual intercourse or disengaging entirely [14,27,29,35,51]. There was also a fear of being considered of little or no value because a woman could not have sexual intercourse with her spouse [15].

One patient in a study carried out in Kenya by Ngutu and Nyamongo [35] highlighted that:

Losing the ability to have children has been a hard thing to reconcile ... I know I have children already, but losing my uterus is like being stripped of one of the things that defines me as a woman. Because of this, I feel like I have lost a large part of my identity as a female.

Theme 6: Stigma and Discrimination Faced by Patients following a Diagnosis of Cancer

Cancer was perceived to be associated with death [31,42,45], promiscuity, infidelity or HIV [49]. Patients were therefore worried about the social consequences of how people would respond if they knew they had cancer, leading to patients hiding a cancer diagnosis from friends and family [35]. In addition, there was a fear of being stigmatised because of symptoms of cancer or fear of social rejection, which made patients reluctant to go to the hospital for diagnostic investigation [18,42]. Three studies [28,42,48] reported how patients who had been stigmatised following their cancer diagnosis experienced feelings of hopelessness, self-hate, isolation, worthlessness and stress.

Discussion

To the best of our knowledge this is the first systematic review to evaluate qualitative studies exploring barriers to diagnosis and treatment of cancer in SSA. We found that over the 25-year period of this review, only 37 studies were identified that focused predominantly on breast and cervical cancer and included four main countries in SSA (Kenya, Ghana, Nigeria and Uganda). This highlights the substantial shortfall in high-quality evidence evaluating system- and patient-level factors contributing to delays in diagnosis and treatment that are necessary to inform cancer control planning.

Although the themes elicited are probably relevant in many countries, this will vary according to country, region, patient group and tumour type and a clear recommendation is for greater investment in research in areas with

limited evaluation to date (e.g. prostate, oesophageal and lung cancer) and in countries poorly represented in the literature (Zambia, Zimbabwe, Mali, Botswana, Cameroon, Malawi and Tanzania). It is understanding these experiences that can help to develop and target health system interventions to improve care delivery.

International organisations, like the World Health Organization and the International Atomic Energy Agency, are trying to promote a healthcare systems approach to manage the rising cancer burden through the support of national cancer control programmes and prioritisation of universal health coverage [53–55]. However, many of the healthcare systems in low-income nations are already overburdened with managing a dual burden of disease that includes infectious diseases, which has meant that cancer care often remains lower down the public health agenda [56]. Accessibility to services for cancer patients such as for prevention, diagnosis and treatment is a challenge. Although many countries have incorporated cancer screening in their cancer control programmes, implementation has been challenging because of financial costs, logistics and societal issues, such as poor health literacy, myths and false beliefs [57–61].

Delays at the healthcare provider level have been shown to contribute to delays in the diagnosis and treatment of cancer. This is due to the lack of a trained workforce, low levels of provider knowledge on cancer, challenges for patients to navigate the referral system as well as the ineffective coordination of patient care between healthcare facilities [62–66]. A systematic review carried out in breast cancer in SSA found that misdiagnosis, healthcare worker shortages, as well as poor knowledge and skills and attitudes of healthcare workers influenced diagnostic and treatment intervals in women with breast cancer [63]. Similarly, a study carried out in Rwanda among general practitioners found that there were considerable deficits in basic oncological education [67].

In order to support crucial cancer control initiatives and improve patient outcomes, the health systems of sub-Saharan Africa (SSA) countries must be strengthened. From a cancer treatment and research perspective, the African Organisation for Research and Training in Cancer (AORTIC) have formed a training, education research and quality improvement hub across the continent, which is increasingly supported by international donors [68]. In addition, the recent Lancet Oncology Commission on Cancer in Sub-Saharan Africa provides an important resource for countries seeking to build capacity in cancer control. Themes include improvements in training of healthcare staff, investment in research funding, expanding diagnostic facilities and development of cancer disease registries. Furthermore, promoting cancer awareness and adoption of healthy habits, particularly around diet, as well as smoking and alcohol consumption. A focus on quality through measurement of performance and audit and feedback are seen as critical as well [69]. Overall, in low-resource settings, such as SSA, given the multiple difficulties they face, it is critical to identify

health system delays and develop low-cost, culturally acceptable ways to address them.

Lack of funds, the costs of transport, lack of accommodation at the health facility coupled with unaffordable diagnostic and treatment services proved to be a significant burden and barrier to patients receiving timely care, as noted in other studies [70–75]. To mitigate these challenges requires ensuring universal health coverage for all citizens diagnosed with cancer or the provision of a financial support package, especially for the vulnerable in these regions.

Our review indicates that complementary and alternative medicine plays a major role as a source of health care in SSA. Several reasons account for this preference, such as its accessibility and availability in the community, recommendations from family and friends, and the belief that it can cure cancer, especially those caused by superstitious causes [76]. However, in two studies carried out in Uganda and Nigeria it was found that traditional practitioners had limited knowledge of the causes of cancer [77,78]. In addition, participants in one study and two systematic reviews attributed the cause of their cancer to the use of birth control, witchcraft and traditional beliefs [2,79,80]. Given the above issues identified, there is a call for collaboration between medical practitioners and traditional practitioners to reduce delays in accessing conventional cancer treatment [81,82]. There is also a need for implementation research to educate complementary and alternative medicine providers as well as the community on cancer, its symptoms and causes, as delays in treatment due to the use of complementary and alternative medicine might be higher than reported in the literature.

There are limitations of our systematic review. Specifically, we only included studies that were published in the English language and therefore acknowledge that some countries in SSA could have published articles on this topic in other languages.

Conclusion

This is the first qualitative systematic review undertaking a narrative synthesis of factors contributing to the delays in diagnosis and treatment of different cancer types in SSA. Although 39 studies were identified over the 25-year period, these predominantly focused on two main tumour types, breast and cervix, with no studies identified for skin cancers such as Kaposi sarcoma and only a single study for prostate and lung across the whole of SSA, which is insufficient. The studies identified do provide different perspectives about the complex interlinked factors that contribute to the barriers to timely diagnosis and treatment of cancer in SSA. The results have highlighted the need for health policy makers and researchers to understand people's help-seeking behaviour and to address the economic barriers to receiving care, as well as the social-cultural factors that perpetuate stigma resulting from a lack of knowledge and awareness of cancer. In addition, health

personnel need adequate diagnostic and treatment resources as well as training in the management of cancer, with clear pathways of referral between primary/community care and specialist facilities.

Author Contributions

AA is the guarantor of integrity of the entire study. AA, DCL, VB, MS and JS were responsible for study concepts and design. MM, DCL and AA carried out the literature research and the data analysis. MM and AA prepared the manuscript. MM, DCL, SM, VB, MS, SS, RM, JS, ADM and AA edited the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.clon.2023.05.011>.

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