



Cancer Treatment Abandonment in Africa: A Narrative Review of Socioeconomic Determinants, Clinical Consequences and Strategies for Improving Treatment Completion

Cecilia Oderinde¹, Oluwamayowa Bello², Bernice Jeruto Kurere³, Edirin Moses Temidire⁴, Emeka Benjamin Okeke^{4,5}

¹Nottingham University Hospitals NHS Trust, United Kingdom

²Hull University Teaching Hospitals NHS Trust

³Barts Health NHS Trust

⁴Cephas Health Research Initiative Inc., Ibadan, Nigeria

⁵Department of Research and Innovation, University of Technology and Entrepreneurship, Phnom Penh, Cambodia

Abstract

Context: Across Africa, patients with potentially curable cancers may fail to initiate or complete recommended curative treatment. This preventable phenomenon, known as treatment abandonment, occurs amid limited diagnostic capacity, workforce shortages, and substantial financial and geographical barriers to care, highlighting the need for an integrated synthesis of its magnitude, determinants, consequences and potential remedies. This narrative review therefore examined the magnitude and patterns of cancer treatment abandonment in Africa, identified its socioeconomic and related determinants, evaluated its clinical consequences, and critically examined strategies for improving treatment completion.

Materials and Methods: Peer-reviewed literature was identified through searches of PubMed/MEDLINE, Scopus and CINAHL, supplemented by reference-list screening, with 53 publications meeting the eligibility criteria and included in the narrative synthesis. Narrative synthesis accommodated the substantial heterogeneity in populations, cancer types, study designs and outcome definitions across the included evidence.

Results: Reported abandonment varied substantially across settings and observation periods, reaching 54% in paediatric cohorts and approximately one-fifth among adults initiating chemotherapy. Financial hardship, compounded by transport costs, distance from treatment centres and inadequate health-insurance coverage, was the most consistently reported determinant, alongside health-system, sociocultural and psychosocial barriers. These patterns carried real clinical weight: abandonment was strongly associated with reduced event-free survival and premature mortality, and it complicated the interpretation of survival statistics whenever patients lost to follow-up were censored rather than treated as an adverse outcome. Encouragingly, multicomponent interventions combining financial assistance, transport reimbursement, residential accommodation, patient navigation and active follow-up substantially reduced abandonment where they were evaluated, although navigation alone could not overcome unaffordable treatment.

Conclusion: Cancer treatment abandonment in Africa is therefore best understood as a structural and largely preventable outcome rather than being attributed primarily to a failure of patient motivation. Reversing it will require financial protection integrated into routine cancer services, expanded health-insurance coverage, decentralised care, standardised definitions and reporting, and reliable patient-

tracking systems, supported by further prospective research, particularly among adult populations.

Keywords: treatment abandonment; cancer; Africa; treatment adherence; health disparities

Corresponding Author:

Dr. Emeka Benjamin Okeke

Cephas Health Research Initiative Inc., Ibadan, Nigeria

emeka.okeke@cephashri.org

DOI: 10.61386/imj.v19i4.1382

Introduction

Cancer treatment outcomes in Africa remain constrained by limited diagnostic capacity, shortages of oncology professionals, inadequate treatment infrastructure and substantial financial and geographical barriers to care^{1,2}. These constraints mean that, although several cancers are potentially curable when diagnosed early and treated appropriately, many patients are unable to begin or complete the recommended course of treatment, contributing to the survival inequalities observed between patients treated in African settings and those receiving care in better-resourced health systems^{1,3}.

One reason these constraints translate into worse outcomes is that cancer treatment itself is demanding: it frequently involves multiple investigations, surgery, repeated chemotherapy cycles, radiotherapy and supportive care delivered over several months. In many African countries, specialised oncology services are concentrated in major cities, so diagnosis and treatment can be delayed well before a patient ever begins therapy⁴. Patients living in rural or underserved areas may therefore have to travel long distances and meet the costs of transportation, accommodation, food, diagnostic tests and medicines⁵, while treatment can also result in loss of employment or household income for patients and caregivers⁶. Together, these combined pressures can make continued attendance difficult, even when patients and families remain committed to treatment.

It is against this backdrop that failure to initiate or complete treatment delivered with curative intent for reasons that are not medically indicated, commonly termed treatment abandonment, has become increasingly recognised as an important and largely preventable cause of poor cancer outcomes in Africa^{1,7}. Treatment abandonment and related terms, including refusal, default and loss to follow-up, are defined more fully later in this review.

Although the label can appear to place responsibility on patients or caregivers, discontinuation is frequently shaped by exactly the circumstances just described, including inadequate insurance coverage, restrictive hospital policies, limited social support and financial hardship^{5,8-10}. These interacting socioeconomic, geographical, clinical and health-system barriers recur across diverse settings, shaping outcomes for children with cancer as much in East Africa as in Southern and Central Africa¹¹⁻¹⁴.

While most of this evidence concerns childhood cancer, where abandonment is recognised as an important cause of treatment failure², the problem affects adults as well: comparable inequalities in treatment initiation, guideline concordance and completion have been documented in breast cancer services across sub-Saharan Africa, and in default from breast- and thyroid-cancer treatment specifically¹⁵⁻¹⁸. This adult evidence nonetheless remains more limited and less consistently defined than the paediatric literature.

Whichever population is affected, treatment abandonment carries serious consequences, including disease progression, relapse, loss of curative opportunity and premature mortality⁷; it can also bias survival estimates when patients with unknown outcomes are censored without active tracing^{19,20}. These consequences are not, however, inevitable: evidence from cash-transfer programmes, patient navigation, transport reimbursement and residential accommodation suggests that abandonment can be reduced through targeted support²¹⁻²⁴.

Building on this evidence, this narrative review examines the magnitude and patterns of cancer treatment abandonment in Africa, identifies its socioeconomic and related determinants, evaluates its clinical consequences, and critically considers strategies for improving treatment completion. It also identifies evidence gaps and priorities for clinical practice, cancer policy and future research.

Methods

Search strategy and eligibility criteria

This narrative review synthesised peer-reviewed literature concerning cancer treatment abandonment in Africa. Relevant publications were identified through searches of PubMed/MEDLINE, Scopus and CINAHL conducted in August 2026, covering records indexed from database inception to that date. The search combined Medical Subject Headings and controlled-vocabulary terms with truncated free-text terms related to cancer, treatment discontinuation and the African setting. These included “cancer,” “neoplasm,” “oncology,” “treatment abandonment,” “treatment refusal,” “treatment default,” “treatment interruption,” “treatment non-completion,” “loss to follow-up,” “treatment adherence,” “Africa,” and the names of individual African countries. The complete search strings applied to each database are

provided in the Supplementary File (Tables S1–S3). Reference lists of relevant articles and reviews were also examined to identify additional publications.

Publications were considered relevant when they examined the initiation, continuation, interruption, abandonment, refusal or completion of cancer treatment in an African country. Evidence involving paediatric and adult populations was included. Eligible publications comprised observational studies, qualitative and mixed-methods research, intervention evaluations, relevant reviews and consensus papers.

Studies concerned solely with cancer screening or early detection, with no clear connection to subsequent cancer treatment, were excluded, alongside conference abstracts, protocols, non-peer-reviewed publications and studies conducted outside Africa. Two reviewers screened and selected the retrieved publications for inclusion. Fifty-three publications meeting these criteria were included in the review; the full list, with source type, focus area and relevance to the review, is provided in the Supplementary File (Table S4).

Evidence synthesis

The selected evidence was synthesised narratively because the studies differed considerably in their populations, cancer types, treatment settings, study designs and outcome definitions. Findings were organised into four principal areas: the magnitude and patterns of cancer treatment abandonment, socioeconomic and related determinants, clinical consequences and strategies for improving treatment completion. A social-ecological framework was used to organise the identified determinants across patient, household, community, healthcare-organisation and wider health-system levels. Geographical and treatment-related influences were presented as additional categories that interact across these levels. This framework guided the presentation of determinants in Table 3 and their interpretation as interconnected influences on treatment abandonment. Treatment abandonment was distinguished from refusal, temporary interruption, medically indicated discontinuation and loss to follow-up whenever the definitions reported in the original studies permitted this distinction^{2,7}. Differences between paediatric and adult cancer care were also considered throughout the synthesis, and the resulting structure mirrors other recent narrative

reviews that have organised comparably heterogeneous oncology evidence into similarly delineated thematic sections²⁵.

Conceptualising Cancer Treatment Abandonment

Cancer treatment abandonment is most consistently defined in paediatric oncology. The International Society of Paediatric Oncology Working Group defines it as failure to initiate or complete treatment delivered with curative intent, commonly operationalised as an interruption of four or more consecutive weeks⁷. This definition recognises both refusal before treatment begins and discontinuation after treatment has commenced while allowing the timing of abandonment to be documented. It excludes interruptions caused by clinical contraindications, treatment-related death or planned transition to palliative care.

Despite this guidance, terminology remains inconsistent across African cancer studies. Abandonment, default, non-completion, refusal, interruption and loss to follow-up are sometimes used interchangeably, although they represent different events. Treatment refusal ordinarily describes an explicit decision not to commence recommended therapy, whereas interruption refers to a temporary break that may or may not progress to permanent discontinuation. Treatment default generally indicates failure to attend or continue treatment according to schedule, but the duration required for classification varies between studies. Loss to follow-up is an administrative or observational outcome indicating that a patient's status is unknown. It cannot automatically be interpreted as abandonment because the patient may have transferred to another facility, continued treatment elsewhere or died^{19,26}.

These distinctions have important implications for estimating the magnitude and consequences of abandonment. Studies that exclude patients who do not initiate therapy may underestimate the overall burden, while those that classify every patient lost to follow-up as having abandoned treatment may overestimate it. Conversely, censoring patients at their last recorded visit can produce artificially favourable survival estimates if a substantial proportion subsequently discontinue treatment or die^{19,20}. Treatment abandonment should therefore be recorded as a distinct adverse outcome, accompanied

by information on when it occurred and, where ascertainable, why it occurred^{7,27}.

The term also requires non-judgemental interpretation. "Abandonment" may suggest that patients or caregivers are responsible for treatment failure. However, African studies consistently show that discontinuation is shaped by financial hardship, geographical inaccessibility, institutional barriers and inadequate support^{2,5}. Accordingly, abandonment is better understood as an outcome arising from interactions between patients, households, healthcare institutions and wider financing and service-delivery systems.

Table 1: Definitions of treatment abandonment and related outcomes

Concept	Working definition	Key distinction
Treatment abandonment	Failure to initiate or complete treatment delivered with curative intent, commonly defined in paediatric oncology as an interruption of at least four consecutive weeks	A distinct adverse treatment outcome
Treatment refusal	An explicit decision not to commence recommended treatment	Occurs before treatment is initiated
Treatment interruption	A temporary break in scheduled treatment	May be resolved or progress to abandonment
Treatment default	Failure to attend or continue treatment according to schedule	Thresholds vary across studies
Treatment non-completion	Failure to receive the entire prescribed treatment course	May include abandonment and other reasons for discontinuation
Loss to follow-up	The patient's treatment status or vital status is unknown	Does not necessarily indicate abandonment
Medical discontinuation	Treatment is stopped because of toxicity, contraindication or another clinical decision	Should not be classified as abandonment
Transition to palliative care	Curative treatment is discontinued following a planned change in treatment goals	Represents a clinical decision rather than abandonment

Note. Definitions were synthesised from Chagaluka et al,²⁷ Freeman et al,²⁶ Mostert et al,⁷ and Stanley et al.¹⁹

Magnitude and Patterns of Cancer Treatment Abandonment in Africa

Evidence on cancer treatment abandonment in Africa is geographically uneven and dominated by paediatric oncology studies from sub-Saharan Africa. Published studies have mainly originated from Cameroon, Ethiopia, Ghana, Kenya, Malawi, Nigeria, Tanzania, Uganda and Zambia, with additional multicountry evidence coordinated through CANCaRe Africa. Consequently, the available literature does not provide a continent-wide prevalence estimate. Reported proportions vary substantially according to country, treatment centre, cancer type, study period, abandonment definition and the completeness of patient tracing^{2,27}.

Some of the highest proportions have been reported in East Africa. In Western Kenya, 98 of 180 children with documented outcomes abandoned treatment, representing 54% of the cohort¹⁰. Among children

treated for cancer in Zambia, only 8% completed their prescribed regimen, with most patients either dying during treatment or abandoning care¹³. A more recent Ethiopian study reported abandonment among 39.2% of children managed at the University of Gondar Comprehensive Specialized Hospital²⁸. Data from a more recently established paediatric oncology unit elsewhere in Ethiopia similarly documented substantial early loss of patients from treatment, illustrating the difficulties that services can face in their first years of operation before referral pathways, financing arrangements and patient-tracking systems are fully established²⁹. These results contrast with a prospective five-centre CANCaRe Africa study in which 7% of 252 children abandoned treatment during the first three months. However, this shorter observation period may not have captured abandonment occurring later in therapy²⁷.

Recent prospective evidence confirms substantial variation between treatment centres. In a cohort of 370 children with five common and curable cancers in Ethiopia and Uganda, the overall cumulative risk of abandonment was 43%, ranging from 20% in Mbarara to 54% in Gondar. Abandonment was highest among children with retinoblastoma and Wilms tumour, at 49% and 48%, respectively³⁰. This variation suggests that abandonment is influenced by local service organisation and socioeconomic conditions rather than cancer diagnosis alone. Comparable difficulties have been documented for Burkitt lymphoma, a highly curable but rapidly progressive cancer for which delay of any kind is especially costly. A large registry-based study of 934 children treated in Cameroon found a median delay of 31 days between symptom onset and diagnosis and predominantly advanced-stage disease at presentation, circumstances that increase both the clinical urgency and the financial burden of completing treatment³¹. A prospective clinical-care project for children with endemic Burkitt lymphoma in Uganda likewise identified early loss from treatment as an important constraint on survival, reinforcing that abandonment affects fast-moving as well as slower-growing childhood cancers³².

Evidence among adults is more limited. In the multicountry ABC-DO cohort, 20% of women who initiated chemotherapy for non-metastatic breast cancer abandoned treatment, while many others did not initiate or adequately complete indicated multimodal therapy¹⁸. In Nigeria, only 31 of 44

women with locally advanced breast cancer completed the full course of neoadjuvant chemotherapy, with the remainder discontinuing before completion¹⁶. A larger, institution-based case-control study across four Ethiopian tertiary hospitals reported that 329 of 1,740 women receiving chemotherapy for breast cancer, or 18.9%, abandoned treatment, confirming that abandonment remains a substantial problem in adult oncology even in relatively centralised, well-established cancer services³³. High default has also been documented in thyroid cancer management¹⁵. Overall, the evidence indicates a substantial but inconsistently measured problem, with paediatric estimates better characterised than adult treatment abandonment.

socioeconomic, geographical, health-system, sociocultural, psychosocial and clinical influences. The relative importance of these factors varies across populations and treatment settings, but financial hardship and limited access to care are the most consistently reported determinants.

Socioeconomic determinants

Direct and indirect treatment costs are central drivers of abandonment. Even where clinical services are subsidised, families may still pay for diagnostic tests, medicines, blood products, transportation, food and accommodation. These expenses are compounded by lost income when patients or caregivers must leave work for repeated hospital visits. In a

multicentre CANCaRe Africa study, 65%

of participating families borrowed money to reach the hospital for diagnosis and treatment initiation. Abandonment occurred more frequently among families who borrowed money than among those who did not²⁷. Caregivers in southwest Uganda similarly identified insufficient money as the principal reason for discontinuing their children's treatment⁵.

Insurance coverage can protect families against abandonment, although access and benefit packages remain inconsistent. In Western Kenya, inadequate access to health insurance was reported alongside treatment and transportation costs as a major reason for abandonment¹⁰. Subsequent Kenyan research found that health-insurance access was associated with better childhood cancer outcomes, while hospital policies and continued out-of-pocket expenditure could still undermine treatment completion^{9,35}. In Ethiopia, health insurance and caregiver employment were independently associated with a lower likelihood of childhood cancer treatment abandonment²⁸. Closing this coverage gap is likely to require innovation as well as expansion of existing schemes; mobile-

network-based models for extending health-insurance enrolment and premium collection have been proposed as one route to increasing coverage in Nigeria, and comparable technology-enabled financing mechanisms could plausibly help to reduce

Table 2: Selected African studies reporting treatment abandonment or non-completion

Study	Setting	Population or cancer type	Design and sample	Principal finding
Njuguna et al. ¹⁰	Western Kenya	Childhood cancers	Descriptive follow-up: 180 patients with documented outcomes	98 patients, or 54%, abandoned treatment
Slone et al. ³	Zambia	Childhood cancers	Retrospective cohort: 162 patients	Only 8% completed a treatment regimen
Chagaluka et al. ³⁷	Five sub-Saharan African hospitals	Childhood cancers	Prospective cohort: 252 patients	7% abandoned during the first three months
Molla et al. ²⁸	Gondar, Ethiopia	Childhood cancers	Retrospective cross-sectional study	Treatment abandonment was 39.2%
Hesseling et al. ³¹	Cameroon	Burkitt lymphoma	Retrospective registry analysis: 934 patients	Treatment was completed by 85.9% of patients; 4.5% abandoned treatment. Abandonment was highest among patients with stage IV disease (9%)
Molla et al. ³⁶	Ethiopia and Uganda	Five common and curable childhood cancers	Prospective multicentre cohort: 370 patients	Overall risk was 43%, ranging from 20% to 54% between centres
Mutyaba et al. ³⁴	Uganda	Childhood cancers	Retrospective outcome study	Abandonment was an important contributor to poor outcomes
Schroeder et al. ¹²	Northern Tanzania	Childhood cancers	Retrospective programme evaluation	Treatment abandonment contributed to treatment failure
Stanley et al. ¹⁴	Malawi	Childhood lymphoma	Mixed method investigation	Abandonment was associated with socioeconomic and treatment barriers
Foerster et al. ⁸	Five sub-Saharan African countries	Non-metastatic breast cancer	Prospective cohort: 1,716 women	20% of women who initiated chemotherapy abandoned treatment
Egwuonwu et al. ¹⁶	Nigeria	Locally advanced breast cancer	Prospective study: 44 women	31 women, or 70.5%, completed the four courses of neoadjuvant chemotherapy; the remainder discontinued
Birie et al. ³³	Four tertiary hospitals, Ethiopia	Breast cancer (adults)	Institution-based nested case-control study: cohort of 1,740 patients reviewed, with 200 abandonment cases and 200 controls randomly selected for analysis of determinants.	Chemotherapy abandonment occurred in 329 of 1,740 patients (18.9%) in the full cohort: 200 of these abandonment cases were selected for the nested case-control analysis.

Note. Direct comparisons should be made cautiously because the studies used different definitions, observation periods and treatment populations.

Determinants of Cancer Treatment Abandonment

Cancer treatment abandonment in Africa rarely results from a single factor. It is more appropriately understood as the outcome of interacting

the out-of-pocket costs that contribute to cancer treatment abandonment elsewhere on the continent³⁶.

Geographical barriers

The centralisation of cancer services creates additional costs and practical difficulties for patients living far from specialist hospitals. Long-distance travel may require several transport connections, overnight accommodation and prolonged separation from employment and other family responsibilities. In Zambia, greater distance from the treating hospital increased the likelihood of childhood cancer treatment abandonment, while lower maternal education was also associated with greater risk¹³. Transportation difficulties were likewise reported by families in Kenya and Malawi^{2,10}. Comparable barriers have been identified in Nigeria, where distance from the treatment centre, cost of care and delayed presentation continued to limit outcomes for children with Wilms tumour despite improvements in surgical and oncological services³⁷. Geographical access is therefore closely connected to household resources because even an available oncology service may remain functionally inaccessible when families cannot afford repeated journeys.

Health-system determinants

Treatment abandonment is also influenced by how cancer services are organised and delivered. Delays in diagnosis, prolonged waiting times, unavailable medicines, fragmented referrals and weak follow-up systems increase both the financial and psychological burden of care. Parents of children with Wilms tumour in Kenya identified inefficient services, drug unavailability and inadequate understanding of treatment plans as barriers to completion³⁸. Studies in Uganda and Tanzania have similarly documented delayed treatment initiation, limitations in diagnostic and treatment capacity, and difficulties maintaining patients throughout prolonged treatment pathways^{4,12}.

Communication is particularly important. Families who do not understand the diagnosis, treatment duration, expected adverse effects or purpose of each treatment phase may discontinue care when symptoms improve or toxicity develops. Poorly communicated prognostic information may also reinforce the belief that continued treatment offers little benefit. Conversely, respectful communication and clear treatment plans can strengthen trust and

help families anticipate treatment demands^{6,11}.

Sociocultural and psychosocial determinants

Cancer-related beliefs, fear and social relationships influence treatment decisions within the constraints created by poverty and service access. Some patients and caregivers perceive cancer as incurable, interpret treatment toxicity as evidence that therapy is harmful, or seek traditional or religious care. In Ethiopia, the belief that cancer was incurable and the perception that a child appeared cured were associated with abandonment²⁸. A qualitative study using a social-ecological model in Ethiopia similarly found that patients experienced psychosocial challenges across individual, interpersonal, community and policy levels, reinforcing the view that decisions about continuing treatment cannot be separated from patients' wider social and economic circumstances³⁹. Earlier qualitative work with guardians of children with cancer in Malawi found that adherence to treatment plans was shaped by their understanding of the illness and their trust in, and relationships with, hospital staff, in addition to material constraints, underlining that these beliefs should not be examined separately from experiences of unaffordable, inaccessible or poorly explained treatment⁴⁰.

Family and community support can either facilitate or hinder treatment completion. In Kenya, parents' social networks affected decisions to continue childhood cancer treatment, demonstrating that advice, financial assistance and community attitudes can shape engagement with care⁸. Caregiver distress, competing childcare responsibilities and fear of disfiguring treatment may also influence decisions. Among Nigerian women receiving neoadjuvant chemotherapy, financial constraints were a major reason for default, while some women declined surgery after responding to chemotherapy, partly because of fear of mastectomy¹⁶.

Clinical and treatment-related determinants

Advanced disease, poor prognosis, treatment toxicity, malnutrition, relapse and long treatment duration can reduce the perceived feasibility or value of continuing therapy. Treatment-related adverse effects may generate additional costs and reinforce fear, particularly when supportive care is limited. The complexity of multimodal treatment also creates multiple points at which discontinuation can occur.

In the ABC-DO cohort, women experienced substantial gaps in the initiation and completion of surgery, chemotherapy, radiotherapy and endocrine therapy, illustrating how treatment complexity interacts with service availability and household circumstances¹⁸. In Tanzania, variable compliance with Wilms tumour treatment protocols was itself associated with poorer outcomes, indicating that incomplete adherence to treatment schedules can compromise survival even when it falls short of outright abandonment⁴¹. Among adults, integrated delivery of chemotherapy alongside antiretroviral therapy has been associated with good retention in care for HIV-associated Kaposi sarcoma in rural Malawi, suggesting that coordinated, co-located services can support continuation of cancer treatment even in resource-limited settings⁴². Treatment abandonment is therefore best understood as a cumulative process in which clinical demands interact with household vulnerability and health-system limitations.

Table 3: Determinants of cancer treatment abandonment within a social-ecological framework

Level	Principal determinants	Supporting evidence	Potential response
Patient	Limited understanding, fear of toxicity, perceived recovery, belief that cancer is incurable	Israëls et al. ⁴⁰ ; Molla et al. ²⁸ ; Renner and McGill ⁶	Repeated counselling and clear treatment plans
Household	Poverty, unemployment, debt, treatment costs, caregiver burden and competing responsibilities	Atwiine et al. ⁵ ; Chagaluka et al. ²⁷	Financial assistance and social-work support
Community	Stigma, traditional beliefs, religious interpretations and weak social support	Mostert et al. ⁸ ; Renner and McGill ⁶ ; Wondimagegnehu et al. ³⁹	Community education and peer-support programmes
Geographical	Long distance, transport costs, rural residence and need for accommodation	Ekenze et al. ³⁷ ; Njuguna et al. ¹⁰ ; Slone et al. ¹³	Transport support, hostels and decentralised services
Healthcare organisation	Waiting times, medicine shortages, poor communication, complex referrals and weak follow-up	Kibudde et al. ⁴ ; Libes et al. ³⁸	Navigation, reliable supplies and active patient tracking
Health system	Inadequate insurance, centralised oncology services and limited specialist capacity	Mostert et al. ⁹ ; Obute et al. ³⁶ ; Olbara et al. ³⁵	Broader insurance coverage and strengthened cancer services
Treatment	Toxicity, long protocols, advanced disease, relapse and multimodal treatment requirements	Foerster et al. ¹⁸ ; Molla et al. ²⁸ ; Wesevich et al. ⁴¹	Supportive care, treatment education and feasible protocols

Note. The categories interact and should not be interpreted as independent causes.

Consequences of Treatment Abandonment

Treatment abandonment has immediate and long-term consequences for patients, families, healthcare services and the interpretation of cancer outcomes. Its most important clinical effect is the interruption of treatment before sufficient disease control has been

achieved. For cancers requiring sequential chemotherapy, surgery, radiotherapy or prolonged maintenance therapy, incomplete treatment can permit residual malignant cells to survive, resulting in disease persistence, progression or relapse. Patients may subsequently return with advanced disease, severe symptoms or complications that are more difficult and expensive to manage. In such circumstances, an initially curable cancer may no longer be amenable to curative treatment^{1,7}.

African studies demonstrate a strong association between abandonment and mortality. In Western Kenya, 37 of the 46 children whose families were interviewed after treatment abandonment had died, while only nine remained alive¹⁰. Research on Wilms tumour in Kenya similarly found that abandonment contributed substantially to poor survival, alongside on-treatment mortality and limitations in service delivery^{38,43}. Studies from Uganda, Tanzania and Zambia have also identified abandonment and incomplete treatment as important contributors to

unfavourable paediatric cancer outcomes^{12,13,34}. Comparable findings have been reported for Burkitt lymphoma, where diagnostic delay and early loss from care in Cameroon and Uganda were linked to advanced disease at presentation and constrained survival^{31,32}.

Multicentre prospective evidence provides a clearer estimate of the survival effect. Among 366 children with common and potentially curable cancers treated across seven African hospitals, 24% abandoned treatment. Two-year event-free survival was 40.8% when abandonment was counted as an adverse event but increased to 59.2% when patients who abandoned treatment were censored. Retinoblastoma had the highest abandonment proportion at 38%²⁰. A subsequent cohort from Ethiopia and Uganda produced a similar pattern: two-year event-free survival was 28% when abandonment was treated as an event and 59% when abandoned patients were

censored³⁰. These findings demonstrate both the direct survival consequences of abandonment and the potential improvement achievable through prevention.

Treatment abandonment also compromises the validity of cancer-survival statistics. Patients who

disappear from care are frequently censored at their last recorded appointment. If many subsequently die, this method produces artificially favourable survival estimates. Active tracing of children with lymphoma in Malawi demonstrated that assumptions about patients lost to follow-up materially influenced estimated survival¹⁹. Similar challenges have been identified in multicountry research on Kaposi sarcoma, where incomplete outcome ascertainment complicated survival analysis²⁶.

The consequences extend beyond mortality. Families may experience guilt, distress, debt and continuing expenditure as a patient's condition deteriorates. Health systems also lose resources already invested in diagnosis and partially delivered treatment. Furthermore, visible treatment failure may reinforce community beliefs that cancer is inevitably fatal, potentially discouraging other patients from seeking or continuing care. Treatment abandonment therefore perpetuates a cycle of poor outcomes, distrust and delayed engagement with oncology services.

Strategies for Improving Treatment Completion

Preventing cancer treatment abandonment requires interventions that address the multiple barriers experienced by patients and families. However, the supporting evidence varies in design and in whether abandonment or treatment completion was directly evaluated. Financial-support programmes and patient navigation have been evaluated in intervention studies reporting these outcomes^{22,23,44,45}, whereas residential accommodation is supported by observational comparisons²⁴. Other strategies draw on feasibility studies, identified barriers or broader evidence concerning access to and continuity of cancer care. The findings therefore distinguish directly evaluated interventions from approaches whose specific effects on abandonment remain uncertain.

Financial assistance

Financial support is the most directly evaluated strategy. In Blantyre, Malawi, a comprehensive intervention funded treatment, transport, accommodation and food while providing counselling and active tracking of patients who missed appointments. Treatment abandonment decreased from 19% in the historical cohort to 7% in the intervention cohort. The proportion of patients

with acute lymphoblastic leukaemia, retinoblastoma or Wilms tumour who were alive without evidence of disease at the end of treatment also increased from 38% to 53%^{44,45}.

The Malawi programme continued after its initial implementation, although transport reimbursement was subsequently limited to travel within the patient's home district. Abandonment remained relatively low at 9% in 2022, 10% in 2023 and 3% in 2024, although some patients in the final cohort were still receiving treatment. Local ownership, demonstrated effectiveness and alternative donor support promoted sustainability, while continued dependence on external funding remained a concern²². A subsequent synthesis of the lessons learned from the Malawi programme concluded that comprehensive, context-adapted financial and psychosocial support could be delivered cost-effectively, and proposed principles for extending comparable models to other sub-Saharan African settings⁴⁶. The model has informed the implementation of an unconditional cash-transfer programme in two Ethiopian paediatric oncology centres, illustrating the importance of adapting financial interventions to local contexts rather than transferring them unchanged between countries.

Transport reimbursement can also be delivered through mobile technology. In Malawi, patients with lymphoma received appointment reminders and upfront transport payments through mobile money. Among 320 transfers sent to interested patients, 312 were followed by timely attendance. However, many patients could not be reached by telephone, indicating that mobile interventions may exclude those with unstable connectivity or outdated contact details²¹. These findings support the feasibility of mobile-money reimbursement and its potential to facilitate attendance, but do not establish a direct reduction in treatment abandonment²¹.

Patient navigation and active follow-up

Patient navigators can help patients understand treatment plans, coordinate appointments, access financial assistance and reconnect with services after missed visits. In Côte d'Ivoire, a prospective randomised study found that navigation significantly reduced refusal and abandonment among patients receiving lymphoma chemotherapy. Nevertheless, only approximately one-third of patients in both groups completed therapy, largely because financial

barriers persisted. Navigation may therefore improve coordination but cannot fully compensate for unaffordable treatment²³.

Navigation combined with cost sharing and coordinated diagnostic services has also been implemented in breast cancer care in Uganda⁴⁷. More recent evidence from digestive-tract cancer care in Kenya showed that navigation alone did not substantially improve treatment initiation time or completion, reinforcing the need to address structural barriers alongside coordination⁴⁸. Active follow-up should include reliable recording of contact information, rapid response to missed appointments and collaboration with community health workers where feasible.

Residential accommodation and decentralised care

Residential hostels reduce repeated travel and provide accommodation near treatment centres. In Tanzania, children who used a cancer hostel had lower treatment abandonment than non-users, at 27% compared with 37%, and higher one-year survival, at 47% compared with 37%²⁴. Although the observational design prevents firm causal conclusions, the findings support accommodation as part of a broader retention strategy.

Decentralised or shared-care models may also reduce travel burdens. Establishing oncology services closer to patients, while maintaining referral pathways to specialist centres, can improve accessibility. Rwanda's rural Hodgkin lymphoma programme demonstrated that protocol-based chemotherapy could be delivered outside a major urban centre, although treatment discontinuation and loss to follow-up remained associated with worse survival⁴⁹. This programme supports the feasibility of rural cancer-treatment delivery, but does not establish the independent effect of decentralisation on treatment abandonment⁴⁹.

Education and psychosocial support

Patients and caregivers require clear, repeated and culturally appropriate information about diagnosis, treatment duration, expected toxicity and the consequences of interruption. Counselling should begin at diagnosis and continue throughout treatment, particularly when symptoms improve or adverse effects occur. Families at high risk of abandonment should be identified early and referred

to social workers, peer-support groups and financial assistance programmes^{6,38}. These recommendations are supported by studies identifying limited understanding, fear and communication difficulties as barriers to continued treatment^{6,38}. Their independent effects on abandonment were not established by the cited studies, although counselling has been incorporated into multicomponent programmes reporting improved outcomes^{44,45}.

Health-system strengthening

Sustainable improvement requires reliable medicine supplies, shorter waiting times, functional referral systems, appropriate supportive care and standardised patient tracking. Locally adapted treatment protocols can improve feasibility, but they must preserve treatment effectiveness. The Wilms Africa programme demonstrated the potential of context-adapted guidelines while showing that abandonment and treatment-related mortality remained major barriers to survival⁵⁰. In Kenya, the introduction of a formalised evaluation and planning tool helped treatment centres to identify service gaps and prioritise improvements in paediatric oncology care⁵¹. Establishing a dedicated paediatric haematology-oncology programme in Botswana similarly showed that structured investment in specialist services, staff training and supply chains could strengthen the foundations needed for patients to complete treatment⁵².

Health systems seeking to design or refine such services may also benefit from engaging patients, caregivers and communities directly in the process. Participatory action research approaches, in which affected communities help to define problems and co-produce solutions, have been proposed as a way of improving the relevance, acceptability and sustainability of public health interventions more broadly, and could plausibly strengthen the design of abandonment-prevention programmes in cancer care⁵³. Overall, evaluated multicomponent programmes provide encouraging evidence that practical and psychosocial support can reduce abandonment^{22,44,45}. However, their designs do not establish the separate contribution of each component, and strategies supported mainly by broader service-delivery evidence require further evaluation using abandonment and treatment-completion outcomes.

Table 4: Strategies for improving cancer treatment completion in African settings and their supporting evidence

Intervention	Mechanism	Evidence from African studies and its scope	Implementation consideration
Cash transfers and comprehensive financial support	Reduces treatment, transport, food and accommodation costs	Before–after evaluation reported reduced abandonment following a multicomponent intervention ^{44,45} ; subsequent follow-up examined sustainability ²² . A further publication synthesised implementation lessons ¹⁶ . Effects cannot be attributed to financial support alone.	Requires sustainable financing and transparent eligibility.
Mobile-money transport reimbursement	Provides travel funds before appointments	Feasibility study reported timely attendance following transfers; a direct reduction in abandonment was not established ²¹ .	Depends on reliable telephone access and updated contact details.
Patient navigation	Coordinates care, provides information and follows missed visits	Randomised study reported reduced refusal and abandonment, but completion remained low ²³ . Other studies examined diagnostic timeliness ⁴⁷ and treatment timeliness, continuity and follow-up ⁴⁸ , with differing outcomes.	Navigation cannot overcome unaffordable treatment alone.
Residential hostels	Reduces travel and accommodation burdens	Observational comparison found lower abandonment and higher survival among hostel users; causal conclusions are limited ²⁴ .	Requires operational funding and equitable access.
Decentralised cancer care	Brings treatment closer to patients	Rural programme demonstrated feasible chemotherapy delivery and reported treatment outcomes; the independent effect of decentralisation on abandonment was not established ¹⁹ .	Requires trained staff, medicines and referral support.
Treatment education and counselling	Improves understanding and prepares families for toxicity and treatment duration	Studies identified understanding and communication as barriers to treatment continuation; they did not independently evaluate education or counselling as abandonment-prevention interventions ^{6,38} .	Information should be repeated throughout treatment.
Locally adapted protocols	Makes treatment more feasible within available resources	Multicentre programme evaluation reported treatment outcomes, including abandonment; the independent effect of protocol adaptation remains uncertain ⁵⁰ .	Adaptation must preserve safety and effectiveness.
Active patient tracking	Identifies missed visits and facilitates re-engagement	Tracking was included in multicomponent programmes reporting reduced abandonment; its separate contribution was not established ^{22,44,45} .	Requires reliable records and dedicated personnel.
Formalised planning and service development	Helps centres identify gaps and strengthen oncology services	Planning-tool and oncology-programme evaluations support service improvement; they do not establish an independent effect on abandonment ^{51,52} .	Requires institutional commitment and trained staff.

Note. Evidence includes intervention evaluations, observational comparisons, feasibility studies and broader research on barriers and service delivery. Associations should not be interpreted as proof of causation, and outcomes from multicomponent programmes cannot establish the effectiveness of individual components.

Discussion

This review indicates that treatment abandonment is a substantial but highly variable contributor to cancer treatment failure in Africa. Njuguna et al.¹⁰ reported that 54% of children with documented outcomes in Western Kenya abandoned treatment, whereas Chagaluka et al.²⁷ observed abandonment in 7% of children during the first three months of treatment across five African hospitals. More recent research estimated a cumulative risk of 43% across centres in Ethiopia and Uganda³⁰. These estimates are not necessarily contradictory. Differences in follow-up duration, cancer type, financial support, institutional capacity and patient tracing may explain much of the variation. Together, they show that abandonment is sensitive to how and where treatment is delivered.

The most consistent agreement across studies concerns financial hardship. Ugandan caregivers identified lack of money as the main reason for

discontinuing their children's treatment, while the CANCaRe Africa cohort found greater abandonment among families who borrowed money to reach hospital^{5,27}. Mansell and Purssell² similarly identified finance, insurance and transportation as leading determinants. Nigerian and Kenyan evidence clarifies how financial hardship operates. Inability to purchase chemotherapy contributed to breast cancer treatment default in Nigeria, while insurance access influenced childhood cancer outcomes in Kenya^{9,16,35}. Poverty therefore affects completion through treatment charges, travel expenses, income loss and inadequate financial protection.

Studies differ more in the emphasis placed on beliefs and treatment perceptions. Molla et al.²⁸ associated abandonment with believing cancer was incurable and perceiving that a child appeared cured. Renner and McGill⁶ also found that parental understanding influenced retention. However, Atwiine et al.⁵ and Israëls et al.⁴⁰ showed that such decisions often occurred alongside severe financial and logistical constraints. This suggests that beliefs should not be interpreted as isolated cultural explanations. Fear and perceptions of recovery may become more influential when treatment is unaffordable, toxic or poorly explained. Education is important, but it cannot substitute for practical support.

Comparison between paediatric and adult evidence reveals an important conceptual gap. Paediatric studies generally apply the definition proposed by Mostert et al.⁷, whereas adult studies use refusal, default, discontinuation and loss to follow-up less consistently. Foerster et al.¹⁸ found gaps across chemotherapy, surgery, radiotherapy and endocrine therapy among women with breast cancer. Egwuonwu et al.¹⁶ similarly found that some Nigerian women defaulted because chemotherapy was unaffordable, while others declined surgery after clinical improvement because of concerns about mastectomy. Adult discontinuation may therefore combine structural barriers, patient preferences and autonomy. Direct comparison with caregiver-mediated paediatric abandonment is consequently difficult, supporting the need for standardised adult

definitions.

Intervention studies support the structural interpretation but show that individual strategies have different limitations. In Malawi, financial support combined with transport, accommodation, food, counselling and active tracking reduced abandonment from 19% to 7%, with later evidence showing that the improvement was largely sustained^{22,45}. Mobile-money transfers also supported timely attendance, although unreachable patients could not benefit²¹. In Côte d'Ivoire, navigation reduced refusal and abandonment, but overall completion remained low because financial barriers persisted²³. A Tanzanian hostel was associated with lower abandonment and better survival, although its observational design limits causal conclusions²⁴. These findings favour multicomponent programmes over isolated education or navigation.

The evidence remains concentrated in paediatric oncology and a limited number of sub-Saharan African centres. Retrospective designs, inconsistent observation periods and incomplete tracing restrict comparison and generalisability. Patients recorded as lost to follow-up may have transferred or died; censoring them can consequently overestimate survival^{19,26}.

The narrative review methodology also has limitations. Although three databases and reference lists were searched and two reviewers screened and selected publications, relevant literature may have been missed, and selection bias cannot be excluded. The absence of a reported formal study-quality appraisal limits assessment of how methodological weaknesses in individual studies may have influenced the synthesis. Future prospective studies should distinguish non-initiation, temporary interruption, abandonment, transfer and death, particularly in adult oncology and underrepresented African regions. Intervention research should evaluate which combinations of financial protection, navigation, accommodation, decentralised care and psychosocial support are effective, equitable and sustainable within routine services.

Implications for Policy, Practice and Research

Reducing treatment abandonment requires coordinated action across clinical practice, healthcare financing and research. At the service level, African cancer programmes should recognise abandonment as a distinct and preventable adverse

outcome rather than treating it simply as patient non-adherence. Treatment centres should assess financial, geographical and psychosocial risks when treatment is initiated and use the findings to connect vulnerable patients with transport assistance, accommodation, counselling and social support. These measures should be supported by patient-tracking systems that distinguish treatment initiation, interruption, completion, transfer and vital status using standardised definitions^{7,19}.

However, treatment-centre interventions will have limited impact if the wider financial barriers to cancer care remain unchanged. Governments should expand health-insurance coverage for cancer diagnosis, treatment and supportive care while also addressing transportation, accommodation and other non-medical expenses associated with repeated attendance. Financial assistance should be incorporated into routine cancer services and supported through sustainable domestic financing rather than depending exclusively on temporary donor programmes^{22,44,45}. Novel financing mechanisms, including mobile-network-based approaches to expanding health-insurance enrolment and premium collection, also warrant consideration as part of this effort, particularly in settings where formal insurance uptake remains low³⁶.

The development of these policies and services should be informed by stronger and more inclusive evidence. Future research should prioritise prospective multicentre studies, particularly among adults, and apply consistent definitions and follow-up periods. Intervention studies should evaluate not only clinical effectiveness but also cost-effectiveness, equity, scalability and long-term sustainability. Examining differences by gender, rural residence, cancer type and treatment phase would help identify patients at greatest risk and enable support to be targeted more effectively. Participatory approaches that involve patients, caregivers and communities in designing and evaluating interventions may further improve their relevance, acceptability and sustained uptake⁵³.

Conclusion

Cancer treatment abandonment is a major but preventable contributor to poor cancer outcomes in Africa. It arises from interconnected financial, geographical, psychosocial, clinical and health-

system barriers rather than patient choice alone. Its consequences include disease progression, loss of curative opportunity, premature mortality and distortion of survival estimates. Evidence from African settings shows that treatment completion can be improved through financial assistance, transport support, accommodation, patient navigation, counselling and active follow-up. Sustainable progress will require these interventions to be integrated into routine cancer services and supported by expanded health insurance, decentralised care, standardised reporting and stronger patient-tracking systems.

Declarations

Ethics approval

The study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was not required, as the review is based entirely on publicly available secondary data.

Availability of data and materials

All data relevant to this study are included within the article.

Competing interests

The authors have no competing interests.

References

1. Israels T, Ribeiro RC, Molyneux EM. Strategies to improve care for children with cancer in sub-Saharan Africa. *Eur J Cancer*. 2010;46(11):1960–1966. doi:10.1016/j.ejca.2010.03.027.
2. Mansell R, Purssell E. Treatment abandonment in children with cancer in sub-Saharan Africa: Systematic literature review and meta-analysis. *J Adv Nurs*. 2018;74(4):800–808. doi:10.1111/jan.13476.
3. Van Heerden J, Balagadde-Kambugu J, Angom R, Lusobya RC, Chantada G, Desjardins L, et al. Evaluating the baseline survival outcomes of the six Global Initiative for Childhood Cancer index cancers in Africa. *Pediatr Hematol Oncol*. 2023;40(3):203–223. doi:10.1080/08880018.2022.2140860.
4. Kibudde S, Namisango E, Nakaganda A, Atieno M, Bbaale J, Nabwana M, et al. Turnaround time and barriers to treatment of newly diagnosed cancer in Uganda: A mixed-methods longitudinal study. *Afr Health Sci*. 2022;22(1):327–337. doi:10.4314/ahs.v22i1.40.
5. Atwiine B, Busingye I, Kyarisiima R, Baluku E, Mbabazi R, Bamwine B, et al. “Money was the problem”: Caregivers’ self-reported reasons for abandoning their children’s cancer treatment in southwest Uganda. *Pediatr Blood Cancer*. 2021;68(11):e29311. doi:10.1002/pbc.29311.
6. Renner LA, McGill D. Exploring factors influencing health-seeking decisions and retention in childhood cancer treatment programmes: Perspectives of parents in Ghana. *Ghana Med J*. 2016;50(3):149–156.
7. Mostert S, Arora RS, Arreola M, Bagai P, Friedrich P, Gupta S, et al. Abandonment of treatment for childhood cancer: Position statement of a SIOP PODC Working Group. *Lancet Oncol*. 2011;12(8):719–720. doi:10.1016/S1470-2045(11)70128-0.
8. Mostert S, Njuguna F, Langat SC, Slot AJ, Skiles J, Sitaresmi MN, et al. Two overlooked contributors to abandonment of childhood cancer treatment in Kenya: Parents’ social networks and experiences with hospital retention policies. *Psychooncology*. 2014;23(6):700–707. doi:10.1002/pon.3571.
9. Mostert S, Njuguna F, van de Ven PM, Olbara G, Kemps LJ, Musimbi J, et al. Influence of health-insurance access and hospital retention policies on childhood cancer treatment in Kenya. *Pediatr Blood Cancer*. 2014;61(5):913–918. doi:10.1002/pbc.24896.
10. Njuguna F, Mostert S, Slot A, Langat S, Skiles J, Sitaresmi MN, et al. Abandonment of childhood cancer treatment in Western Kenya. *Arch Dis Child*. 2014;99(7):609–614. doi:10.1136/archdischild-2013-305052.
11. Mirutse MK, Tolla MT, Memirie ST, Palm MT, Hailu D, Abdi KA, et al. The magnitude and perceived reasons for childhood cancer treatment abandonment in Ethiopia: From healthcare providers’ perspectives. *BMC Health Serv Res*. 2022;22(1):1014. doi:10.1186/s12913-022-08188-8.
12. Schroeder K, Saxton A, McDade J, Chao C, Masalu N, Chao C, et al. Pediatric cancer in Northern Tanzania: Evaluation of diagnosis, treatment, and outcomes. *J Glob Oncol*. 2018;4:1–10. doi:10.1200/JGO.2016.009027.

13. Slone JS, Chunda-Liyoka C, Perez M, Mutalima N, Newton R, Chintu C, et al. Pediatric malignancies, treatment outcomes and abandonment of pediatric cancer treatment in Zambia. *PLoS One*. 2014;9(2):e89102. doi:10.1371/journal.pone.0089102.
14. Stanley CC, van der Gronde T, Westmoreland KD, Salima A, Amuquandoh A, Itimu S, et al. Risk factors and reasons for treatment abandonment among children with lymphoma in Malawi. *Support Care Cancer*. 2018;26(3):967–973. doi:10.1007/s00520-017-3917-z.
15. Adedapo KS, Fadiji IO, Orunmuyi AT, Ejeh JE, Osifo BO. High default rate in thyroid cancer management in Ibadan, Nigeria: A need for health insurance. *Afr J Med Sci*. 2012;41(Suppl.):105–109.
16. Egwuonwu OA, Anyanwu SN, Nwofor AM. Default from neoadjuvant chemotherapy in premenopausal female breast cancer patients: What is to blame? *Niger J Clin Pract*. 2012;15(3):265–269. doi:10.4103/1119-3077.100618.
17. Foerster M, Anderson BO, McKenzie F, Galukande M, Anele A, Adisa C, et al. Inequities in breast cancer treatment in sub-Saharan Africa: Findings from a prospective multi-country observational study. *Breast Cancer Res*. 2019;21(1):93. doi:10.1186/s13058-019-1174-4.
18. Foerster M, McCormack V, Anderson BO, Boucheron P, Zietsman A, Cubasch H, et al. Treatment guideline concordance, initiation, and abandonment in patients with non-metastatic breast cancer from the African Breast Cancer–Disparities in Outcomes cohort in sub-Saharan Africa: A prospective cohort study. *Lancet Oncol*. 2022;23(6):729–738. doi:10.1016/S1470-2045(22)00198-X.
19. Stanley CC, Westmoreland KD, Itimu S, Salima A, van der Gronde T, Wasswa P, et al. Quantifying bias in survival estimates resulting from loss to follow-up among children with lymphoma in Malawi. *Pediatr Blood Cancer*. 2017;64(6):e26370. doi:10.1002/pbc.26370.
20. Yimer M, Fufa D, Njuguna F, Mdoka C, Chagaluka G, Molyneux E, et al. Significant impact of treatment abandonment on survival of children with “common and curable” GICC index cancers in sub-Saharan Africa: A multicenter prospective CANCaRe Africa study. *Pediatr Blood Cancer*. 2025;72(11):e31997. doi:10.1002/pbc.31997.
21. Ellis GK, Manda A, Topazian H, Stanley CC, Seguin R, Minnick CE, et al. Feasibility of upfront mobile money transfers for transportation reimbursement to promote retention among patients receiving lymphoma treatment in Malawi. *Int Health*. 2021;13(3):297–304. doi:10.1093/inthealth/ihaa075.
22. Khofi H, Chikaphonya B, Agulnik A, Sung L, Mdoka C, Molyneux E, et al. Sustainability of a cash transfer program in Malawi: A CANCaRe Africa “Zero Abandonment” pilot. *Pediatr Blood Cancer*. 2025;72(11):e32021. doi:10.1002/pbc.32021.
23. Koffi KG, Silué DA, Laurent C, Boidy K, Kouli S, Compaci G, et al. AMAFRICA, a patient-navigator program for accompanying lymphoma patients during chemotherapy in Ivory Coast: A prospective randomized study. *BMC Cancer*. 2019;19(1):1247. doi:10.1186/s12885-019-6478-3.
24. Morgan A, Watt M, Zullig L, Sued H, Schroeder K. Pediatric cancer outcomes after the implementation of a residential hostel in Tanzania. *Pediatr Blood Cancer*. 2022;69(10):e29758. doi:10.1002/pbc.29758.
25. Kanmodi KK, Jayasinghe YA, Jayasinghe RD, Okeke EB, Nkhata MJ, et al. The definition, types, risk factors, prevention, diagnosis, and treatment of oral cancer: An up-to-date literature review. *Ibom Med J*. 2026;19(3):793–806.
26. Freeman E, Semeere A, Wenger M, Bwana M, Asirwa FC, Busakhala N, et al. Pitfalls of practicing cancer epidemiology in resource-limited settings: The case of survival and loss to follow-up after a diagnosis of Kaposi’s sarcoma in five countries across sub-Saharan Africa. *BMC Cancer*. 2016;16:65. doi:10.1186/s12885-016-2080-0.
27. Chagaluka G, Afungchwi GM, Landman L, Njuguna F, Hesseling P, Tchintseme F, et al. Treatment abandonment: A report from the Collaborative African Network for Childhood Cancer Care and Research–CANCaRe Africa. *Pediatr Blood Cancer*. 2021;68(12):e29367. doi:10.1002/pbc.29367.

28. Molla YM, Shad A, Wali R, Yimer MA. The magnitude and associated factors of childhood cancer treatment abandonment at the University of Gondar Comprehensive Specialized Hospital, Ethiopia. *Sci Rep.* 2025;15(1):10534. doi:10.1038/s41598-025-90493-3.
29. Hordofa DF, Ahmed M, Birhanu Z, Weitzman S, Broas J, Shad A, et al. Childhood cancer presentation and initial outcomes in Ethiopia: Findings from a recently opened pediatric oncology unit. *PLOS Glob Public Health.* 2024;4(7):e0003379. doi:10.1371/journal.pgph.0003379.
30. Molla YM, Mezgebu E, Atwiine B, Mdoka C, Wassie M, Branchard M, et al. Baseline risk of treatment abandonment and survival of children with common and curable cancers in the Zero Abandonment Cash Transfer Programme: A multicentre prospective CANCaRe Africa study. *Pediatr Blood Cancer.* 2026;73(10):e70621. doi:10.1002/1545-5017.70621.
31. Hesseling PB, Afungchwi GM, Njodzeka BW, Wharin P, Kouya FN, Kruger M. Burkitt lymphoma: The effect of age, sex and delay to diagnosis on treatment completion and outcome of treatment in 934 patients in Cameroon. *PLoS One.* 2024;19(3):e0299777. doi:10.1371/journal.pone.0299777.
32. McGoldrick SM, Mutyaba I, Adams SV, Larsen A, Krantz EM, Namirembe C, et al. Survival of children with endemic Burkitt lymphoma in a prospective clinical care project in Uganda. *Pediatr Blood Cancer.* 2019;66(9):e27813. doi:10.1002/pbc.27813.
33. Birie T, Gizaw M, Seife E, Kassaw NA, Tilahun Y, Addissie A, et al. Determinants of chemotherapy abandonment in Ethiopia: A nested case-control study. *Oncologist.* 2025;30(6):oyaf076. doi:10.1093/oncolo/oyaf076.
34. Mutyaba I, Wabinga HR, Orem J, Casper C, Phipps W. Presentation and outcomes of childhood cancer patients at Uganda Cancer Institute. *Glob Pediatr Health.* 2019;6:2333794X19849749. doi:10.1177/2333794X19849749.
35. Olbara G, Martijn HA, Njuguna F, Langat S, Martin S, Skiles J, et al. Influence of health insurance status on childhood cancer treatment outcomes in Kenya. *Support Care Cancer.* 2020;28(2):917–924. doi:10.1007/s00520-019-04859-1.
36. Obute GA, Akyala AI, Usen-Obong S, Samuel SO, Salami AA, Kanmodi KK, Okeke EB. Modelling telecom-driven health insurance financing in Nigeria: A techno-economic narrative review. *Ann Ibadan Postgrad Med.* 2026;21(1):74.
37. Ekenze SO, Nwangwu EI, Ezomike UO, Orji EI, Okafor OO. Continuing barriers to care of Wilms tumor in a low-income country. *Pediatr Blood Cancer.* 2019;66(1):e27416. doi:10.1002/pbc.27416.
38. Libes J, Oruko O, Abdallah F, Githanga J, Ndung'u J, Musimbi J, et al. Risk factors for abandonment of Wilms tumor therapy in Kenya. *Pediatr Blood Cancer.* 2015;62(2):252–256. doi:10.1002/pbc.25312.
39. Wondimagegnehu A, Assefa M, Teferra S, Kantelhardt EJ, Zebrack B, Addissie A. A qualitative study on psychosocial challenges of patients with cancer in Ethiopia using the social-ecological model. *Qual Health Res.* 2024;34(8–9):828–841. doi:10.1177/10497323231219409.
40. Israëls T, Chirambo C, Caron H, de Kraker J, Molyneux E, Reis R. The guardians' perspective on paediatric cancer treatment in Malawi and factors affecting adherence. *Pediatr Blood Cancer.* 2008;51(5):639–642. doi:10.1002/pbc.21703.
41. Wesevich A, Mocha G, Kiwara F, Chao C, Shabani I, Igege JZ, et al. Wilms tumor treatment protocol compliance and the influence on outcomes for children in Tanzania. *Pediatr Blood Cancer.* 2023;70(12):e30704. doi:10.1002/pbc.30704.
42. Hecce ME, Kalanga N, Wroe EB, Keck JW, Chingoli F, Tengaenga L, et al. Excellent clinical outcomes and retention in care for adults with HIV-associated Kaposi sarcoma treated with systemic chemotherapy and integrated antiretroviral therapy in rural Malawi. *J Int AIDS Soc.* 2015;18(1):19929. doi:10.7448/IAS.18.1.19929.
43. Axt J, Abdallah F, Axt M, Githanga J, Hansen E, Lessan J, et al. Wilms tumor survival in Kenya. *J Pediatr Surg.* 2013;48(6):1254–1262. doi:10.1016/j.jpedsurg.2013.03.021.
44. Chakumatha E, Weijers J, Banda K, Bailey S,

- Molyneux E, Chagaluka G, et al. Outcome at the end of treatment of patients with common and curable childhood cancer types in Blantyre, Malawi. *Pediatr Blood Cancer*. 2020;67(7):e28322. doi:10.1002/pbc.28322.
45. Chakumatha E, Khofi H, Landman L, Weijers J, Bailey S, Chagaluka G, et al. Towards zero percent treatment abandonment of patients with common and curable childhood cancer types in Blantyre, Malawi. *Pediatr Blood Cancer*. 2022;69(12):e29899. doi:10.1002/pbc.29899.
 46. Sichali J, Denburg A, Khofi H, Mdoka C, Nyirenda D, Chimalizeni Y, et al. Prevention of treatment abandonment in sub-Saharan Africa: Lessons learned in Malawi that guide the way forward to cost-effective interventions—A report from CANCaRe Africa. *Pediatr Blood Cancer*. 2023;70(11):e30654. doi:10.1002/pbc.30654.
 47. Muyinda Z, Davis KM, Kalungi S, Walusansa V, Kiguli-Malwadde E, Fiat L, et al. Using patient navigation to reduce time to diagnosis of breast cancer in Uganda. *J Am Coll Radiol*. 2024;21(8):1180–1187. doi:10.1016/j.jacr.2024.03.006.
 48. Likhubi WK, Nyongesa CN, Kisiyena FK. Evaluating the impact of a patient navigation program on treatment timeliness, continuity, and follow-up outcomes for patients with digestive tract cancer at Kenyatta Hospital. *JCO Glob Oncol*. 2026;12(6):e2500751. doi:10.1200/GO-25-00751.
 49. DeBoer RJ, Shyirambere C, Driscoll CD, Butera Y, Paciorek A, Ruhangaza D, et al. Treatment of Hodgkin lymphoma with ABVD chemotherapy in rural Rwanda: A model for cancer care delivery implementation. *JCO Glob Oncol*. 2020;6:1093–1102. doi:10.1200/GO.20.00088.
 50. Fufa D, Mdoka C, Ayalew M, Khofi H, Amankwah E, Chokwenda N, et al. Effectiveness of a Wilms tumour treatment guideline adapted to local circumstances in sub-Saharan Africa: A report from Wilms Africa Phase II–CANCaRe Africa. *Pediatr Blood Cancer*. 2024;71(11):e31300. doi:10.1002/pbc.31300.
 51. Mutua D, Omotola A, Bonilla M, Bhakta N, Friedrich P, Wata D, et al. Implementation of a formalized evaluation and planning tool to improve pediatric oncology outcomes in Kenya. *Pediatr Blood Cancer*. 2023;70(12):e30657. doi:10.1002/pbc.30657.
 52. Slone JS, Slone AK, Wally O, Semetsa P, Raletshegwana M, Alisanski S, et al. Establishing a pediatric hematology-oncology program in Botswana. *J Glob Oncol*. 2018;4:1–9. doi:10.1200/JGO.17.00095.
 53. Kanmodi KK, Jayasinghe YA, Okeke EB, Jayasinghe RD, Nkhata MJ, Nnyanzi LA. Fundamentals of participatory action research in public health investigations: A literature review. *Ibom Med J*. 2026;19(1):242–256.