# Primary Health Care Providers' Perspectives on Childhood Cancer, Traditional Medicine, Referral Practices, and Health Insurance in Western Kenya

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## ABSTRACT

**PURPOSE** Accessing timely childhood cancer care is a significant challenge in low- and middle-income countries. Primary health care workers are key patient navigators through specialized care referral systems. Understanding their perspectives on childhood cancer is critical in improving access to care.

**METHODS** A cross-sectional study was conducted from January to June 2023 in Bungoma County, Kenya. The in-charges of 144 level 2 and 3 facilities completed a semistructured questionnaire on childhood cancer perspectives, traditional, complementary, and alternative medicine (TCAM), referral barriers, and health insurance. Descriptive statistical analysis was performed. For baseline data, frequency distributions were calculated. Mann-Whitney test, chi-square test, and Fisher's exact test were performed for comparisons of perspectives and health beliefs.

**RESULTS** Of 144 facilities, 125 (86%) were level 2 and 19 (13%) were level 3. Only 14% of the facilities offered full insurance from the National Health Insurance Fund. Most in-charges believed that cancer was caused by chemical exposure (98%) or maternal drug use (90%), whereas 25% cited supernatural causes. Financial barriers were the main obstacle to accessing childhood cancer care (90%), with 69% believing that families could not afford health insurance. TCAM use was common, with 50% of respondents supporting its combination with chemotherapy. The participants concluded that referral barriers included financial constraints, lack of insurance, and family fears.

**CONCLUSION** We found that delays in childhood cancer care in Western Kenya arises from a combination of provider misconceptions, culturally embedded TCAM use, rigid referral systems, financial inadequacy, lack of insurance, and family fears and beliefs. This study contributes uniquely by focusing on primary health care facility in-charges, whose perspectives directly shape the navigation pathway through the referral system.

ACCOMPANYING CONTENT

Reflexivity Statement

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## INTRODUCTION

Globally, more than 400,000 cases of childhood cancer are estimated annually.[1] Majority of these children live in low- and middle-income countries (LMICs), where chances of survival are 20%-30% compared with 80% in high-income countries (HICs).[2,3] Kenya, an LMIC, has a large population living in poverty.[4] Approximately 4,000 cases of childhood cancer are expected annually. One of the three tertiary hospitals offering childhood cancer care is the Moi Teaching and Referral Hospital (MTRH) where only 270 childhood cancer cases of the expected 1,350 cases are diagnosed annually,[5] implying that the majority of children from the region remain undiagnosed. Diagnosed children often present with advanced stages of cancer, with poor prognosis.[6]

The underdiagnosis and late presentation of children with cancer can be attributed to lack of awareness of childhood cancer at primary care levels, with studies expressing the need for increased awareness among health care workers.[7,8] Most guardians visit primary health facilities as their first point of care, as reported in a study on Burkitt's lymphoma in Western Kenya.[9] Primary health care providers in these

## CONTEXT

**Key Objective**

This study specifically explores the perspectives of primary health care workers in Western Kenya on issues related to childhood cancer and their perceived barriers to early diagnosis and care. In Kenya, primary health care workers are the first point of care for most rural populace, and what they communicate to patients may determine their navigation to specialized care.

**Knowledge Generated**

We found that there was a gap in knowledge of childhood cancer causes, difference in referral practices, and uncertainty about what they believed appropriate. There was prevalent personal use of traditional, complementary, and alternative medicine (TCAM) and most advocated for its benefit in childhood cancer care. Financial, social, and family fears were noted as barriers to appropriate referral.

**Relevance**

The findings of this study shows that if primary care workers' awareness in childhood cancer is improved and referral pathways are streamlined while addressing TCAM and barriers, we may reduce diagnosis and treatment delays, leading to better prognosis.



facilities may not recognize childhood cancers, as some cancer symptoms, such as those of leukemia, may mimic other common diseases, such as malaria, leading to misdiagnosis. Alternative health beliefs by both parents and primary health care providers can further contribute to delayed presentation and negatively influence early referral to specialized cancer centers.[10]

Parents and primary health care providers may prefer seeking traditional, complementary, and alternative medicine (TCAM) rather than conventional health care.[10] A previous study at MTRH revealed that parents first try spiritual interventions and locally available traditional medicines, delaying the referral, diagnosis, and care of patients with childhood cancer.[8] TCAM use may complicate cancer care through interaction with conventional treatments.[10,11] In Kenya, belief in spiritual interventions for care is widespread, and this can delay care for sick children.[9,12] The recommendation to improve awareness on effects of TCAM by health care providers and parents to children with cancer was noted in a study in MTRH.[12]

Primary health care providers play a crucial role as the first point of cancer care. Their early detection and subsequent referral of cases in a timely and appropriate manner to specialized childhood cancer care centers are key to improving the survival rates in LMICs. Gaps in childhood cancer awareness at the community and primary care levels have been demonstrated in LMICs such as India, Indonesia, Uganda, and Kenya.[13-15] Effective strategies to improve childhood cancer knowledge at these levels include training, mentoring, and deployment of community and facility navigators to facilitate referrals and linkages with care.[16]

The WHO aims to increase childhood cancer survival globally by 2030 to 60% for the six common and curable childhood cancers (acute lymphoblastic leukemia, Hodgkin lymphoma, retinoblastoma, Wilms tumor, Burkitt's lymphoma, and low-grade glioma) by addressing inequities in access to care.[17] One of the key proposed WHO interventions is building capacity through cancer centers and networks linked to strong primary care.[17] This includes the provision of Universal Health Coverage (UHC) to align accessible primary and tertiary service delivery systems.[18] In Kenya, a limited number of primary health facilities are accredited by the National Health Insurance Fund (NHIF). Health insurance coverage is low and unaffordable for people living in rural areas. A prior Kenyan study showed that children with cancer have a lower chance of survival if the family has no health insurance.[19]

The perspectives of primary health care providers on childhood cancer may affect the information they relay to patients on available care and lead to prompt or delayed access to diagnosis and treatment. Therefore, the aim of this study was to assess primary health care providers' perspectives on childhood cancer, the use of TCAM for childhood cancer, barriers to referral for children with cancer, and health insurance issues.

## METHODS

### Setting

Kenya, an LMIC in eastern Africa, has a population of approximately 53 million, with a poverty rate of 38.6%.[4] Our study was conducted in Bungoma County, Western Kenya,

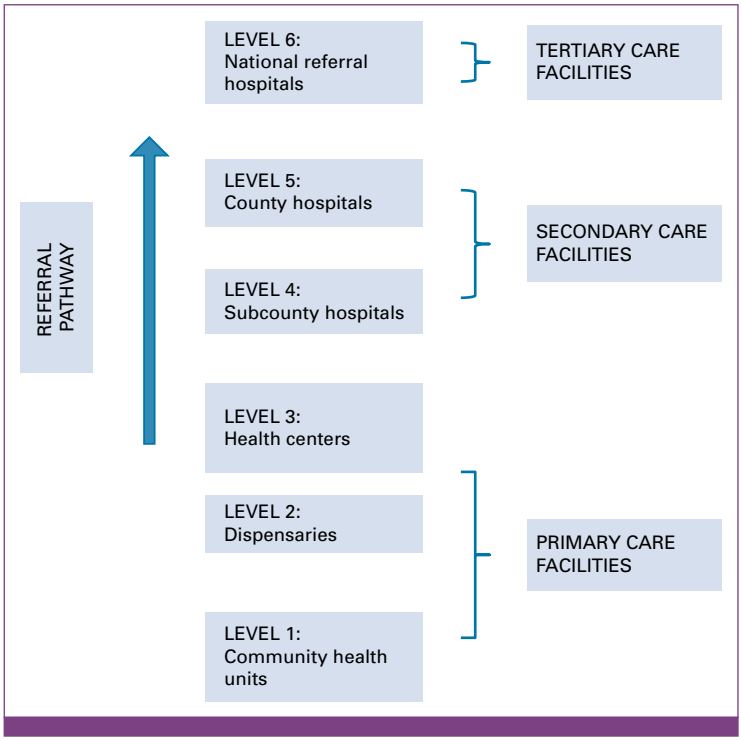


**FIG 1.** Six levels of health facilities in Kenya.



with 1.67 million inhabitants, 680,000 of whom are children.[20] The expected annual incidence of childhood cancer in Bungoma County is 140; however, only 13 children from Bungoma County were diagnosed annually and treated for cancer at MTRH.[6]

Approximately 90% of the Bungoma population live in rural areas and rely on primary health facilities for maternal, antenatal, nutritional, malaria, HIV, and common-ailment care.

The Kenyan referral system is organized into 6 levels in an ascending manner as shown in Figure 1, with primary care facilities being the first point of contact.

Bungoma has 144 primary health facilities. Level 2 facilities (dispensaries) are managed by nurses, while community health extension workers coordinate community health volunteers (CHVs) who work and interact with the rural populace. CHVs undertake brief training on common diseases and are key in health education and referrals to dispensaries. Level 3 facilities (health centers) are managed by either clinical officers or nurses. To cater to patient bills, some primary health facilities accept the NHIF.

When children with suspected cancer are seen at these primary health facilities, referrals can be to a subcounty, county, or a national referral hospital.[21] However, MTRH is the only national comprehensive childhood cancer treatment center in Western Kenya.

In MTRH, the pediatric oncology ward currently has two pediatric oncologists. Available treatment modalities include chemotherapy, surgery, and radiotherapy. The NHIF is used for cancer management and covers most inpatient costs (six sessions of basic chemotherapy, four sessions of complex chemotherapy, and radiotherapy) and limited outpatient costs. Patients pay out-of-pocket for most outpatient bills.

## Study Design

This cross-sectional study used a semistructured questionnaire to collect interview data from in-charges of the 144 level 2 and 3 health care facilities in Bungoma County.

Baseline data, such as the number and type of staff, availability of laboratory services, weekly number of patients, NHIF accreditation, and referral pathways, were obtained. Additionally, perspectives on childhood cancer, TCAM, referral barriers, and NHIF were explored.

The 20-minute interviews were conducted by independent interviewers between January and June 2023. The questionnaire had closed (2- to 4-point rating scale) and open-ended questions.

Questionnaires were designed by Kenyan, American, and Dutch doctors and investigators with expertise in childhood cancers. A pilot test was performed among 10 in-charges with minor adjustments. The professional cadre of the in-charge (clinical officer or nurse) was the only demographic

characteristic recorded to maintain anonymity. Participants were assured of confidentiality with informed consent obtained from all participants.

All methods were performed in accordance with relevant guidelines and regulations.

Approval was obtained from Bungoma County and MTRH/Moi University Institutional Research Ethics Review Committee of MTRH (study number: 2021/216).

### Data Analysis

An electronic data capture tablet was used and descriptive statistics and analyses performed using SPSS version 21. Frequency distributions, medians, means, and standard deviations (SDs) were calculated for the baseline data. Mann-Whitney and chi-square tests were performed to compare differences in perspectives and health beliefs among both in-charge cadres (clinical officers *v* nurses) and facility types (level 2 *v* level 3). Nonparametric Mann-Whitney tests were used because the variable was considered to be measurable on an ordinal scale (Likert scale). Fisher's exact test was used where the expected cell count was < 5. Statistical significance was defined as a two-sided *P* value ≤.05.

### Ethics Approval and Consent to Participate

This study was approved by MTRH/MU Institutional Research and Ethics Committee IREC2021/216. Informed consent was obtained from all participants.

## RESULTS

All 144 (100%) in-charges of the level 2 and 3 health facilities in Bungoma County participated in this study.

### Baseline Characteristics of Facilities (N = 144)

Information in Table 1 shows most facilities were level 2 (87%, n = 125) and the rest were level 3 (13%, n = 19). All facilities had nurses, whereas approximately one quarter (26%, n = 38) had clinical officers. Notably, every level 3 facility had a clinical officer, compared with only 15% (n = 19) of level 2 facilities. Approximately two thirds (65%, n = 93) of the facilities had laboratory technicians. Basic microscopy equipment was available for nearly three quarters of the facilities (72%, n = 103), including all level 3 facilities, and two thirds (67%, n = 84) of the level 2 facilities. HemoCue hemoglobin measuring machines were present in approximately two thirds (67%, n = 97) of the facilities, with greater availability in level 3 facilities (90%) than in level 2 facilities (64%). Only a small fraction (14%, n = 20) of facilities were accredited to offer full NHIF package. Approximately two fifths (42%, n = 61) provided both Linda Mama and Edu Afya, whereas nearly one fifth (18%, n = 26) provided only Linda Mama. Approximately one quarter (26%, n = 37) of the facilities had no NHIF. On average, the facilities served 49 patients per day (SD = 41), with level 3 facilities attending to more than double the number seen at level 2. For referrals of children with suspected cancer, approximately half (51%, n = 73) referred to subcounty (level 4) hospitals, 44% (n = 63) to county (level 5) hospitals, and 6% (n = 8) to other facilities. No referrals were made to national (level 6) centers.

**TABLE 1.** Baseline Characteristics of Primary Health Facilities in Bungoma (N = 144)

| Facility Baseline Characteristic | Total | Level 2 | Level 3 |
|---|---|---|---|
| Facility type, No. (%) | 144 (100) | 125 (87) | 19 (13) |
| Permanent staff per facility, No. (%) | | | |
| Clinical officers | 38 (26) | 19 (15) | 19 (100) |
| Nurses | 144 (100) | 125 (100) | 19 (100) |
| Laboratory technicians | 93 (65) | 74 (59) | 19 (100) |
| Laboratory facilities, No. (%) | | | |
| Microscopy | 103 (72) | 84 (67) | 19 (100) |
| HemoCue | 97 (67) | 80 (64) | 17 (90) |
| NHIF accreditation, No. (%) | | | |
| Full package | 20 (14) | 12 (10) | 8 (42) |
| Only Linda Mama (NHIF) and Edu Afya (SD) | 61 (42) | 56 (45) | 5 (26) |
| Only Linda Mama (NHIF) | 26 (18) | 23 (18) | 3 (16) |
| None | 37 (26) | 34 (27) | 3 (16) |
| Number of patients attending facility daily (mean [SD]) | 49 (SD 41) | 42 (SD 34) | 92 (SD 52) |
| Used referral pathways, No. (%) | | | |
| Level 4 (subcounty hospital) | 73 (51) | 66 (53) | 7 (37) |
| Level 5 (county hospital) | 63 (44) | 52 (42) | 11 (58) |
| Level 6 (national referral hospital) | 0 (0) | 0 (0) | 0 (0) |
| Other facilities (level 2/3/private) | 8 (6) | 7 (6) | 1 (5) |

Abbreviations: NHIF, National Health Insurance Fund; SD, standard deviation.

### Perspectives on Childhood Cancer

The in-charges perceived the causes of childhood cancer to be exposure to chemicals (98%), drugs by mothers (90%), unknown/unclear (86%), inheritance (85%), medication by mothers (81%), alcohol by mothers (70%), drugs by fathers (47%), medication by fathers (37%), alcohol by fathers (34%), no cause (31%), supernatural (26%), bad luck (17%), punishment by God (6%), and conflict, witchcraft, and curse (each 4%). Statistically significantly more nurses (88%) than clinical officers (67%) considered the cause of cancer to be unknown/unclear (*P* = .037). No other significant differences in responses between cadres (clinical officers *v* nurses) and facilities (level 2 *v* level 3) were found.

Table 2 illustrates the health beliefs about childhood cancer among in-charges. Childhood cancer can be cured according

**TABLE 2.** Healthcare Providers' Beliefs About Childhood Cancer (N = 144)

| | | All HCP | Clinical Officer | Nurse | | Level 2 | Level 3 | |
|---|---|---|---|---|---|---|---|---|
| Health Beliefs About Childhood Cancer | Response | No. (%) | No. (%) | No. (%) | *P* | No. (%) | No. (%) | *P* |
| "Childhood cancer can be cured" | Agree | 137 (95) | 14 (93) | 123 (95) | .752 | 119 (95) | 18 (95) | .949 |
| | Uncertain | 4 (3) | 1 (7) | 3 (2) | | 3 (2) | 1 (5) | |
| | Disagree | 3 (2) | 0 (0) | 3 (2) | | 3 (2) | 0 (0) | |
| "Almost all children with cancer die" | Agree | 19 (13) | 3 (20) | 16 (12) | .709 | 15 (12) | 4 (21) | .262 |
| | Uncertain | 6 (4) | 0 (0) | 6 (5) | | 5 (4) | 1 (5) | |
| | Disagree | 119 (83) | 12 (80) | 107 (83) | | 105 (84) | 14 (74) | |
| "Most children will not be able to complete the cancer treatment due to financial problems." | Agree | 128 (90) | 14 (93) | 114 (89) | .606 | 110 (89) | 18 (95) | .423 |
| | Disagree | 14 (10) | 1 (7) | 13 (10) | | 13 (10) | 1 (5) | |
| | Uncertain | 1 (1) | 0 (0) | 1 (1) | | 1 (1) | 0 (0) | |
| "The health of children with cancer is beyond the doctor's control and is determined by luck, fate, or God." | Agree | 9 (6) | 0 (0) | 9 (7) | .267 | 9 (7) | 0 (0) | .285 |
| | Disagree | 129 (90) | 14 (93) | 115 (89) | | 111 (89) | 18 (95) | |
| | Uncertain | 6 (4) | 1 (7) | 5 (4) | | 5 (4) | 1 (5) | |
| "The health of children with cancer can be influenced by health care providers." | Agree | 125 (87) | 14 (93) | 111 (86) | .422 | 109 (87) | 16 (84) | .755 |
| | Disagree | 16 (11) | 1 (7) | 15 (12) | | 13 (10) | 3 (16) | |
| | Uncertain | 3 (2) | 0 (0) | 3 (2) | | 3 (2) | 0 (0) | |
| "Surgery on patients with cancer spreads the disease more". | Agree | 35 (24) | 3 (20) | 32 (25) | .994 | 31 (25) | 4 (21) | .349 |
| | Disagree | 92 (64) | 11 (73) | 81 (63) | | 81 (65) | 11 (58) | |
| | Uncertain | 17 (12) | 1 (7) | 16 (12) | | 13 (10) | 4 (21) | |
| "If patients with cancer receive surgery, their chance of survival decreases" | Agree | 25 (17) | 3 (20) | 22 (17) | .363 | 22 (18) | 3 (16) | .538 |
| | Disagree | 111 (77) | 9 (60) | 102 (79) | | 97 (78) | 14 (74) | |
| | Uncertain | 8 (6) | 3 (20) | 5 (4) | | 6 (5) | 2 (11) | |

Abbreviation: HCP, health care providers.



to 95% of in-charges. Majority (83%) of in-charges disagreed with the statement that almost all the children with cancer die. Most children with cancer are unable to complete treatment due to financial problems, according to 90% of in-charges. Most in-charges (87%) felt that health care providers could influence the health of children with cancer. Surgery in patients with cancer spreads the disease more according to 24% of in-charges, and 12% are uncertain of this. No other statistically significant differences regarding perspectives on childhood cancer between cadres and facilities were noted.

## Perspectives on Traditional, Complementary, and Alternative Medicine

The respondents described their views on TCAM use as follows: cautious (42%), skeptical (38%), and positive (13%). The in-charges stated that they personally used the following types of TCAM: nutritional supplements (82%), self-prayers/spiritual interventions (74%), special food intake (67%), massage (51%), yoga/meditation (50%), heat compression (50%), laying hands on the sick in Christian faith (42%), herbal medicine (27%), casting evil spirits (24%), attending a healing ceremony (16%), manual healing (10%), hypnosis (8%), and witchcraft (2%). Significantly more clinical officers (20%) than nurses (4%) reported using bloodletting ($P = .038$). No other significant differences in responses between cadres and facility type were found.

Information in Table 3 shows the in-charges' perspectives on TCAM. 48% of in-charges considered TCAM to be helpful in childhood cancer treatment. Half of all in-charges (50%) agreed that the combination of chemotherapy with TCAM is the best way to cure cancer. The usefulness of TCAM is underestimated in conventional medicine, according to 67% of in-charges. No significant differences in responses between cadres (clinical officers *v* nurses) and facilities were found.

### *Barriers to the Referral of Patients With Suspected Childhood Cancer*

Respondents highlighted several barriers to referral of suspected childhood cancer as shown in Table 4, with 94% citing cancer treatment being expensive as a barrier. 100% of level 3 respondents cited family being poor as a barrier to referral. Majority of the respondents (93%) mentioned transport costs as a barrier. Lack of health insurance was also noted as a significant barrier to referral. 100% of clinical officers highlighted family preference for TCAM compared with 92% of nurses who cited the same ($P = .023$). Patients' severity of disease at point of referral was not a significant barrier to referral, as shown by 32% of respondents.

**TABLE 3.** Healthcare Providers' Perspectives on TCAM (N = 144)

| Health Beliefs About TCAM | Response | All HCP No. (%) |
|---|---|---|
| "TCAM can be provided as helpful in childhood cancer treatment" | Agree | 69 (48) |
| | Disagree | 54 (38) |
| | Uncertain | 20 (14) |
| "TCAM can cure cancer" | Agree | 8 (6) |
| | Disagree | 122 (85) |
| | Uncertain | 13 (9) |
| "Chemotherapy can cure cancer" | Agree | 136 (95) |
| | Disagree | 2 (1) |
| | Uncertain | 5 (3) |
| "A combination of chemotherapy and TCAM is the best way to cure cancer" | Agree | 71 (50) |
| | Disagree | 60 (42) |
| | Uncertain | 12 (8) |
| "TCAM has a very long history. It must be better than conventional treatment" | Agree | 10 (7) |
| | Disagree | 122 (85) |
| | Uncertain | 11 (8) |
| "Conventional treatment is only good for a disease that requires short-term treatment. A chronic disease, such as cancer, can only be cured by TCAM" | Agree | 5 (3) |
| | Disagree | 134 (94) |
| | Uncertain | 4 (3) |
| "Parents may prefer TCAM because doctors say that conventional treatment for childhood cancer has low cure rates, whereas TCAM-practitioners say that CAM cures." | Agree | 43 (30) |
| | Disagree | 93 (65) |
| | Uncertain | 7 (5) |
| "Usefulness of TCAM is underestimated in conventional medicine." | Agree | 96 (67) |
| | Disagree | 38 (27) |
| | Uncertain | 9 (6) |

Abbreviations: HCP, health care providers; TCAM, traditional, complementary, and alternative medicine.

More nurses (89%) cited loss of daily wages as a barrier to referral compared with clinical officers (60%; $P = .03$). Reputation of corruption by receiving hospital was cited as a barrier by slightly more than half of the respondents (59%).

### *Availability of Health Insurance at Primary Care Facilities*

Regarding onboarding patients on NHIF, we explored in-charge responses to how often they asked patients if they were registered on NHIF: never (6%), sometimes (39%), often (15%), and always (40%). How often patients were informed and encouraged to register for NHIF by in-charge: never (5%), sometimes (38%), often (14%), and always (43%). If the in-charges actively facilitated patients' registration for NHIF: never (14%), sometimes (41%), often (9%), and always (35%). No significant differences in responses between cadres (clinical officers *v* nurses) and facilities (level 2 *v* level 3) were found.

Table 5 highlights the in-charges' perspectives on the NHIF; monthly NHIF contribution was not affordable for most families, according to 69% of the in-charges. NHIF covered the treatment costs for the entire family according to 77% of in-charges. Most of the in-charges (67%) confirmed that NHIF covers investigations and treatments of childhood cancer. Most in-charges (74%) agreed that uninsured children with cancer had worse survival rates than their insured counterparts. When they suspected that a child had cancer, it was important to immediately register that child for NHIF according to almost all respondents (97%). No differences in responses between cadres (clinical officers *v* nurses) and facilities (level 2 *v* level 3) were found.

## DISCUSSION

This study explored primary health care providers' perspectives on childhood cancer, TCAM, referral practices, and health insurance in Bungoma County.

A major finding of the study was that there was a high prevalence of incorrect beliefs about causes of childhood cancer. Most respondents attributed the causes of childhood cancer to be chemical exposure, and parental drug and alcohol use, while one quarter cited societal myths, such as supernatural causes, punishment from God, witchcraft, or curses. These findings are consistent with prior studies demonstrating low childhood cancer awareness and persistent myths in LMIC settings, including Kenya, Uganda, India, and Indonesia.[13-15] However, our study extends the findings by showing that these misconceptions are also present among primary facility leaders responsible for referral decision making.

These findings imply that primary health care workers are not fully aware that unlike adult cancers, most childhood cancers have no clearly established environmental or behavioral risk factors, making early detection and referral the most critical determinant of survival These alternative health beliefs regarding the causes of childhood cancer among medical staff could lead to delayed referral and reliance on TCAM rather than conventional medicine, as reported in other studies.[11,17,22,23]

Our findings show a widespread use of TCAM among primary health care providers, including nutritional supplements, spiritual interventions, and herbal remedies. Nearly half believed TCAM could be helpful in cancer treatment, although not as a cure, and many agreed that the usefulness of TCAM is underestimated in conventional medicine. Our study revealed that few primary health care workers were positive about TCAM. However, the high prevalence of personal use of TCAM among respondents shows a potentially more positive attitude toward TCAM than reported. Prior studies in Kenya have reported high TCAM use among families and even among tertiary-level health care providers.[10,12] Similarly, studies in Cameroon have shown that traditional healers remain influential in cancer pathways.[24]This study contributes new insights by showing that TCAM is not only a familial practice but is also normalized within primary health care providers' own health behaviors. This is important as the providers' attitudes may

**TABLE 4.** Health Care Providers' Perceived Barriers to the Referral of Patients With Suspected Childhood Cancer (N = 144)

| | All HCP | Clinical Officer | Nurse | | Level 2 | Level 3 | |
|---|---|---|---|---|---|---|---|
| Barriers to Referral of Children With Suspected Cancer | No. (%) | No. (%) | No. (%) | *P* | No. (%) | No. (%) | *P* |
| Cancer treatment is expensive | 136 (94) | 13 (87) | 123 (95) | .196[a] | 118 (94) | 18 (95) | >.99[a] |
| Family is poor | 134 (93) | 12 (80) | 122 (95) | .071[a] | 115 (92) | 19 (100) | .359[a] |
| Travel cost | 134 (93) | 11 (73) | 123 (95) | .011[a] | 117 (94) | 17 (89) | .621[a] |
| Patient has no health insurance | 132 (92) | 11 (73) | 121 (94) | .023[a] | 114 (91) | 18 (95) | >.99[a] |
| Family has preference for TCAM | 132 (92) | 15 (100) | 117 (91) | .615[a] | 115 (92) | 17 (89) | .660[a] |
| Fear of surgery | 126 (88) | 11 (73) | 115 (89) | .096[a] | 109 (87) | 17 (89) | >.99[a] |
| Long distance to other hospital | 125 (87) | 10 (67) | 115 (89) | .030[a] | 109 (87) | 16 (84) | .718[a] |
| Family loses daily wages | 124 (86) | 9 (60) | 115 (89) | .008[a] | 109 (87) | 15 (79) | .304[a] |
| Fear of chemotherapy | 123 (85) | 12 (80) | 111 (86) | .460[a] | 106 (85) | 17 (89) | .740[a] |
| Family believes cancer is a curse | 123 (85) | 12 (80) | 111 (86) | .460[a] | 107 (86) | 16 (84) | >.99[a] |
| Fear that child will be detained in hospital | 122 (85) | 10 (67) | 112 (87) | .055[a] | 108 (86) | 14 (74) | .172[a] |
| Family believes cancer cannot be cured | 121 (84) | 10 (67) | 111 (86) | .066[a] | 104 (83) | 17 (89) | .739[a] |
| Poor transportation facilities | 120 (83) | 10 (67) | 110 (85) | .134[a] | 107 (86) | 13 (68) | .092[a] |
| Family believes cancer is caused by witchcraft | 119 (83) | 11 (73) | 108 (84) | .296[a] | 103 (82) | 16 (84) | >.99[a] |
| Cancer treatment has no certainty of cure | 109 (76) | 10 (67) | 99 (77) | .361[a] | 94 (75) | 15 (79) | >.99[a] |
| Reputation of corruption in public hospitals | 85 (59) | 6 (40) | 79 (61) | .113 | 78 (62) | 7 (37) | .035 |
| Patient has severe condition | 46 (32) | 3 (20) | 43 (33) | .388[a] | 38 (30) | 8 (42) | .308 |

Abbreviations: HCP, health care providers; TCAM, traditional, complementary, and alternative medicine.
[a]Fisher's exact test.



influence the guidance families receive and influence whether TCAM is viewed as complementary or harmful in childhood cancer care. Systematic reviews show that TCAM use is common globally in childhood cancer and may contribute to delays or harmful interactions with conventional treatment.[25] Rather than approaching TCAM use as a barrier, our findings suggest the need for culturally sensitive engagement where providers are encouraged to discuss TCAM openly while reinforcing timely referral and conventional treatment.

Although most respondents believed childhood cancer is curable at national referral centers, none reported referring suspected cases directly to these canters. Instead, referrals were primarily made to subcounty and county facilities. This finding is striking, given evidence from Western Kenya showing that children referred directly to specialized centers have significantly better outcomes.[5] This shows a gap between provider beliefs about availability of care and actual referral practices, in essence contributing significantly to delays. This infers that delays may not be explained only by lack of awareness but also by constraints within the Kenyan referral system, which is designed around a hierarchical progression rather than disease-specific urgency.[21]

Unlike conditions with clear emergency pathways, childhood cancer lacks streamlined protocols for bypassing intermediate levels of care. The WHO's Global initiative for childhood cancer emphasizes that achieving survival requires strong interlinkage between primary care and specialized centers.[17] Developing clear childhood cancer referral guidelines and empowering primary healthcare providers to initiate referral could represent a high-impact intervention.

Financial constraints were identified as the most significant barriers to referral; this includes poverty, transport costs, loss of daily wages, and lack of health insurance. These findings align with earlier Kenyan studies showing worse survival outcomes among uninsured children with cancer.[5,23] Our study adds to evidence that only a small number of primary facilities offered full NHIF packages, potentially limiting the perceived value of insurance at community level.

Insurance affordability remains low in western Kenya where families often experience incomplete health protection despite registration.[19] Respondents strongly agreed that uninsured children have poorer outcomes and that immediate NHIF registration is crucial when cancer is suspected. These findings reinforce WHO recommendations that UHC and financial protection are essential pillars for improving childhood cancer survival globally.[17,18]

As Kenya transitions from NHIF to the Social Health Insurance Fund, ensuring comprehensive childhood cancer coverage and having effective registration processes at primary levels will be critical.

**TABLE 5.** Health Care Providers' Perspectives on NHIF (N = 144)

| | | All HCP | Clinical Officer | Nurse | | Level 2 | Level 3 | |
|---|---|---|---|---|---|---|---|---|
| Perspectives on NHIF | Response | No. (%) | No. (%) | No. (%) | *P* | No. (%) | No. (%) | *P* |
| "Monthly NHIF contribution is not affordable for most families." | Agree | 99 (69) | 9 (60) | 90 (70) | .381 | 87 (70) | 12 (63) | .517 |
| | Uncertain | 42 (29) | 5 (33) | 37 (29) | | 36 (29) | 6 (32) | |
| | Disagree | 3 (2) | 1 (7) | 2 (2) | | 2 (2) | 1 (5) | |
| "NHIF registration covers treatment costs for the whole family." | Agree | 111 (77) | 13 (87) | 98 (76) | .411 | 99 (79) | 12 (63) | .096 |
| | Uncertain | 28 (19) | 1 (7) | 27 (21) | | 23 (18) | 5 (26) | |
| | Disagree | 5 (3) | 1 (7) | 4 (3) | | 3 (2) | 2 (11) | |
| "When you suspect a child to have cancer, it is important to immediately refer that child to a hospital for diagnostics and treatment. At that hospital, the child can then best be registered for NHIF." | Agree | 79 (55) | 8 (53) | 71 (55) | .772 | 68 (54) | 11 (58) | .887 |
| | Disagree | 62 (43) | 6 (40) | 56 (43) | | 55 (44) | 7 (37) | |
| | Uncertain | 3 (2) | 1 (7) | 2 (2) | | 2 (2) | 1 (5) | |
| "Uninsured children with cancer have worse survival rates than insured children with cancer." | Agree | 106 (74) | 12 (80) | 94 (73) | .642 | 92 (74) | 14 (74) | .948 |
| | Disagree | 35 (24) | 2 (13) | 33 (26) | | 30 (24) | 5 (26) | |
| | Uncertain | 3 (2) | 1 (7) | 2 (2) | | 3 (2) | 0 (0) | |
| "NHIF covers investigations and treatment for childhood cancer." | Agree | 97 (67) | 13 (87) | 84 (65) | .115 | 84 (67) | 13 (68) | .954 |
| | Disagree | 10 (7) | 0 (0) | 10 (8) | | 9 (7) | 1 (5) | |
| | Uncertain | 37 (26) | 2 (13) | 35 (27) | | 32 (26) | 5 (26) | |
| "Hospital detention practices are not applicable when family has NHIF registration." | Agree | 109 (76) | 11 (73) | 98 (76) | .841 | 94 (75) | 15 (79) | .816 |
| | Disagree | 25 (17) | 3 (20) | 22 (17) | | 23 (18) | 2 (11) | |
| | Uncertain | 10 (7) | 1 (7) | 9 (7) | | 8 (6) | 2 (11) | |
| "When you suspect a child to have cancer, it is important to immediately register that child for NHIF." | Agree | 140 (97) | 15 (100) | 125 (97) | .491 | 121 (97) | 19 (100) | .431 |
| | Disagree | 3 (2) | 0 (0) | 3 (2) | | 3 (2) | 0 (0) | |
| | Uncertain | 1 (1) | 0 (0) | 1 (1) | | 1 (1) | 0 (0) | |

NOTE. Mann-Whitney U test.
Abbreviations: HCP, health care providers; NHIF, National Health Insurance Fund.



On family beliefs (fear of surgery and chemotherapy and belief that cancer is a curse or caused by witchcraft), similar barriers have been reported in Kenyan studies examining diagnostic delays and treatment abandonment.[6,8] A few respondents believed that a patient's severe condition delayed referral. Systematic reviews performed at LMICs also identified traditional medicine, household income, lack of transportation, rural populations, and parental education as factors contributing to delays, whereas the global factors noted included cancer type, the first medical facility consulted, and the age of the child.[25-27] Combining insights from our study, which focused on the primary care level, and previous studies focusing on the patient and higher care levels highlights the need for a system's approach to reduce barriers in access to childhood cancer care.

More than half of the respondents cited corruption in public hospitals as a barrier. One example of corruption in public hospitals is that families often need to know someone at a referred facility to access care. Corruption and hospital detention practices have been documented as unethical and harmful to timely cancer care in Africa, with international advocacy calling for an end to such practices.[28-30] Our findings further highlight the role of systemic distrust, with more than half of the respondents citing corruption in public hospitals as a deterrent to referral.

In conclusion, our findings suggest that delays in childhood cancer care in Western Kenya arise from a combination of provider misconceptions, culturally embedded TCAM use, rigid referral systems, financial inadequacy, lack of insurance, and family fears and beliefs. This study contributes uniquely by focusing on primary health care facility incharges, whose perspectives directly shape the navigation pathway through the referral system.

To reduce diagnostic and treatment delays, we recommend the development and implementation of a national childhood cancer strategy targeting primary health care workers. This should include training on childhood cancer recognition, culturally sensitive guidance on TCAM, streamlined referral systems that recognize the need for rapid referral, and strengthened insurance coverage and enrollment support. These recommendations align with WHO's goal of achieving 60% survival for common curable childhood cancers by 2030.[17]

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## DATA SHARING STATEMENT

All study materials relevant to the study have been attached, and any other material will be provided by the corresponding author upon request.

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## AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

The following represents disclosure information provided by authors of this manuscript. All relationships are considered compensated unless otherwise noted. Relationships are self-held unless noted. I = Immediate Family Member, Inst = My Institution. Relationships may not relate to the subject matter of this manuscript. For more information about ASCO's conflict of interest policy, please refer to www.asco.org/rwc or ascopubs.org/go/authors/author-center.
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