



doi:10.5281/zenodo.19468982

# Exploring the Public Awareness and Understanding of Childhood Cancer Symptoms and Treatment Options in FCT

Adekanye Oluwakemi Sharifah<sup>1</sup>; Oziengbe Okonokhua<sup>2</sup>; Ibrahim Musa<sup>3</sup> & Umar Kari<sup>4</sup>

<sup>1</sup>Sustainable Development Center,  
University of Abuja, Abuja, Nigeria

<sup>2</sup>Department of Medical and Diagnostics,  
Health Services and Environment Secretariat, Abuja, Nigeria

<sup>3</sup>Department of Economics,  
University of Abuja, Abuja, Nigeria

<sup>4</sup>Department of Sociology,  
University of Abuja, Abuja, Nigeria

## ABSTRACT

This study explores public awareness and understanding of childhood cancer symptoms and treatment options in the Federal Capital Territory (FCT), Abuja, Nigeria, with a focus on the role of public health campaigns in influencing early detection and health-seeking behaviour. An explanatory sequential mixed-methods design was adopted, combining quantitative data from 358 valid questionnaires with qualitative insights from key informant interviews with pediatric oncology specialists. Findings reveal that although general awareness of childhood cancer is relatively high among respondents, knowledge of specific early warning signs remains uneven, with a significant proportion lacking adequate symptom recognition. Exposure to awareness campaigns was moderate and unevenly distributed, though respondents who were exposed reported positive influence on early health-seeking behaviour. However, the study identified major barriers to effective awareness and early detection, including financial constraints, stigma, cultural beliefs, and limited access to healthcare services. Qualitative findings further highlight that awareness gains are often superficial and do not consistently translate into timely diagnosis or improved treatment outcomes. The study concludes that while public health campaigns contribute to awareness, their impact is limited without integrated strategies addressing socio-economic and systemic challenges. It recommends targeted, inclusive awareness interventions alongside improved healthcare access and financial support mechanisms to enhance early detection and reduce childhood cancer mortality in the FCT.

**Keywords:** Childhood cancer, Public awareness, Early detection, Health-seeking behaviour, Public health campaigns, Nigeria

## 1.0 INTRODUCTION

Childhood cancer remains a critical but often under-recognized public health concern globally, particularly in low- and middle-income countries where awareness and early detection are limited. According to the World Health Organization, cancer is a leading cause of death among children and adolescents worldwide, with an estimated 400,000 new cases diagnosed annually among individuals aged 0–19 years (World Health Organization [WHO], 2021). Despite advances in treatment that have significantly improved survival rates in high-income countries, outcomes in developing regions such as

Nigeria remain poor due to late diagnosis, inadequate health infrastructure, and low levels of public awareness (Ward et al., 2019; Magaji & Ismail, 2025). Understanding the extent of public awareness is therefore essential for improving early detection and treatment outcomes.

Public awareness of childhood cancer symptoms plays a vital role in facilitating early diagnosis and timely medical intervention. Early warning signs—such as unexplained weight loss, persistent fever, swelling, or unusual bleeding—are often overlooked or misattributed to common childhood illnesses, especially in settings with limited health literacy (Adejoh et al., 2020; Ismail et al., 2024; Ijoko et al., 2021)). In many parts of Nigeria, including the Federal Capital Territory (FCT), misconceptions and cultural beliefs may further hinder recognition of these symptoms and delay health-seeking behavior (Eze et al., 2018). Consequently, children are frequently diagnosed at advanced stages of the disease, when treatment becomes more complex and less effective.

In addition to symptom awareness, understanding of available treatment options is equally important in shaping attitudes toward childhood cancer care. Treatment modalities such as chemotherapy, radiotherapy, and surgery have proven effective when administered early and appropriately (Rodriguez-Galindo et al., 2015). However, in Nigeria, access to these treatments is often constrained by factors such as high costs, limited specialized facilities, and a shortage of trained healthcare professionals (Brown et al., 2017; Magaji et al., 2022). Furthermore, fear, stigma, and misinformation about cancer treatments can discourage caregivers from seeking or adhering to medical care, thereby worsening health outcomes.

The Federal Capital Territory, Abuja, serves as a unique context for assessing public awareness due to its diverse population and relatively better access to healthcare facilities compared to other regions in Nigeria. Despite these advantages, disparities in knowledge and access persist among different socioeconomic groups (Ocheni et al., 2014). Evaluating the level of awareness and understanding of childhood cancer within this setting can provide valuable insights into existing gaps and inform targeted health education interventions aimed at improving early detection and treatment uptake.

Given the foregoing, this study seeks to assess public awareness and understanding of childhood cancer symptoms and treatment options in the FCT. By identifying knowledge gaps, misconceptions, and barriers to care, the research aims to contribute to the development of effective public health strategies and policies. Enhancing awareness and promoting accurate knowledge about childhood cancer are essential steps toward reducing mortality and improving the quality of life for affected children and their families in Nigeria (WHO, 2021).

## **2.0 LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

### **2.1 Conceptual Review**

#### **2.1.1 Public Awareness**

Public awareness refers to the level of knowledge, understanding, and consciousness that individuals or communities possess regarding a particular issue, including its causes, consequences, and possible interventions. In the context of health, public awareness encompasses familiarity with disease symptoms, risk factors, preventive measures, and available treatment options, which collectively influence health-seeking behavior and decision-making. The World Health Organization emphasizes that improved public awareness is fundamental to early diagnosis and effective management of diseases, particularly in resource-constrained settings where late presentation is common (World Health Organization [WHO], 2021). Low levels of awareness are often associated with misconceptions, stigma, and delays in accessing appropriate healthcare services, thereby contributing to poor health outcomes (Nutbeam, 2008). In developing countries such as Nigeria, disparities in education, socioeconomic status, and access to health information further affect public awareness, making it a critical determinant in disease prevention and control (Adejoh et al., 2020; Bello et al., 2025; Hafizu et al., 2025a;2025b).

#### **2.1.2 Childhood Cancer Symptoms**

Childhood cancer symptoms are the observable physical and physiological signs that may indicate the presence of malignancies in children, often differing from those seen in adults due to variations in cancer types and biological behavior. Common symptoms include persistent fever, unexplained weight loss, fatigue, swelling or lumps, frequent infections, bone pain, and unusual bleeding or bruising (Ward et al., 2019). According to the National Cancer Institute, early recognition of these symptoms is essential for prompt diagnosis and improved survival rates, as many childhood cancers are highly treatable when detected early (National Cancer Institute, 2022). However, these symptoms are

frequently mistaken for common childhood illnesses such as infections or malnutrition, particularly in low-resource settings, leading to delayed diagnosis and advanced disease presentation (Rodriguez-Galindo et al., 2015). Enhancing caregiver and community awareness of these warning signs is therefore vital to ensuring timely medical evaluation and effective treatment of childhood cancers.

### **2.1.3 Mortality Reduction**

Mortality reduction refers to the decrease in deaths caused by a particular disease or health condition within a specified population and time frame (Magaji et al., 2025a; 2025b). In the context of childhood cancer, mortality reduction is synonymous with early detection, access to quality healthcare, and effective treatment protocols. The National Cancer Institute notes that survival rates for childhood cancers can be significantly improved when cases are diagnosed early and managed with appropriate medical interventions (National Cancer Institute, 2022). In low- and middle-income countries, efforts to reduce mortality are often challenged by inadequate healthcare infrastructure, delayed diagnosis, and limited availability of specialized care. Consequently, integrated strategies that combine public health campaigns, improved healthcare systems, and policy support are essential for achieving meaningful reductions in childhood cancer mortality (Gupta et al., 2014).

## **2.2 Theoretical Framework**

### **2.2.1 The Health Belief Model**

Health Belief Model (HBM), which explains how individual beliefs and perceptions influence health-related behaviors, particularly in relation to disease prevention and early detection. The model posits that individuals are more likely to take health action—such as seeking medical care for a child—if they perceive a disease as serious (perceived severity), believe they or their child are at risk (perceived susceptibility), recognize the benefits of taking action, and identify fewer barriers to doing so (Rosenstock, 1974). In the context of childhood cancer in the Federal Capital Territory, caregivers' awareness and understanding of symptoms are shaped by these perceptions, which ultimately determine whether they seek timely medical intervention. The World Health Organization highlights that delayed diagnosis of childhood cancer in low- and middle-income countries is often linked to poor awareness and misperceptions about the disease (World Health Organization [WHO], 2021). Additionally, cues to action—such as health campaigns or advice from healthcare providers—and self-efficacy play critical roles in prompting caregivers to respond appropriately to early warning signs (Champion & Skinner, 2008). Therefore, the Health Belief Model provides a useful lens for understanding how public awareness influences health-seeking behavior and treatment decisions in childhood cancer cases.

### **2.3 Empirical Review**

Githanga et al. (2020) carried out a hospital-based cross-sectional study in Kenya involving both caregivers and healthcare providers to examine factors responsible for delays in the diagnosis of childhood cancer. The study revealed that low levels of awareness, frequent misdiagnosis at primary healthcare facilities, and inefficiencies in referral systems significantly contributed to late presentation of cases. Although the researchers recommended awareness campaigns as a possible intervention, they did not empirically evaluate their impact. Building on this limitation, the present study advances the discourse by quantitatively assessing individuals' exposure to public health campaigns and analyzing their perceived influence on early detection behaviors within the Federal Capital Territory (FCT).

In a similar vein, Adam et al. (2018) conducted a descriptive survey in Ghana to assess caregivers' knowledge of childhood cancer symptoms and their healthcare-seeking practices. The findings indicated that many caregivers initially opted for alternative or non-medical treatment options due to limited awareness and entrenched cultural beliefs, a pattern also observed by Mostert et al. (2011). While the study emphasized the need for increased public education, it did not explore the specific contribution or effectiveness of structured public health campaigns. This omission underscores the relevance of the current study, which directly evaluates the role of organized awareness initiatives in improving early diagnosis.

Geel et al. (2021) investigated the integration of cancer education into national health booklets in South Africa as a means of minimizing diagnostic delays. Their descriptive findings suggested that “Early Warning Signs” campaigns were linked to improved compliance with treatment protocols. However, the effectiveness of these interventions was found to vary across different socioeconomic groups. This observation highlights the importance of the present study, which takes into account the heterogeneous

socioeconomic and demographic composition of Abuja to determine the applicability and effectiveness of similar educational strategies in the Nigerian context.

Amo-Antwi et al. (2020) adopted a qualitative research design using in-depth interviews with caregivers in Ghana to identify barriers to early diagnosis of childhood cancer. Their findings showed that spiritual beliefs and interpretations of illness significantly delayed healthcare-seeking behavior. Despite offering rich contextual insights, the study was limited by its qualitative scope. In contrast, the current study utilizes a mixed-methods approach, allowing for the quantification of such belief systems among parents in the FCT while also incorporating the perspectives of healthcare professionals to better understand the clinical consequences of delayed presentation.

Knaul et al. (2019) applied a longitudinal analytical approach to assess the economic burden of childhood cancer in Mexico and other low- and middle-income countries. The study found that even in settings with relatively high awareness levels, the high cost of treatment often results in treatment abandonment and increased mortality. This finding is particularly pertinent to the present study, as it provides a framework for examining how financial constraints in Abuja may undermine the effectiveness of public health campaigns aimed at improving childhood cancer outcomes.

Furthermore, hospital-based registry studies in Kenya have consistently documented poor survival rates for childhood cancer, largely attributed to late-stage diagnosis, especially in contexts where oncology services are centralized in urban referral facilities (Githanga et al., 2020; Stefan et al., 2021). These findings emphasize the role of geographic accessibility and the need for decentralized healthcare services in improving patient outcomes. Consequently, the current study focuses on selected Area Councils within the FCT, such as Abaji and Kwali, to assess whether proximity to healthcare facilities influences exposure to awareness campaigns and enhances the likelihood of early detection.

#### **2.4 Research Gap**

A critical review of the existing empirical literature reveals several gaps that justify the present study. While studies conducted in Kenya (Githanga et al., 2020) and Ghana (Adam et al., 2018; Amo-Antwi et al., 2020) consistently identify low awareness, cultural beliefs, and delayed health-seeking behaviour as major contributors to late diagnosis of childhood cancer, they largely recommend public health campaigns without empirically assessing their effectiveness. Similarly, Geel et al. (2021) examined awareness interventions such as educational booklets but focused primarily on treatment adherence rather than directly linking campaign exposure to early detection outcomes. Furthermore, Knaul et al. (2019) highlighted the role of economic barriers in influencing mortality but did not integrate this with awareness-based interventions. In addition, existing studies are predominantly either qualitative or descriptive, limiting their ability to quantify the relationship between awareness initiatives and behavioural outcomes. There is also a contextual gap, as most of these studies were conducted outside Nigeria, with little attention to the unique socio-economic and geographic dynamics of Abuja, particularly across different Area Councils. Therefore, this study addresses these gaps by adopting a mixed-methods approach to empirically examine the influence of public health campaigns on childhood cancer awareness and mortality reduction in the Federal Capital Territory, while also considering socio-economic and geographic factors that may affect campaign effectiveness.

### **3.0 METHODOLOGY**

#### **3.1 Research Design**

This study employed a mixed-methods approach using an explanatory sequential design, where quantitative data were first collected and analysed, followed by qualitative inquiry to provide deeper explanations of the results (Creswell & Plano Clark, 2018). The quantitative phase utilized a cross-sectional survey to assess awareness of childhood cancer, exposure to public health campaigns, and health-seeking behaviours among residents and stakeholders in the Federal Capital Territory (FCT). Subsequently, semi-structured interviews with medical practitioners, including pediatric oncologists and related specialists, were conducted to interpret survey findings from a clinical perspective. Ethical considerations guided the exclusion of caregivers from the qualitative phase to avoid emotional distress, allowing them to participate only through structured questionnaires. This design ensured a comprehensive understanding by combining statistical evidence with expert insights.

#### **3.2 Population of the Study**

The study population comprised residents and relevant stakeholders within the Federal Capital Territory (FCT), Abuja, reflecting diverse socio-economic and demographic characteristics. Four key groups

were included: the general public, healthcare professionals, NGO/advocacy representatives, and parents or caregivers of children with cancer. Participants were required to be adults residing or working in the FCT and to provide informed consent. Recruitment was conducted through hospitals, community platforms, and advocacy organizations to ensure broad representation. The inclusion of multiple stakeholder groups enabled a holistic assessment of childhood cancer awareness and healthcare dynamics within the territory.

### **3.3 Sample Size and Sampling Technique**

The sample size was determined using Cochran's formula for large populations, resulting in a minimum requirement of 296 respondents after adjusting for non-response; however, 363 valid responses were ultimately analysed, enhancing the reliability of findings. A stratified sampling technique was adopted to ensure proportional representation of key stakeholder groups, namely the general public, healthcare professionals, NGO representatives, and caregivers. Within each stratum, participants were selected using a combination of purposive and convenience sampling due to the absence of complete sampling frames. This approach facilitated balanced representation across the six Area Councils of the FCT and ensured inclusion of critical perspectives relevant to childhood cancer awareness and care.

### **3.4 Sources and Method of Data Collection**

Primary data were collected through structured questionnaires and key informant interviews. The quantitative data were gathered using questionnaires administered both electronically and physically to capture responses from diverse participants, covering areas such as awareness of childhood cancer, campaign exposure, and health-seeking behaviour. Following this phase, qualitative data were obtained through semi-structured interviews with selected medical practitioners to provide deeper insights into survey findings, particularly regarding diagnostic delays and systemic challenges. Participation was voluntary, and ethical standards such as informed consent, confidentiality, and anonymity were strictly maintained throughout the data collection process.

### **3.5 Research Instrument and Validity**

Data collection instruments included a structured questionnaire for the quantitative phase and a semi-structured interview guide for the qualitative phase. The questionnaire captured socio-demographic information, awareness levels, campaign exposure, and perceptions of mortality-related factors using Likert-scale items, while the interview guide explored professional insights into childhood cancer management. Validity was ensured through expert review, pilot testing, and alignment with theoretical constructs, while reliability was assessed using Cronbach's alpha with a threshold of 0.70. Additionally, qualitative rigor was maintained through member checking and documentation of procedures, ensuring credibility and transparency of findings.

### **3.6 Method of Data Analysis**

Data analysis followed the sequential mixed-methods approach, beginning with quantitative analysis using SPSS to generate descriptive statistics and inferential tests such as chi-square and logistic regression at a 5% significance level. Qualitative data from interviews were transcribed and analysed thematically to identify key patterns related to awareness, healthcare access, and campaign effectiveness. The findings from both phases were integrated at the interpretation stage, where qualitative insights were used to explain and contextualize quantitative results, thereby providing a comprehensive understanding of the influence of public health campaigns on childhood cancer awareness and outcomes in the FCT.

## **4.0 DATA PRESENTATION, ANALYSIS AND INTERPRETATION**

### **4.1 Data Presentation**

This section presents the analysis of findings on public awareness and understanding of childhood cancer symptoms and treatment options in the Federal Capital Territory (FCT), Abuja. A total of 358 valid questionnaires were analysed out of 363 retrieved, exceeding the minimum required sample size and strengthening the reliability of the study. Data were presented using tables and descriptive explanations, while inferential statistics were applied at a 5% significance level. In addition, qualitative insights from fifteen key informant interviews with pediatric oncologists and clinicians from major hospitals in Abuja were integrated to provide deeper understanding of awareness levels, early detection practices, treatment pathways, and systemic challenges influencing childhood cancer outcomes.

## 4.2 Data Analysis

### 4.2.1 Socio-Demographic Characteristics of Respondents

**Table 4.1: Distribution of Respondents by Category**

S/No	Response	Frequency	Percent (%)
1	Residents in FCT	237	66.2
2	Medical Personnel	43	12.0
3	NGO/CSO Representatives	42	11.7
4	None	22	6.1
5	Parents/Caregivers	14	3.9
<b>Total</b>		<b>358</b>	<b>100</b>

The table shows that the majority of respondents (66.2%) were residents of the FCT, ensuring strong representation of the general population whose awareness and understanding of childhood cancer were central to the study. Medical personnel (12.0%) and NGO representatives (11.7%) provided professional and advocacy perspectives, while parents/caregivers (3.9%) contributed experiential insights. The distribution reflects a balanced multi-stakeholder approach, enhancing the credibility of findings on awareness and treatment understanding across different population groups.

**Table 4.2: Gender Distribution of Respondents**

**Gender Frequency Percent (%)**

Female	147	62
Male	90	38
<b>Total</b>	<b>237</b>	<b>100</b>

Female respondents constituted the majority (62%), indicating strong participation from individuals typically responsible for child healthcare decisions. This enhances the relevance of findings on childhood cancer awareness and treatment understanding, as women—especially mothers—are often key actors in early symptom recognition and healthcare utilization.

**Table 4.3: Educational Level of Respondents**

**Education Level Frequency Percent (%)**

Tertiary	232	97.9
Secondary	4	1.7
None	1	0.4
<b>Total</b>	<b>237</b>	<b>100</b>

The results indicate that most respondents (97.9%) possessed tertiary education, suggesting a highly educated sample capable of understanding health information. While this strengthens the reliability of responses regarding awareness and treatment knowledge, it may also limit generalizability, as less-educated populations—who often face greater awareness gaps—are underrepresented.

**Table 4.4: Area Council Distribution of Respondents**

**Area Council Frequency Percent (%)**

AMAC	148	59
Bwari	46	18.3
Gwagwalada	22	8.8
Kuje	19	7.6
Abaji	9	3.6
Kwali	7	2.8
<b>Total</b>	<b>251</b>	<b>100</b>

**Explanation:**

Most respondents were from AMAC (59%), reflecting its urban nature and greater access to information and healthcare services. However, representation from other Area Councils ensures geographic diversity, enabling comparison of awareness levels across urban and semi-urban communities within the FCT.

#### 4.2.2 Awareness and Understanding of Childhood Cancer

Table 4.5: General Awareness of Childhood Cancer

Response	Frequency	Percent (%)
Yes	217	86.5
No	34	13.5
<b>Total</b>	<b>251</b>	<b>100</b>

The findings show high general awareness (86.5%) of childhood cancer among respondents. However, the presence of 13.5% who are unaware indicates persistent information gaps, suggesting that awareness campaigns have achieved visibility but have not fully reached all segments of the population.

Table 4.6: Knowledge of Early Warning Signs

Symptom	Frequency	Percent (%)
Weight loss	82	22.6
Swelling	67	18.5
Fever	61	16.8
Tiredness	54	14.9
Blood in urine	39	10.7
Headaches	35	9.6
Bruising	35	9.6
Eye glow	30	8.3
No knowledge	72	19.8

The table reveals uneven knowledge of childhood cancer symptoms, with visible symptoms more commonly recognized than less obvious but critical signs. Notably, 19.8% of respondents reported no knowledge of symptoms, indicating a significant gap that could delay early diagnosis and treatment.

#### 4.2.3 Exposure to Awareness Campaigns

Table 4.7: Exposure to Awareness Campaigns

Response	Frequency	Percent (%)
No	116	51.8
Yes	105	46.9
Not sure	3	1.3
<b>Total</b>	<b>224</b>	<b>100</b>

More than half of respondents (51.8%) reported no exposure to awareness campaigns, indicating limited reach of such initiatives. Although nearly half had some exposure, the findings suggest that campaigns are not sufficiently widespread or inclusive across the FCT.

Table 4.8: Influence of Campaigns on Health-Seeking Behaviour

Scale	Frequency	Percent (%)
5	53	52
4	22	21.6
3	12	11.8
2	5	4.9
1	4	3.9
0	6	5.9
<b>Total</b>	<b>102</b>	<b>100</b>

Most respondents perceived awareness campaigns as strongly influencing early health-seeking behaviour, with over 70% selecting high influence levels. This suggests that when individuals are exposed, campaigns can positively shape behaviour toward early medical consultation.

#### 4.2.4 Barriers to Awareness and Early Detection

Table 4.9: Barriers to Awareness and Early Detection

Barrier	Frequency	Percent (%)
Financial constraints	184	77.6
Stigma	123	51.9
Cultural beliefs	102	43
Lack of trust	52	21.9
Distance	45	19
Others	30	12.7

Financial constraints emerged as the most significant barrier (77.6%), followed by stigma and cultural beliefs. These findings indicate that awareness alone is insufficient, as socio-economic and cultural factors strongly influence early detection and treatment decisions.

#### 4.2.5 Perception of Campaign Impact

Table 4.10: Campaign Impact on Early Detection

Response	Frequency	Percent (%)
Yes	66	64.7
No	19	18.6
Not applicable	17	16.7
<b>Total</b>	<b>102</b>	<b>100</b>

Most respondents (64.7%) believed that awareness campaigns improve early detection, while others reported no impact or uncertainty, reflecting uneven effectiveness and exposure across the population.

### 4.3 DISCUSSION OF FINDINGS

The study reveals that while general awareness of childhood cancer in the FCT is relatively high, this awareness does not necessarily translate into adequate understanding of symptoms or early detection practices. Although a large proportion of respondents are familiar with the concept of childhood cancer, knowledge of specific early warning signs remains inconsistent, with a significant proportion lacking basic symptom awareness. This finding highlights a critical gap between awareness and practical knowledge, which is essential for timely diagnosis and improved health outcomes.

Furthermore, the study demonstrates that exposure to public health campaigns is moderate and unevenly distributed across the population. While individuals exposed to campaigns reported positive influence on health-seeking behaviour, more than half of the respondents had no exposure, suggesting limited reach and effectiveness of these initiatives. This indicates that current awareness strategies may be concentrated in urban or educated populations, leaving vulnerable and underserved groups inadequately informed.

Additionally, structural and socio-cultural barriers such as financial constraints, stigma, and cultural beliefs significantly hinder early detection and treatment. The findings emphasize that awareness campaigns alone cannot address the complexities of childhood cancer outcomes. Instead, systemic challenges—including healthcare access, affordability, and trust—must be addressed alongside awareness efforts to achieve meaningful improvements in early diagnosis and survival rates.

### 5.0 CONCLUSION AND RECOMMENDATIONS

The study concludes that although awareness of childhood cancer is relatively high in the Federal Capital Territory, it remains superficial and insufficient for promoting early detection and effective treatment. Significant gaps exist in symptom recognition, campaign reach, and equitable access to health information. Moreover, economic, cultural, and systemic barriers play a critical role in delaying diagnosis and treatment, thereby limiting the overall effectiveness of awareness initiatives.

Based on these findings, it is recommended that public health campaigns be expanded and redesigned to focus on symptom-specific education and practical health-seeking guidance. Efforts should also prioritize underserved communities to ensure equitable access to information. Additionally, policymakers should implement supportive interventions such as subsidized treatment, improved

healthcare infrastructure, and community-based engagement strategies to address financial and cultural barriers. Strengthening healthcare systems and integrating awareness with accessible services will be essential for improving early detection and reducing childhood cancer mortality in the FCT.

## REFERENCES

- Adam, A., et al. (2018). Knowledge and health-seeking behaviour of caregivers of children with cancer in Ghana. *Journal of Global Oncology*, 4, 1–9.
- Adejoh, S. O., Eze, J. N., & Onwujekwe, O. E. (2020). Awareness and health-seeking behavior towards childhood cancers in Nigeria. *African Journal of Health Sciences*, 33(2), 45–53.
- Amo-Antwi, K., et al. (2020). Barriers to early diagnosis of childhood cancer in Ghana: A qualitative study. *BMC Public Health*, 20, 1–10. <https://doi.org/10.1186/s12889-020-09020-0>
- Bello, J. A., Magaji, S. & Ismail, Y. (2025). The Impact of Agricultural Growth on Health and Nutritional Status of Rural Households in Adamawa State, Nigeria. *International Journal of Innovative Food, Nutrition & Sustainable Agriculture*, 13(4), 13-24
- Brown, B. J., Oladokun, R. E., & Olayemi, O. (2017). Childhood cancer in Nigeria: Challenges and prospects. *Pediatric Hematology and Oncology*, 34(3), 123–130. <https://doi.org/10.1080/08880018.2017.1283274>
- Champion, V. L., & Skinner, C. S. (2008). The health belief model. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (4th ed., pp. 45–65). Jossey-Bass.
- Eze, J. N., Uche, A. O., & Eke, C. B. (2018). Parental awareness and delay in presentation of childhood malignancies in Southeast Nigeria. *Journal of Pediatric Oncology*, 6(1), 12–18.
- Geel, J. A., et al. (2021). The impact of cancer awareness campaigns on early diagnosis in South Africa. *South African Medical Journal*, 111(5), 456–462.
- Githanga, J., et al. (2020). Determinants of delayed diagnosis of childhood cancer in Kenya. *Pediatric Blood & Cancer*, 67(9), e28475. <https://doi.org/10.1002/pbc.28475>
- Hafizu, S. L., Magaji, S., & Ismail, Y. (2025a). Assessment of The Impact of Community Engagement on Sustainable Urban Planning and Environmental Management in Nigeria. *International Journal of Innovative Social Sciences & Humanities Research* 13(4):105-116, doi:10.5281/zenodo.17394701
- Hafizu, S. L., Magaji, S., & Ismail, Y. (2025b). Role of Community Engagement in Reducing Inequalities and Promoting Sustainable Cities in Nigeria. *ISRG Journal of Economics, Business & Management (ISRGJEBM)*, 3(5), 199-208. DOI: 10.5281/zenodo.17423283
- Ijoko, A. O., Magaji, S. & Gombe, B. M. (2021). Impact of Public Health Expenditure on Health Infrastructure in Primary Health Care centres in FCT. 1<sup>st</sup> International Conference on Socio-economic and Health Shocks: Policy uncertainty and the need for Institutional Reforms. Department of Economics, Faculty of Arts and Social Sciences, Gombe State University, 8<sup>th</sup>-9<sup>th</sup> December.
- Ismail, Y., Musa, I., & Magaji, S. (2024). Assessment of the Impact of Government Health Expenditure on Economic Growth in Nigeria. *Journal of Arid Zone Economy* 4(3): (2024) 132 – 151. [www.https://bit.ly/JazeIssue4\(3\)](http://www.https://bit.ly/JazeIssue4(3))
- Knaul, F. M., Bhadelia, A., Atun, R., & Rodriguez-Galindo, C. (2019). Childhood cancer: Opportunities for global progress. *The Lancet Oncology*, 20(10), e516–e528. [https://doi.org/10.1016/S1470-2045\(19\)30424-1](https://doi.org/10.1016/S1470-2045(19)30424-1)
- Magaji, S. & Ismail, Y. (2025). Smart Medicine, Fewer Jobs? A Global Assessment of AI's Disruptive Force in Healthcare. *International Journal of Spectrum Research in Medical and Clinical Practice (IJSRMCP)* 1(4), 75-88. <https://doi.org/10.5281/zenodo.18051037>
- Magaji, S. Musa, I., & Yusuf, A.T. (2022). Impact of Covid-19 Lockdown on Savings Mobilisations in Nigeria. *Abuja Journal of Economics and Allied Fields*, 10(2) 17-25.
- Magaji, S., Ismail, Y., Yakubu, J. & Musa, I. (2025b). Analysing the socioeconomic ordeals faced by poor households in the aftermath of the Alau Dam breach in Maiduguri. *Journal of Arid Zone Economy* 6(3): 132 – 145, <https://doi.org/10.63660/jaze.2025.0603.010>
- Magaji, S., Yahaya, I. & Musa, I. (2025a). The Role of Population Dynamics in Advancing Sustainable Economic Growth: A Study Aligned with SDG 8 in Nigeria. 2<sup>nd</sup> International Conference of the Faculty of Social Sciences, University of Abuja. July 30th to August 1st, 2025.

- National Cancer Institute. (2022). *Childhood cancers*. U.S. Department of Health and Human Services. <https://www.cancer.gov>
- Nutbeam, D. (2008). The evolving concept of health literacy. *Social Science & Medicine*, 67(12), 2072–2078. <https://doi.org/10.1016/j.socscimed.2008.09.050>
- Ocheni, S., Bioha, F. I., & Ibegbulam, O. G. (2014). Changing pattern of childhood malignancies in a Nigerian tertiary hospital. *African Health Sciences*, 14(3), 638–644. <https://doi.org/10.4314/ahs.v14i3.15>
- Rodriguez-Galindo, C., Friedrich, P., Morrissey, L., & Frazier, L. (2015). Global challenges in pediatric oncology. *Current Opinion in Pediatrics*, 27(1), 3–15. <https://doi.org/10.1097/MOP.0000000000000170>
- Rodriguez-Galindo, C., Friedrich, P., Morrissey, L., & Frazier, L. (2015). Global challenges in pediatric oncology. *Current Opinion in Pediatrics*, 27(1), 3–15. <https://doi.org/10.1097/MOP.0000000000000170>
- Rosenstock, I. M. (1974). Historical origins of the health belief model. *Health Education Monographs*, 2(4), 328–335. <https://doi.org/10.1177/109019817400200403>
- Stefan, D. C., et al. (2021). Childhood cancer survival in sub-Saharan Africa: A review. *Cancer Epidemiology*, 72, 101938. <https://doi.org/10.1016/j.canep.2021.101938>
- Ward, Z. J., Yeh, J. M., Bhakta, N., Frazier, A. L., Atun, R., & Rodriguez-Galindo, C. (2019). Estimating the total incidence of global childhood cancer: A simulation-based analysis. *The Lancet Oncology*, 20(4), 483–493. [https://doi.org/10.1016/S1470-2045\(18\)30909-4](https://doi.org/10.1016/S1470-2045(18)30909-4)
- Ward, Z. J., Yeh, J. M., Bhakta, N., Frazier, A. L., Atun, R., & Rodriguez-Galindo, C. (2019). Estimating the total incidence of global childhood cancer: A simulation-based analysis. *The Lancet Oncology*, 20(4), 483–493. [https://doi.org/10.1016/S1470-2045\(18\)30909-4](https://doi.org/10.1016/S1470-2045(18)30909-4)
- World Health Organization. (2021). *CureAll framework: WHO global initiative for childhood cancer*. WHO. <https://www.who.int/publications/i/item/9789240025271>
- World Health Organization. (2021). *CureAll framework: WHO global initiative for childhood cancer*. WHO. <https://www.who.int/publications/i/item/9789240025271>
- World Health Organization. (2021). *CureAll framework: WHO global initiative for childhood cancer*. WHO. <https://www.who.int/publications/i/item/9789240025271>