



CHILDHOOD CANCER KNOWLEDGE AMONG PARENTS WHOSE CHILDREN ARE ON ADMISSION AT THE PAEDIATRIC WARD OF TAMALE TEACHING HOSPITAL (TTH)

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Abstract

There is an upsurge in childhood cancers in recent times, with low survival rates especially in most Low and Middle-Income Countries (LMICs). Most deaths in these developing countries are avoidable since there are cost-effective treatments available. Over the years, a lot of research has been conducted into childhood cancers, but little has been done to assess the knowledge of parents on childhood cancer. Knowledge of parents is prerequisite in seeking early treatment. This study, therefore, sought to assess the knowledge of parents on childhood cancer of their children diagnosed with cancer at the Tamale Teaching Hospital in Ghana. The specific research objectives were centred on the level of knowledge of the parents on cancer among children; parents' knowledge on the cause of childhood cancer and how parents think cancer can be managed in children. An exploratory qualitative research design was used. A simple random sampling technique was employed to select participants. A semi-structured interview, with the aid of an interview guide was used to solicit information from 15 participants; which was audio-taped and later transcribed verbatim and analysed using thematic content analysis method. The results showed that the parents had little knowledge on the cause of childhood cancer. As a consequence, they had limited knowledge on general management of cancer among children. However, they appeared to have a fair knowledge on the general cause of childhood cancer. It is recommended that Ghana Health Service should provide more health education on childhood cancers as well as encourage parents to report such cases early to treatment centres across the country.

Keywords: Cancer, Parent, Knowledge, Childhood, Treatment

Introduction

There is an increasing level of pediatric cancers (Keener, 2019) with successful cancer treatment regimens. Advances in cancer treatments increase the childhood cancer survival rate of about 83% of children who will reach 5-year survival (Offor et al., 2018). Similarly, Sandheirich & Hayashi (2018) also stated that, of the children and adolescents who reach this milestone, 95% are expected to reach 15-year survival.

Successful treatments have led to an increased number of childhood cancer survivors. For instance, about 16.9 million American children with a history of cancer were alive on January 1, 2019, most of whom were diagnosed many years ago and have no current evidence of cancer (ACS, 2020). Three hospitals in Cameroon showed that children diagnosed with cancer had a recorded cure rate of over

50% (Afungchwi, Hesseling & Ladas, 2017).

Despite this, the knowledge level and awareness of parents on childhood cancer, integral to the treatment remains largely unknown (Ji et al., 2018).

Globally, in 2018, newly diagnosed childhood cancer cases were 18.1million. Out of this, 9.5million children died within the same period. A recent study estimated that 397000 new cases of pediatric cancer occurred in 2015. The global cancer burden is projected at 23.6million new cases yearly by 2030 (Fung et al., 2019). In another study, ACS estimated that by 2040, the global burden is expected to reach 27.5 million and 16.2 million deaths (Institute, 2020).

Conversely, Renner & McGill (2020) also postulate that globally, the annual incidence of childhood cancer is about 140 per one million children under the age of 15 years with 175,000 new cases and 96,000 deaths annual-

ly and that ninety per cent of these deaths occur in developing countries.

Walubita, Sikateyo & Zulu (2018), stated that childhood cancer is a leading cause of death in developed countries and the second leading cause of death in developing countries. About 12.7 million new cases of childhood cancer occur each year worldwide and 56% of the cases occur in Low and Middle-Income Countries (LMICs). Globally, about 160,000 new cases of cancer are diagnosed annually in children younger than 15 years of age.

According to the ACS in 2018, in the United States (US), 10,590 children were estimated to be diagnosed with cancer (Keener, 2019). In a further study, the ASC envisaged that 11,050 new cancer cases will be diagnosed among children ages 0 to 14 years in the US in 2020, and an estimated 1,190 children will die of the disease. One in 389 children will be diagnosed with cancer by the age of 15. Cancer is the second-leading cause of death among children ages 1–14 years (Institute, 2020).

Hockenberry, Wilson & Rodgers (2017), also stated that about 16,400 cases of cancer are diagnosed in children younger than 20 years in the US each year, with approximately, 1,300 children younger than 15 years dying each year (Scheurer, Lupo and Bondy, 2016). The incidence of cancer in children and adolescents is approximately 18 cases per 100,000 children (Henley et al., 2015).

Furthermore, in the US, about 1.8 million new childhood cancer cases are expected to be diagnosed in 2020 and about 606,520 American children are projected to die of cancer within the same period, which translates to about 1,660 deaths per day (Institute, 2020). In Zambia, about 1,000 cases of paediatric cancer occur per year (Walubita et al., 2018).

In China, the incidence of paediatric cancer continues to increase, with an estimated 2.8% annual increase (Ji et al., 2018).

World Child Cancer UK (2010) also estimated that in Ghana, 1,300 new cases of childhood cancers are expected each year and the number diagnosed increases each year with a lot of cases not diagnosed.

A story by the Ghanaian Times on 20th November 2019, and published by All Africa Global Media pointed out that about 328 childhood cancer cases between the ages of 0 to 19 years have been recorded at the Korle-Bu and Komfo Anokye Teaching Hospitals. The report also revealed that Ghana currently records between 1,000 and 1,300 of childhood cancer cases yearly.

According to the British Journal of Cancer, paediatric cancers are malignancies that occur in young children, the most common being leukaemia and brain tumours (Kamili et al., 2020).

Conversely, the National Strategy for Cancer Control in

Ghana (2012 – 2016) also stated that childhood cancers refer to neoplastic disorders affecting individuals aged less than fourteen years, who constitute approximately 40% of the country's population and account for about 1% of the total cancer cases worldwide (MoH, 2016).

A retrospective study on the pattern of childhood cancers in Kumasi (Ghana), according to Journal of Cancer Prevention and Current Research (JCPCR), showed that majority of the common childhood cancers affected more males than females in the population studied. The male to female ratio of all cases was 1.5:1. Lymphomas were the commonest cancers diagnosed, with Burkitt's lymphoma being the highest among the 5-9 years group. The acute lymphoblastic leukaemias were next to the lymphomas in Komfo Anokye Teaching Hospital (KATH) (Paintsil et al., 2015).

In the same vein, Hockenberry et al. (2017) stated that males have a higher overall incidence of cancer compared with females, with a ratio of 1.1:1. The incidence of childhood cancer is more pronounced in children aged 0 to 4 years and adolescents aged 15 to 19 years.

The most common categories of childhood cancers include leukaemias, brain cancers, lymphomas and solid tumours, such as neuroblastoma and Wilm's tumour according to the International Classification of Childhood Cancers (ICCC-3) (Steliarova-foucher et al., 2005; Lam et al., 2019). Hockenberry et al (2017) also stated that the types of cancers in children vary among different age groups, with neuroblastoma and retinoblastoma occurring more commonly in young children and lymphoma and sarcoma occurring more commonly in adolescents (Scheurer, Lupo and Bondy, 2016). In East Africa, an estimated 760 children are newly diagnosed with retinoblastoma annually with poor outcomes and survival rate of about 23% (Hill et al., 2016).

Burkitt Lymphoma (BL) is the commonest childhood cancer in Ghana (Offor et al., 2018). Del, Quintana & Hviid (2020) also affirmed that BL is the most common childhood cancer in tropical Africa and it is attributed to plasmodium falciparum malaria infection. Similarly, in Cameroon, BL is the most common childhood cancer with a reported incidence of 3 per 100,000 children under 15 years (Afunghwi et al., 2017).

The upsurge in childhood cancer cases globally led the World Health Organisation (WHO) to launch a programme in 2018, called WHO Global Initiative for Childhood Cancer, with the two main aims to increase prioritisation of childhood cancer through awareness creation at the global and national levels; and to expand the capacity of countries to deliver best practice in childhood cancer care, (WHO, 2018). Other studies by Fung et al. (2019); and Lam, Howard, Bouffet &

Pritchard-Jones (2019) added that the WHO goal was to attain a global survival rate of at least 60% for children with cancer by 2030. In the same vein, the ACS has an ultimate aim to lead the fight for a world without cancer (Institute, 2020)

In High-Income Countries (HICs), more than 80% of children with cancer are cured, but in many LMICs, only about 20% are cured (Fung et al., 2019). Conversely, Renner (2020) also stated that in HICs, the survival rates for childhood cancer is greater than 80%. But in the LMICs with an estimated 90% of the global population being children, the survival rate varies between 10% and 50%.

Childhood cancer generally cannot be prevented or screened. Improving outcomes for children with cancer require early and accurate diagnosis followed by effective treatment (Institute, 2020).

Effective treatment entails a long-term and consistent follow-up to a treatment centre to avoid risk for a variety of treatment-related late effects including secondary cancers, cardiac and pulmonary problems, neurocognitive and learning difficulties, and endocrine disorders, among other chronic health conditions (Hudson et al., 2003; Oeffinger et al., 2006) according to Cherven et al. (2015).

Many adolescent oncology patients and parents of paediatric cancer patients express concern about fertility, but some patients maintain their reproductive potential. Female childhood cancer survivors have a 50% increased risk of clinical infertility compared to their siblings. Exposure of the ovaries or uterus to radiation or alkylating agents increases the risk of infertility. Therefore, the American Society for Clinical Oncology (ASCO) recommends physicians discuss risks of infertility with all female cancer patients and provide fertility preservation information and/or referrals to reproductive specialists when appropriate (Sandheinrich & Hayashi, 2018).

The Childhood Cancer Survivor Study (CCSS) also stated that nearly three-quarters of adult survivors of childhood cancer develop chronic health conditions, 40% develop severe or life-threatening complications; 95% of childhood cancer survivors develop chronic health conditions by age 45, and 80% develop disabling or life-threatening complications (Lindell et al., 2015).

Most childhood cancers can be treated with generic medicines and other forms of treatments including surgery and radiotherapy. Treatment of childhood cancer can be cost-effective in all income settings (WHO, 2018).

Avoidable deaths from childhood cancers in LMICs result from lack of diagnosis, misdiagnosis or delayed diagnosis, obstacles to accessing care, abandonment of treatment as a result of low parental knowledge on childhood cancer, death from toxicity, and higher rates of relapse (Offor et al., 2018).

The survival rate for childhood cancers in developing countries such as Ghana is low (Isaevska et al., 2019). There could be several factors accounting for this, which includes low knowledge of available treatment regimes on the part of parents which often leads to delayed reporting to treatment facilities or abandonment of treatments.

According to Joko-Fru et al. (2018), four out of five cases of childhood cancers occur in LMIC. Due to the young age structure of the populations of these countries, relatively more cancers occur in the childhood age range than in their HIC counterparts. In sub-Saharan Africa of which Ghana is part, 4.6% of cancers occur at ages 0–14 years, compared with 0.5% in the HIC (Joko-Fru et al., 2018).

This study therefore sought to assess childhood cancer knowledge among parents whose children are on admission at the Paediatric Ward of the Tamale Teaching Hospital. Specifically, it sought to find out about the level of knowledge of parents/guardians as regards cancer among children, unearth parents' knowledge about the causes of some common childhood cancers and to inquire from parents how they think cancer in children can be managed.

Materials and Methods

The study was conducted at the Tamale Teaching Hospital (TTH) in the Northern Region of Ghana. The hospital is located at about 2km southeast of the Tamale Metropolis with a total land surface area of about 490,000 sq.m. Its catchment area has a population of approximately 4.2 million, according to the TTH 2014 Annual Report (Ghana Health Service, 2015).

The Hospital was commissioned on 24th February 1974 to serve as a medical referral centre for the Regions of Northern, Upper East and Upper West. It was also to serve the Northern parts of the Bono Region and the neighbouring countries of Ivory Coast, Burkina Faso and Togo (Ghana Health Service, 2015). Currently, the hospital has a bed capacity of about eight hundred. The Paediatric Unit of the facility has various specialists of health workers, medical doctors, all categories of nurses and students as well.

The facility, apart from its tertiary health care mandate, also serves as a clinical teaching institution for the various health training institutions in the region. The Ghana Health Service and Teaching Hospitals Act 1996 (Act 525), accorded TTH autonomous status in compliance with policy guidelines and strategic directions by the Ministry of Health with the country's laws, (Act, 1996). The study was an exploratory one and so a sample size

of 15 was chosen and used, based on sample point saturation. Theoretical saturation was reached by the 15th interview. This research is therefore not generalizable to the population at large.

After defining the potential subjects as a sample size, researchers then enrolled various units of respondents (Mugenda and Mugenda, 2003). A semi-structured interview was used for the design on thematic areas shown in Table 1.

Table 1: Themes and Sub-themes

Themes	Sub-themes
Knowledge of childhood cancer	1.1 What is wrong with your child?
	1.2 Have you heard of cancer in children before?
	1.3 If so, briefly state what cancer in children is
	1.4 How is cancer in children a problem?
	1.5 Difference between a child with cancer and one without it
	1.6 Is cancer communicable?
	1.7 Part(s) of body cancer can affect
Causes of childhood cancer	2.1 What causes cancer in children?
	2.2 Link between level of community development and cancer
	2.3 Myths about cancer in children
	2.3 Maternal activities and chances of cancer on the child
Parents thoughts about cancer management in children	3.1 Possible treatment of cancer in children
	3.2 Difference in the management of cancer from other illness
	3.3 Support systems for children with cancer
	3.4 Effects of cancer on child and parents

The study population comprised of 15 to 30 admitted children with their parents. They were contacted right from the admission to when they were discharged. Those who were already diagnosed with cancer and had come for review were not included as they might have had an insight during their first admission. Parents who were not ready or not willing to cooperate were excluded from the study.

A simple random sampling technique was used in the data collection. This minimized bias and gave each parent a fair opportunity to be selected for the study. Written informed consent was obtained before the commence-

ment of interviews. Unique study numbers for participants ensured confidentiality and anonymity.

Primary data was mainly collected and used for this study except for the review of related literature where we used secondary data to relate the findings of our study.

In this research, primary data was obtained by interviewing respondents using an interview guide. An interview guide, based on a social constructionist approach, with open-ended questions, was used to retrieve the data from the respondents through a face-to-face interview. Pilot testing of the interview guide with two parents was used before commencement. Questions were based on the specific objectives of the study.

All interviews were audio taped with permission from the respondents and notes taken. After this, the audiotapes were transcribed verbatim and used together with the notes taken to summarize the responses. Analysis of the data was done using thematic content analysis. Also, medical records of respondents on admission were also analysed.

Results

The response rate of the 15 participants in this study was 100% and recognised as a generally acceptable sample size for a study of this nature (Boddy, 2016; Vasileiou et al., 2018) and for data analysis and reporting (Tiberious et al., 2016).

Personal Characteristics of Participants

Personal characteristics of respondents are significant in expressing and giving the responses about the problem. As such, the authors considered the following characteristics of participants: age, sex, marital status, educational background, occupation and religious affiliation.

The results revealed that majority of respondents were within the age bracket 26–35 years (46.67%). This was followed by 18–25 years (26.67%), 36–45 years (13.33%) and 56–65 years (13.33%).

In terms of sex, 73.33% of participants were females, whilst their male counterparts represented 26.67%. Of these, 86.67% of the respondents were married with only 2 respondents representing 33.33% being single.

The educational status of respondents indicated that 20% had formal education up to tertiary level, and those who had no formal education represented 20%. The number of respondents who had elementary and junior high levels of education was 13.33 % each.

Majority of respondents (60%) were engaged in trading, food vending, apprenticeship among others. Others were public servants (6.67%), housewives (6.67%) and

self-employed and unemployed respondents were represented by 13.33% each.

The religious affiliation was also looked at and it was revealed that majority of respondents were Muslims (53.33%), while the rest were Christians (46.67%).

Parents Knowledge on Childhood Cancer

All parents interviewed had heard of cancer before but some were not sure whether it occurs in children.

"...I've only heard of cancer in general. But how it attacks or occurs in children specifically, I have not heard how it usually... I mean... errrrhh... but I know that cancer is just a disease that can attack any human whether child to old age, it do[does] occur [occur]. So, I understand that. But children specifically... oooh... when it attacks the child, this is how the form looks like, I've not...", R5 stated.

Parents were equally asked to briefly state what they think cancer in children was. According to R9,

"They have their eyes 'coming out', there is also a boil in their stomach".

Another parent mentioned that cancer in children developed like a boil. One reported it was an infection. Four (4) parents, however, could not tell what childhood cancer was all about.

For instance, R2 said,

"I don't know much about it".

The rest said they could not tell or explain what cancer in children was like. Eleven (11) of the parents gave various explanations of cancer. For example, R1 said,

"Cancer is like any other sickness. But I didn't initially know it can occur in children... Both child and mother suffer. It can affect any part of the body; leg, head".

Another parent, R12 perceived childhood cancer as dangerous and a source of worry to parents. She responded,

"...Is very scaring and dangerous as well. It's... It's, so bad for a child to have cancer. It is very, very bad". "...It is a problem because you the parents, you will be like... you will be very disturbed and scared. So, it's a big problem to the parents. It's a big problem".

From some respondents, it was revealed that cancer was associated with bloody cough and that it was contagious. For example, a parent opined that a child diagnosed with cancer will have a bloody cough.

"I know that if you have cancer the body will be warm. That you will be coughing and blood will be coming. So, that [was] what I just heard". "...They [other children] don't want to share anything with them because they think they can also get it", according to R8.

Some parents linked the prevalence of cancer among children to inadequate nutritional and dietary intake less than the body requirement. R11 replied,

"Yeah! Yeah!! Yeah!!! I've been hearing it. I only know... if the child is not taking proper food or if the child is always hungry, that one can cause it, according to what I have been hearing". ... "Mmmm... the one has cancer, sometimes, she cannot eat, she cannot take proper food, even sometimes, always will be complaining about stomach, stomach. So, you know if a child is complaining stomach, stomach, the child cannot grow well and then the child cannot... even many things will be... The child will lost [lose] many things, unless we take proper care of her or him".

Few parents (3) were able to point out the various cancer types in children. They mentioned the eyes, breasts, heart and stomach as organs of cancer development among children. For instance, R9 stated,

"They have their eyes coming out. There is also a boil in their stomach". Another parent, R4 also said, *"the eyes may have problems"*. *"...Sometimes, women... Breast cancer. You will see somebody breasts mmm... I don't know how am going to... I heard of breasts cancer"*.

Breast cancer is common among young and adolescent girls. Many parents were able to identify the growing disparities between children with cancer and other children.

"...yeah, the person doesn't grow. The person is always looking smallish and then lost of hair", according to R4. R3 also said, "...He won't grow. You have to take time and take care of him or her. Mostly, those who are having cancer, they reduce; they reduce in weight or they don't look big".

Parent's knowledge was also assessed on whether cancer in children was communicable. Most parents responded no. But one parent believed it could be communicable. One other responded,

"...Mmmm... they believe in that. That if they eat together, he can catch it", R8.

Parent's Knowledge on Causes of Childhood Cancer

Generally, the cause of cancer in children is largely unknown, except for some risk factors. Parent's knowledge on the cause(s) of cancer among children was assessed. Most parents (12 respondents) reported that they did not know the cause. But some parents believed the type of food, environment and through birth, children get cancer.

"...Like... money like this, if the child takes money to the mouth, he can get cancer. Or... if the... like if me have cancer and deliver a child, the child will have cancer. Like if you are pregnant, you have to [laughs] to be choosing food that can give... not all the food that you're going to be eating. You have foods... some food that... you can't eat [laughs]. Me, like this, I don't know that kind of food. So... but if you are pregnant like this and we go to the weighing, they will say this one, you are not"

supposed to eat that one [laughs] but I don't know", R 2.

R13 also said "sometime, is about the food we eat. That is [are] some of the causes".

"...Maybe, through birth, like mother to child. And sometimes the food. There are some food you eat that will let you get cancer. Or maybe through breastfeeding or birth transmission". "...Like where the person was living, maybe you had enough food or all the social amenities that he or she moves to a different area, he or she might lack what he was having. So, this can cause cancer", according to R4. But R 5 disagreed with this when he stated that activities of a pregnant woman do not contribute to childhood cancer and that it cannot be passed through breastfeeding. He stated, "...usually... Islamically, I don't believe it, that aspect".

He later mentioned sharp and piercing objects as sources of children getting cancer.

"Sometimes, in children [children], what may cause some of their cancers, I could say something like errh... errh... what is it...let me just say blade. Something that, I mean errh... errh... sharp. It could be knife's cut because that cut, cancer can pass through the cut and children sometimes, you can't stop them. You don't even follow them", R 5.

Parents were also quizzed on whether activities during pregnancy and the environment in which parents live with their children can influence cancer development in children. A parent retorted,

"Is it not the cold water? [laughs]. If you like taking cold water or block anytime", R 3.

She further added that both rich and poor can get cancer and that one's socioeconomic status is not a determinant.

However, another parent strongly disagreed that some activities during pregnancy can cause cancer. He was emphatic that cancer occurring among children is from God.

"...No NoNoNo! You know sickness... sickness going with Almighty Allah give. If God says they will give... buh[but] you can have a cancer and you give a birth and the child don't [doesn't] have cancer. So, it doesn't mean if you have a cancer and you give birth, the child should come with cancer". "...No nonono! Sickness doesn't follow you are rich or you are poor. Sickness don't [doesn't] follow that. God just gives sickness to know how your mind is", R 11.

R 14 said,

"I know if somebody is smoking. If you are pregnant and you are smoking, you can infect your child with some cancer. If you take alcohol, it can also lead to that. And maybe other foods. Maybe they advised they are not good for a pregnant woman to be taking and you are taking those things, you maybe endangering your unborn child. The child can come out with any of the cancer related diseases".

There are several myths about childhood cancer and this affects health seeking behaviours. Parents were asked to mention them.

Some parents equated cancer in children to death where it

was mentioned that the child cannot survive more than six months. Some said they do not believe in any myths about cancer in children. For instance, R 15 said,

"I am a Christian and I don't believe it".

R 14 also stated, "...Yab there are beliefs. There are beliefs. So, people believe in that. Yes". "...Because, I said is a belief, somebody maybe sick of a cancer, ignorantly, you will think that is spiritual; somebody is doing something to the child".

Parents Thought on How Cancer in Children can be Treated

Awareness of the treatment options for children with cancer is the first step towards cancer management. Parents were asked about their awareness of treatment modalities and other orthodox and complementary medicines for cancer in children. All the parents interviewed affirmed that it could be treated especially with early diagnosis and management.

For example, R15 said, "Yes. Once you come to the hospital, it can be treated".

Similarly, R13 replied, "Yes. You can treat it and it will go completely".

In the same vein, R11 stated that,

"... Me I only know if the child is having a cancer, the best treatment is to go to the hospital. But I even heard that our local, they are treating it, but I never tried before. Because I never know someone having a cancer and maybe am going to take responsibility to treat that person". "There are many sickness [sicknesses] in the hospital and maybe the hospital will just do... but after that maybe, if you go home and you know that you can add the local one; to what, to complete it, you do".

Another parent responded,

"... oh yes! Yes. To the best of my knowledge, I know we have types... different kinds of cancers. So, I know some are treatable. It can be cured, but others, I cannot speak for general term", R 14.

Parents were aware that cancer therapy was different from other therapies for different conditions. They specifically mentioned that different medications are given for various disease therapies. For instance, R 11 affirmed,

"...You know you definitely will treat them differently. You can't take cancer treatment and give to malaria".

One problem with cancer management in children is the perception that treatments are expensive. Even though respondents mentioned the treatment modalities, they stated financial problems as effects of cancer on parents whose children are diagnosed with cancer. They equally mentioned loss of job and psychological stress that childhood cancer brings on parents.

For instance, R 5 stated,

"Every sickness pose [poses] a lot of problems on parents, unless they are careless". "If you just heard [hear] that somebody is having a cancer, the whole family... nobody will be

happy. Is giving the whole family sadness. You can't heard [hear] that your child is having a cancer and you are happy", according to R 11. Another parent said, "It brings shame to the family. Some people will just fear the fellow", R 3.

R 12 also responded,

"Depression... Depression... Depression in the sense that... Depression in the sense that nobody will be organized. You'll always be thinking about your child, whether he or she will recover".

Parents knowledge were also assessed on the availability of family support systems in the management of children diagnosed with cancer. They mentioned psychological support, financial support and enhanced health-seeking behaviours to address the health needs of these children.

According to R 4,

"... Just love. Love the person. Like, stop asking the person not to come closer to you. Just show the person love. Like, it's only a disease. So, this shouldn't bring any problem to the family".

She further asked that people should stop discriminating against children diagnosed with cancer.

All the parents expressed psychological trauma, socio-economic effects and stigmatisation that cancer in children bring upon parents. They encouraged financial and psychological support to address these.

Discussion

Knowledge of Parents/Guardians on Cancer Among Children

Data collected from the field indicates that all parents interviewed had only heard of cancer in children, but they did not know much about it. Many parents reported that they could not state what cancer is or know what causes cancer in children. Majority of them attempted to state the causes of cancer in children, but it was inaccurate. For instance, some parents associated cancer with an infection which can be got through a cut, open wounds by sharp and piercing objects.

Putting money in the mouth was also mentioned as a cause of cancer among children.

In exploring factors influencing health-seeking decisions and retention in childhood cancer treatment in Ghana, Renner (2020) equally found out that there was a general lack of knowledge about the causes of childhood cancer. Parents perceived money in close contact with skin as a cause of cancer among children. They added trauma being causative, cancer being infectious and also attached spiritual causation to it.

The findings of this study are similar to those reported by Nair et al. (2017) in Kerala (India). Their study revealed that formal education and socio-economic status impacted on parents' knowledge level on their child's cancer. 83% of mothers had school level education only and 84%

belonged to lower and middle socioeconomic status. More than 80% of mothers knew the name of their child's cancer, type of treatment received by child and approximate duration of treatment. 93% knew regarding painful procedures and 84% of mothers reported knowledge about chemotherapy side effects. The hope of cure and satisfaction with treatment was reported by 90% of mothers.

In our study, only 20% of parents had education up to tertiary level and 20%, no formal education. The rest had some level of basic education up to a certain point. This influenced their level of understanding of cancer among children.

Unlike in this study, Quillen et al. (2018) learnt in their study at United States of America that majority of parents were highly knowledgeable about the general aspects of their child's cancer diagnosis when they wanted to find out the knowledge of parents with children diagnosed with cancer who attended a survivorship clinic in the US. Quillen et al. (2018) however stated that knowledge deficits were somewhat identified in both parents and child cancer survivors, only in treatment specifics. In this our study where we set to explore the knowledge of parents on childhood cancer, it was realized that parents associated it with death.

Though the global childhood cancer burden is estimated at 27.5 million cases and 16.2 million deaths by 2040, successful cancer treatment has led to about 80% survival rate. For instance, on January 1, 2019, about 16.9 million American children with a history of cancer were alive, who were diagnosed some years ago and have no current evidence of cancer (Institute, 2020).

When parents were asked to state in their own words what cancer is, some rather described the types of childhood cancer. They gave a symptomatic description of retinoblastoma, owing to it being one of the most common childhood cancers. "They [children] have their eyes coming out" by one respondent is a case in point.

In a qualitative study in Canada, parents were knowledgeable about retinoblastoma childhood cancer type. Parents viewed their experiential knowledge of retinoblastoma as valuable to the treatment process. Retinoblastoma according to the study, is an aggressive childhood cancer of the eye. It is generally caused by a biallelic mutation of the RB1 gene. This gene is carried in their constitutional cells and later on passed to offspring (Moses, Flegg & Dimaras, 2020).

Retinoblastoma is a common type of childhood cancer with high mortality in developing countries, such as Ghana. According to the American Academy of Ophthalmology (AAO), Global Retinoblastoma Study Group (GRS) researched 4000 children from 153 countries. It

think can cause cancer in children. A parent said if the child puts money note in the mouth, it can cause cancer. This is similar to a study by Renner & McGill (2020) to explore factors that influence health-seeking decisions by parents of children diagnosed with cancer where parents stated that money in close contact with child's skin causes cancer.

One parent opined that household articles such as knives, blades and other piercing objects can cause cancer in children. He said that cut wounds sustained through these objects due to children's vulnerability and activity can be a source of cancer. This however is inaccurate.

When parents were asked about the interrelationship between one's environment and the chances of getting cancer, fourteen out of the fifteen parents responded that environment is not a determinant and that the risk levels are equal in both rich and poor parents. One parent argued that the rich are at more risk and that more development even leads to increased cancer risks.

However, according to Offor et al. (2018), Epstein-Barr Virus (EBV) and *Plasmodium falciparum* malaria infection are risk factors of endemic BL (eBL) affecting children in their early years in countries within Equatorial Africa located 10°–15° north and south of the equator. Similarly, Del et al. (2020), posited that BL is prevalent in areas with stable transmission of *Plasmodium falciparum* malaria. *Plasmodium falciparum* and EBV infection combined, account for BL more than 90% of all paediatric cancers. The environment, therefore, has an impact on the chances of childhood cancer, which parents in this study overlooked. It could be stated that the risks of childhood cancer between rich parents and the poor is equal but the type of cancer is a factor too.

The ACS stated that people with lower socioeconomic status have higher cancer death rates than those with higher socioeconomic status because of disparities in education, the standard of living, and social barriers to higher-quality cancer prevention, early detection or treatment. It argued that incidence rates are higher in the former for many cancers because many factors that increase cancer risk are more prevalent. For instance, people with lower socioeconomic status are more likely to smoke. Moreover, community factors often limit opportunities for physical activity and access to fresh fruits and vegetables. Additional factors include a higher prevalence of cancer-causing infections and harmful exposures in the workplace and other environments (Institute, 2020).

From our research findings, parents would have been more accurate if they stated the difference lies in the rate of survival, access to quality care and the type of cancer affecting children of rich parents and the poor.

Parents Thought About How Cancer in Children Can Be Managed

The study findings in this regard revealed that most parents interviewed believe in the efficacy of orthodox medicine in the treatment of childhood cancer. For them, the first approach is to seek medical care at a health facility when a parent suspects that the child has cancer. They, however, acknowledged the important role played by Complementary and Alternative Medicine (CAM) as a second option. The National Strategy for Cancer Ghana (2016) stated that orthodox medicine should include a multidisciplinary management team of specialities: oncologist/haematologist, radiotherapist, surgeon, pathologist, radiologist and nurse coordinator as laid down by International Society for Paediatric Oncology (SIOP), Childhood Cancer and Leukaemia Group (CCLG) and National Wilm's Tumour Study (NWTS) (National Strategy For Cancer, 2016).

Conversely, the WHO described CAM as the most available and affordable treatment option in sub-Saharan Africa, but often underestimated, according to Afungchwi et al. (2017).

Parents response in this research findings contrasted with a study in Turkey to find out the opinions of parents of children in the Oncology Unit on CAM by Uysal et al. (2017). It gathered that the frequency of CAM therapy use for childhood cancers is between 24% and 90%. Parents stated the reason for the choice was to avoid the adverse effects of medical treatment. All parents preferred CAM therapies for their children's treatment but 81.4% who used it withheld the information. More than half used herbs as CAM.

This study's findings also indicated that there are family support systems that parents could offer to their children diagnosed with cancer as part of the treatment process. Few parents responded that the first line of action is to send the child to hospital when you suspect that child has cancer. Majority of parents however mentioned that providing psychological support is essential in the treatment. One parent stated that complying with treatment protocols and cooperation is very key to treatment outcomes. Only a few parents mentioned strict adherence to diet and nutrition as to avert complications and ensure a good clinical outcome.

Meanwhile, nutritional support for childhood cancer therapy is essential. Despite this, little attention is given to nutritional management, particularly in LMICs. Comorbidities such as malnutrition impacts negatively on the survival of cancer children. The value of nutritional support in pediatric oncology is still underrated both in HICs and in LMICs, according to Murphy-Alford et al. (2020) and Lam et al. (2019). Education is needed to

was found that 85% of children with retinoblastoma live in LMIC (Marie, 2020).

In the same vein, ACS stated that retinoblastoma affects children younger than 5 years and it accounts for 2% of American children diagnosed with cancer, often recognized because the pupil appears white or pink instead of the normal red during eye examinations (Institute, 2020).

In this research, some parents attempted to explain the cause of cancer. They gave inaccurate responses. They attributed cancer in children to inadequate dietary intake. Yet a parent was of the view that cancer is communicable, in that when children eat together, it can be transmitted. Diet is a risk factor in cancer development and not a direct cause of cancer. According to ACS, approximately 4% to 5% of all cancer cases and deaths is attributed to dietary factors. More red and processed meat, starchy foods, refined carbohydrates, and sugary drinks are associated with a higher risk of developing cancer. Fruits and vegetables, whole grains, legumes, and fish or poultry and fewer red and processed meats are associated with lower risk (Institute, 2020).

Some parents interviewed in this research on their knowledge of childhood cancer were able to state the signs and symptoms of childhood cancer. Fever, weight loss, poor appetite and bloody cough were mentioned. This agrees with National Cancer Institute of the US's criteria for the early signs and symptoms of childhood cancer which include; fever, easy fatigability, swollen glands, weight loss, easy bruising and tender joints or bones (NCI, 2015).

Similarly, the ACS stated unusual mass or swelling; unexplained paleness or loss of energy; a sudden increase in the tendency to bruise or bleed; a persistent, localized pain or limping; a prolonged, unexplained fever or illness; frequent headaches, often with vomiting; sudden eye or vision changes; and excessive, rapid weight loss as signs and symptoms of cancer. It urged parents to ensure their children have regular medical check-ups and be alert to these unusual symptoms.

An important symptom of cancer is pain, which parents did not mention. According to the Clinical Journal of Pain, pain is a common and distressing symptom of paediatric cancer, reported by both children and their parents (Petrova & Gavrilova, 2006). The study added that more than 50% of paediatric cancer outpatients reported undertreated pain. Unmanaged pain leads to declines in quality of life, difficulty with sleep, increased pain sensitivity and procedural distress, restriction of social activities, and the development of emotional and behavioural problems. Parents knowledge on the symptoms of childhood cancer which they attempted, was therefore limited.

When parents were asked of the problems and effects of

childhood cancer, they only mentioned financial and psychological problems, without considering the late health effects of cancer treatment on their child. Parents' concept of financial and psychological problems are quite in conformity with Renner & McGill (2020), that also suggested that the impact of cancer on parents and children included psychological, physical and socio-economic effects. In a similar study in Sweden, parents reported psychological distress, whose children were being treated for cancer (Carlsson, et. al., 2019). Lehmann et al. (2017) also found that knowledge of late effects of childhood cancer which included infertility was poor.

But Cohen et al. (2020) mentioned diabetes mellitus, metabolic syndrome and cardiovascular diseases as the most common treatment-related late effects of childhood cancer. Meanwhile, the cost of treating childhood cancer has been said to be effective.

According to ASCO, a study in Korle Bu Teaching Hospital (KBTH) to find out the cost-effectiveness of childhood cancer treatment, realised that the total cost of the paediatric oncology treatment was \$1.7 million or \$9,781 per newly diagnosed case per year. The cost per Disability-Adjusted Life Years (DALY) averted was \$1,034, which met the WHO Choosing Interventions that are Cost Effective (CHOICE) criterion of very cost-effective, (Renner, 2020).

Similarly, in a systematic review to find out the cost-effectiveness of childhood cancer treatment in the LMIC of El Salvador, Ghana, Mexico and Uganda, Fung et al. (2019), paediatric oncology services were found to be cost-effective per WHO-CHOICE criteria, even though parents in this research perceived it to be too expensive.

Parents' Knowledge on the Causes of Childhood Cancer

Data collected from the field showed that majority of parents did not know the causes of childhood cancer. The rest of the parents attributed it to different aetiologies. The ACS states that childhood cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells with the causes unknown. There are, however, risk factors such as tobacco use and inherited genetic mutations (Institute, 2020).

A few parents understood that the causes of childhood cancers are not known, in line with the ACS criteria of a cancer diagnosis. For example, a parent responded that he did not know the cause of cancer in children but quickly added that it could be passed from parents to the child due to genetic inheritance.

Conversely, some parents mentioned items that they

improve the knowledge on nutritional management of children with cancer.

All parents interviewed understood the general management of cancer among children. A few parents particularly mentioned surgery and that the medications given in cancer treatment are different from other conditions. According to the National Strategy for Cancer Ghana (2016) surgery, radiotherapy, chemotherapy, hormone therapy and biologic therapy (Immunotherapy) are treatment methods. The National Cancer Institute's Children with Cancer: A Guide for Parents of US added bone marrow transplantation and peripheral blood stem cell transplantation and targeted cancer therapies (NCI, 2015). Our research findings regarding parents knowledge on childhood cancer therapies are similar to Quillen et al.'s (2018) study at a survivorship clinic in the US, where the majority of parents were highly knowledgeable about the general treatments but lacked knowledge in treatment specifics.

In exploring the challenges for health care providers, parents and children who were diagnosed with cancer in Zambia, Walubita et al., (2018) also found out that there were several socio-economic and psychosocial effects of cancer on children and their families, such as access to relevant information, stress, lack of finances to meet the health needs and poor nutrition to support the treatment.

Conclusion

Childhood cancer largely has an unknown cause. Scientists and researchers are still exploring the possible causes. Health professionals have a difficult task in educating parents on the cause of childhood cancer. The study revealed that parents did not have adequate knowledge of the disease due to paucity of information available on childhood cancers. As such parents did not know causes of the disease and gave wrong reasons for it. However, a few respondents associated it with food.

In the case of managing the disease, parents demonstrated some knowledge of paediatric oncology therapy. But they worriedly expressed the view that treatments are expensive. This may affect early cancer diagnosis and treatment and subsequently lead to a low survival rate in LMICs, such as Ghana.

The findings from this research clearly showed that the knowledge of parents about childhood cancer was still low. Thus, there is a need for more health education on the disease and health financing to alleviate the financial burdens of parents seeking treatment for their children. There is a need for further studies to assess the general knowledge of the population on all aspects of childhood cancer and contribute to quality health data among paediatrics for policy decisions by governments.

Ethical Approval

Ethical clearance for the study was obtained from the Institutional Review Board of the University for Development Studies (Ref: 002/2020) and the Department of Research & Development Tamale Teaching Hospital (Ref: TTH/R&D/SR/039) to carry out the research. Respondents' consent was sought and they were assured of the anonymity and confidentiality of the data to be collected.

Competing Interests

The authors declare that there are no competing interests in this publication.

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