

**Research****Fighting Childhood Cancers in Africa Through Digital Communication****Justine John Dyikuk\****Centre for the Study for African Culture and Communication (CESACC), Catholic Institute of West Africa (CIWA), Port Harcourt, Nigeria***Abstract**

The global advancement of digital communication and its direct impact on medical sciences is a phenomenon that would remain with humanity for a long time. This is the motivation for this study: "Fighting Childhood Cancers in Africa through Digital Communication." This qualitative study on how oncologists, paediatric cancer patients and their parents in two countries with state-of-the-art pediatric cancer centers namely South Africa and Egypt as well as two countries which have poor child cancer centers such as Kenya and Nigeria employ digital communication in fighting paediatric cancer fatalities. According to the findings, childhood cancers are rife in Africa because of deficit in infrastructure, lack of adequate qualified personnel, insufficient data and modern research as well as inability to exploit the relevant tools of traditional and new media. The author suggested establishing paediatric cancer facilities, adequate funding of the sector, generation of databases and exchange of information amongst oncologists and the use of media platforms as possible ways of fighting the disease. The study concluded that Digital Communication is an indispensable modern tool for curbing the scourge of childhood cancers in Africa and beyond.

**Keywords:** Cancer; Childhood; Communications; Digital; Fight**Introduction**

The sight of watching a loved one die of cancer is painful and heartrending. It is even more agonizing if that loved is a helpless child. No doubt, this is a scenario no one would like to find himself or herself in. Since children bring joy and happiness, when they are ill, it affects the family. This shows their place in the overall wellbeing of the family. That family-wellbeing is further sickened when a lively child is suddenly attacked by cancer. Often, parents and guardians do not only panic but are often depressed looking up to either care-givers or God for a miracle. Since childhood cancers are not quite known compared to adult cancers, it is even more worrisome when the disease hits a kid.

Perhaps the frightening spate of childhood cancers in advanced countries where paediatric care is easily available is less. Even at that, children still die. This makes the situation on the African continent especially Sub-Saharan Africa more troubling. The absence of advanced paediatric

care occasioned by poor infrastructure, fetish beliefs around childhood sicknesses, general poor healthcare delivery services and lack of political-will by government have given child tumors a fertile ground to flourish in the continent. Coming from a society where medical care is expensive puts the lives of children in jeopardy.

While the fight against childhood cancer is a global phenomenon, it is further crucial in Africa. The advancement in science and technology has necessarily brought about advances in medical sciences. Diseases which were hitherto considered as dead-ends are now being handled through various modern techniques which are aimed at either curing the patient or easing the pain until nature takes its course. It is much the same with cancers, especially childhood cancer. The importance thereof, of digital communications in the fight against paediatric cancer cannot be overemphasized.

In few years, new technology has fundamentally changed the way we communicate [1]. Talking face to face or on phone is no longer considered as the most common way of interacting with each other. In its place, newer forms of communications are emerging which do not require us to talk to each other especially among younger age groups [1]. This trend is set to continue as technology advances and we move further into the digital age [1]. Consequently, mobile technologies have become a dominant mode of

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**Sub Date:** December 15<sup>th</sup>, 2017, **Acc Date:** December 26<sup>th</sup>, 2017, **Pub Date:** JDecember 30<sup>th</sup>, 2017.

**Citation:** Justine John Dyikuk (2017) Fighting Childhood Cancers in Africa Through Digital Communication. BAOJ Cancer Res Ther 3: 046.

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access, allowing us to connect at almost any time and place [2].

Apparently, engagement with the web, surfing and purchasing over the internet, is also increasingly common. [3] Most aspects of social media and digital communication are increasingly known throughout society at all levels and all life-stages [3]. These are: Blogging, micro-blogging, Facebook, Twitter, Pinterest, Snapchat (the latest craze as this article was being edited) and Skyping (video-calling on programmes such as Skype and Facetime) [3]. These provide leverage for medical sciences and fighting child cancers.

### Statement of the Problem, Aim and Method of the Study

Around 250,000 children are said to develop cancer worldwide yearly [4]. Nearly 450 million children live in Africa [4]. Yet, in the entire continent, there are only four specialist children's hospitals compared to about 20 in the United Kingdom [4]. Studies have indicated that while one in 600 children in South Africa are affected by cancer before reaching 16 years of age, more than 40 percent of children in the country with cancer have no access to a specialist treatment centre [4]. The situation is worse in Sub-Saharan Africa which has the highest rate of child mortality in the world. It is estimated that one in 9 African children die before reaching the age of 5. Sadly, people in the region also suffer from widespread poverty [5]. This is despite the fact that information about paediatric oncology in most of Africa is not widely available [6].

Studies have also disclosed that majority of children with cancer live in low and middle-income countries (LMICs) with little or no access to cancer treatment [7]. With high levels of poverty and the lack of equipped healthcare facilities, diagnosis of cancer often takes place too late or the patient is forced to seek medical assistance from primary healthcare facilities which lack sophisticated equipment and trained staff [5].

According to the International Society of Paediatric Oncology (SIOP), treating cancer in Africa has been problematic as it largely remains an unknown disease within communities especially in rural areas [5]. Also, information about paediatric oncology in most of Africa is not widely available [6]. Although HIV/AIDS infections amongst children remain a critical health priority in sub-Saharan Africa, cancer is emerging as a major cause of childhood deaths on the African continent [5]. Perhaps this is noted that "Childhood cancer in Africa, like most non-communicable diseases on the continent, is of growing concern. These diseases are however increasingly garnering the attention needed to address them in the coming years" [8].

As such, the study sets before itself the task of:

1. Doing a résumé on the extant efforts at paediatric care in Africa;
2. Making a case for childhood cancers in Africa towards fighting the disease head-on;
3. Advancing digital communications as vital tools for fighting childhood cancers in Africa;

4. Stating the limitations of digital communications in fighting the scourge of cancer among children in the region;

5. Making a proposal for the establishment of childhood cancer-related health centres in the continent, and

6. Stimulating more research and data on clinically based oncology and kid cancers.

The study employs the qualitative method of study drawing views of scholars about two countries which have state-of-the-art pediatric cancer centers namely South Africa and Egypt as well as two countries which have poor child cancer centers such as Kenya and Nigeria.

### Deconstruction of Concepts

#### Childhood Cancer

Childhood cancer is the tumor which occurs in children below the age of 15 years [6], [9]. Unlike in developed countries, paediatric tumors which affects children in Africa include: lymphomas, nephroblastoma, Kaposi sarcoma and retinoblastoma [6].

#### Types of Paediatric Cancer

According to the American Cancer Society (2017) [10], the common types of cancers which often occur among children are:

#### Leukemia

Leukemia is the most common type of paediatric cancer which makes up for about 30% of all paediatric cancers [10]. Also regarded as bone marrow and blood cancer, the tumor could be acute lymphocytic leukemia (ALL) and acute myelogenous leukemia (AML) [10]. Children who suffer from the disease experience bone and joint pain, fatigue, weakness, pale skin, bleeding or bruising, fever and loss of weight [10]. To stop the spread of acute leukemia, patients are treated through chemotherapy [10].

#### Brain and Spinal Cord Tumors

Being the second most common cancers in children, brain and central tumors constitute about 26% of paediatric cancer [10]. Most brain tumors in children start in the lower parts of the brain such as the cerebellum or brain stem [10]. Common symptoms of brain and spinal cord disease are: Headaches, nausea, vomiting, blurred or double vision, dizziness, seizures, trouble walking or handling objects [10]. The available treatment for each type of brain or spinal tumor differs [10].

#### Neuroblastoma

These are cancers which start in forms of nerve cells found in a budding cell [10]. Neuroblastoma constitutes about 6% of childhood cancers. This type of cancer develops in children who are less than 10 years old [10]. It usually attacks the abdomen although it can also start from any part of the body. The disease causes bone pain and fever in patients [10].

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## Wilms Tumor

Also known as nephroblastoma, wilms tumor often attacks one kidney but rarely two in children of about 3 - 4 years old [10]. Wilms tumor accounts for about 5% of cancers in children. Children who suffer from the disease experience the swelling of the abdomen, fever, pain, nausea and lack of appetite [10].

## Lymphomas

Lymphomas cancer starts in the cells of the immune system which are referred to as lymphocytes [10]. They most often start in lymph nodes and tissues such as tonsils or thymus and affect the bone marrow and other organs [10]. Patients suffer, weight loss, fever, sweats, fatigue and lumps in the skin in the neck, armpit or groin [10]. The most common types of lymphoma cancer found in both children and adults are: Hodgkin lymphoma and non-hodgkin lymphoma [10]. While the former accounts for about 3% of childhood cancers, non-hodgkin lymphoma makes up about 5% of childhood cancers [10].

## Rhabdomyosarcoma

Rhabdomyosarcoma constitutes about 3% of paediatric cancers [10]. It develops from the muscles that we control to move parts of our body [10]. Although it starts in the cells which develop into skeletal muscles, rhabdomyosarcoma can also begin anywhere in the body. Among the common symptoms are pain and swelling [10].

## Retinoblastoma

This is the cancer of the eye which makes up for about 2% of paediatric cancers [10]. Children who suffer from this cancer are often about 2 years old [10]. These tumors can be discovered when doctors or parents examine a child's Eye And Flash Light On It. When The Pupil Looks White Or Pink, The Disease Is Palpable [10].

## Bone Cancers

Bone cancer which often develop in the bones occur in older children and teenagers [10]. It makes up for about 3% of childhood cancers [10]. Top among the types of bone cancers are, osteosarcoma and ewing sarcoma [10]. While osteosarcoma often develops in areas where the bone grows quickly around the bones of the legs or arms causing pain at night and swelling, ewing sarcoma attacks the bones of pelvic, the chest wall or in the middle of the long leg bones causing bone pain and swelling [10].

## Digital Communications

According to certain scholars, digital communication or media is the way people use computers and other electronic devices to send digital messages to one another [3]. They further noted that it is an attempt to embrace all that print and paper media could do as well as takes over from other telecommunications media such as the phone to radio and TV. They stressed that it is also the principal medium for communication in the

21st century stating its various forms as: Digital radio, digital TV, digital newspapers, digital letters (email), digital notes (Twitter), digital greetings cards, digital books, digital Bibles, digital tools and digital offices [3].

## Literature Review and Discussion

### Paediatric Cancers and Patterns of Distribution in Africa

According to studies, "childhood cancers are very rare and may differ from adult cancers in the way they grow and spread, how they are treated, and how they respond to treatment" [9]. The most common forms of childhood cancers are: Leukemia which begins in blood-forming tissue such as bone marrow, lymphoma which starts in the cells of the immune system, neuroblastoma begin in certain nerve cells, retinoblastoma which commences from the tissues of the retina, wilms tumor described as a type of kidney cancer and cancers of the brain, bone, and soft tissue [9].

Cancer affects the lives of children all over the world, but it is estimated that up to 90 percent of children with cancer live in developing countries [8]. In low income countries where access to healthcare is limited, childhood cancer survival rates are as low as 10 to 20 percent [8]. Although HIV/AIDS infections amongst children remain a critical health priority in sub-Saharan Africa, cancer is emerging as one of the major causes of childhood death on the African continent [8]. As such, treatment of childhood cancer in Africa is of growing concern [8].

In order to ascertain the regional variation in the incidence of childhood malignancies in Africa, a survey was conducted in 21 centers from 18 Sub-Saharan African countries to arrive at a comprehensive analysis of the distribution of childhood cancer in Sub-Saharan Africa. According to the research which included cases from 1985 to 2011, the proportion of childhood cancer out of all cancers ranged between 1.4% in Ghana to 10.0% in Rwanda [6]. In Southern Africa, Kaposi sarcoma was the most common malignancy in children in Mozambique (15.8% of all cases) and the second most common in Zambia (15.6%) and in Malawi (12.4%) [11].

In Eastern Africa, Uganda recorded Kaposi sarcoma as the most common tumor in children (22.0%), while two Kenyan centers reported mainly Burkitt lymphoma (25.1 and 37.1%, respectively). In Central Africa, Congo classified retinoblastoma as the most common childhood cancer with an incidence of 20.1% [11]. Also, in Western Africa, Non-Hodgkin lymphoma was the most common in Ghana (53.6%), in Ivory Coast (73.6%) and in Mali (32.7%) [6]. Nephroblastoma remains the most common solid tumor in Africa exceeding 10% of total paediatric cancers in many countries (Rwanda 21.3%, Senegal 22%, Ivory Coast 14.5%, Mali 17.6%, Congo 15.5%, etc) [6].

In a study titled "Parent-child communication about the cancer experience in families of paediatric cancer patients," Robins (1997) discovered that parents and children were more open than closed and more frequent than infrequent in their communication while indicating differences between informational and emotional communication [12]. The author

suggested that demographic variables do not relate to communication. While social variables showed primary relationships and emotional communication, medical variables revealed primary relationships with informational communication [12]. The scholar also noted that openness and frequency of communication accounted for significant variance in family functioning and in social functioning [12]. Results of the study underscored the clinical importance of communication in dealing with childhood cancers [12].

### **Factors Militating against the Fight of Childhood Cancer in Africa**

**Lack of Specialist Treatment Centres:** Lack of paediatric health centres in the region [5] is a clog in the wheel of progress in terms of addressing the threatening effects of child tumors. Inadequate diagnostic capability and a disturbing paucity of treatment facilities especially those designed for childhood cancer in most sub Saharan African countries [13] increases the chances of death of paediatric cancer patients.

**Widespread Poverty and Expensive Treatment:** There is widespread poverty in Africa [5] , [7] which affects the spread of paediatric cancer in the continent. Also, “the prohibitive cost of chemotherapy drugs, few radiotherapy facilities as well as a lack of bone marrow transplantation technology, compounds the problem making treatment expensive” [13].

**Lack of Proper Diagnosis and Insufficient Personnel:** In most African countries, childhood tumors are largely unknown especially in rural areas [5]. Another scholar [8] concurs that it is problematic to treat cancer in Africa because it remains a largely unknown disease within communities. “The problem of insufficient health care workers trained in paediatric cancer, especially oncologists, pathologists, surgeons, nurses, pharmacists and palliative care experts needs urgent attention” [13] is another looming danger which frustrates the fight against childhood cancers in the continent.

**Ignorance and Illiteracy:** Due to ignorance, most patients reach out to doctors when it is too late [8]. There is also the challenge of late diagnosis due to lack of awareness of cancer in children among guardians as well as insufficiency of health care workers. There is also the problem of poor access to treatment facilities [13].

**Inadequate Data and Research:** Like Kenya, most countries in Africa do not have an updated population based cancer registry [13] which makes it difficult to know the cases and even attempt treatment of the disease. The scholar further stresses that “Treatment protocols are rarely standardised, evidence based or adapted for each developing country’s capacity. There’s little research into local childhood cancers and especially clinical trials. This is a sorry state of affairs given that the best treatments in cancer are often in the context of a clinical trial” [13].

**Extant Efforts at Paediatric Services in Africa and Possible Remedies of Childhood Cancers:** Successful twinning programmes, like those in Malawi and Cameroon, as well as the collaborative clinical trial approach

of the Franco-African Childhood Cancer Group (GFAOP), provide good models for childhood cancer treatment [7]. To provide state-of-the-art paediatric healthcare centers in Africa aimed at addressing child cancer cases, plans are completed in South Africa for the establishment of an oncology unit at the Nelson Mandela Children’s Hospital. The oncology unit of the ultra-modern Children’s Hospital is poised to change the stark statistics of children dying of cancer and provide cutting-edge paediatric services in South Africa and across the continent [5] , [14]. Importantly too, it is observed that “Paediatric patients from the Middle East and North Africa receive care at Children’s Cancer Hospital Egypt 57357, the world’s largest pediatric cancer hospital. In the six years since the hospital opened, the cure rate for children has risen from 20 to 30 percent up to 60 to 70 percent, and, for some diseases, now approaches 90 percent” [15].

Aside for the new Mandela hospital, there are only four other hospitals in Africa which serve nearly 450 million children [16]. In a study carried out between 2011 and 2013 which involved 49 health professionals who are taking care of children with cancer from 38 hospitals in 29 African countries, it was discovered that care was provided often by non-paediatric oncologists [11]. The research further disclosed that radiotherapy was available in 21/38 hospitals, palliation in 27/38 and tumor registries in 21/38 centers [11]. The study surmised that capabilities for care of children with cancer vary widely [11]. It further recommended improving care for paediatric cancer [11]. According to the researcher, the aim of the study was “to provide an overview of childhood cancer and resources for patient care in a cross-section of African hospitals” [11].

According to available records, in 2016, more than 20 African countries did not have any facilities with a working radiotherapy machine which is considered as the most common form of cancer treatment [8]. In a research, *Atomic Energy Agency* discovered that there are only a few hundred radiotherapy machines in a continent of more than a billion people and that majority of the said machines are in few countries like South Africa, Egypt, Morocco, Tunisia, Nigeria and Algeria [8]. Based on these findings, the study surmised that cancer is a death sentence in most African countries [8].

However, there are indications that Baylor College of Medicine and Texas Children’s Hospital, with additional funding from the Bristol-Myers Squibb foundation have unveiled an initiative to address what is called Global HOPE (Hematology-Oncology Paediatric Excellence) - a plan which seeks to partner with local governments to create a network of providing paediatric cancer-care facilities in both South and East Africa. With a plans to have a pilot initiative in Botswana, Malawi, Uganda and other African countries are said to follow in that order [8]. This initiative is also aimed at detecting and treating childhood cancers as well as creating a blueprint for childhood cancer-related diseases for other countries to follow [8].



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**Digital Communications as Vital Tools for Fighting Childhood Cancers in Africa:** In our age and time, the networks are increasingly becoming part of the very fabric of society, inasmuch as they bring people together on the basis of these fundamental needs. Social networks are thus nourished by aspirations rooted in the human heart [17] (Benedict XVI). Whether we like it or not, we are caught up in an irresistible digital environment. This digital environment offers opportunities which medical sciences and oncologists are exploiting for the advancement better health in the world. One significant role that digital communication plays in the world is the fact that it is a game-changer in human interactions. This is even more crucial in the relationship between doctors and their patients and physicians and parents who have to be at work and leave their children who are suffering from cancer in their care.

Buttering the significant of this age, Benedict XVI noted that: “The digital environment is not a parallel or purely virtual world, but is part of the daily experience of many people, especially the young. Social networks are the result of human interaction, but for their part they also reshape the dynamics of communication which builds relationships: A considered understanding of this environment is therefore a prerequisite for a significant presence there” [17]. This underscores the place of interpersonal relationship and building trust amongst people. More than that, digital communication allows for communication with those we cannot speak to already [3].

We can also have guest speakers from all over the world using Skype, FaceTime or a whole host of apps [3] to speak to patients about chances of survival. Providers can use and maintain separate email accounts for professional and personal communications in reaching out to cancer patients through creating a “dual-citizenship” approach which separates professional and private personae [3]. In that way, clinicians can leverage the benefits of this method of communication while managing their professional responsibilities [2].

Oncologists and parents or guardians of children suffering from cancer must not only understand how to exist in the digital age but also how to read it, speak into it, have proper passive and active encounter and above all, have an interaction within the digital age [3] concerning getting medical attention for their loved ones. It is also true that through digital communications or development of social networks, people are engaged in building relationships [17].

A new study suggests that parents and family members are increasingly turning to the internet to find and actively share information about their child’s health care. It also informs that information can be shared on Twitter for endogenous reasons as well as to meet the needs of others. It however proposes an increased understanding of motives for sharing information about a child’s cancer journey and also establishing a theoretical framework for access to further knowledge in this area [18]. Since digital communication requires listening, watching, collaboration and engagement, doctors are able to cash in on its values of transparency,

authenticity and passion [3] in dealing with patients and their loved ones who are desperately in need of cure. It’s being suggested that it can also provide benefits for patients, including improved access to provider expertise and portability of health information. In its guidance on the use of email to assist patients, the American Medical Association advised physicians to: 1) Refrain from starting a physician-patient relationship by email; 2) Maintain the same ethical responsibilities when communicating through this medium; and 3) Inform patients about the risks and limitations of email before communicating that way [2].

Because digital communication transcends the geographical and the physical as well as the limitations of time and presence, [3] oncologists from Africa could consult experts from other climes using Skype, FaceTime on new paediatric cancer cases in view of getting new insights towards providing adequate medical care. Digital communications or development of social networks help people to look for answers to their questions, finding intellectual stimulation and sharing knowledge and know-how [17].

Digital communication can enhance the presence of that fellowship into people’s everyday lives through the week [3]. What this means is that family and friends who have children suffering from cancer can reach out to the patients on twitter, Facebook or Skype to encourage them not to lose faith. Accordingly, Twitter is one of many online platforms used by parents of children diagnosed with cancer to share information related to their child’s cancer experience [18].

It has also been observed that digital communication offers excellent crosscultural training opportunities [3] amongst doctors across Africa and beyond which could further leads to creativity and innovation in the advancement of medical sciences. This resonates with the submission of Benedict XVI that: “...the development of digital social networks which are helping to create a new “agora”, an open public square in which people share ideas, information and opinions, and in which new relationships and forms of community can come into being” [17].

Journaling is another modern strategy which is used to fight the scourge of childhood cancers. It has been discovered that journaling helps paediatric cancer patients to find meaning in their struggles. It also helps in addressing children’s emotional needs and building resilience and when they discover that their issues are laid out in a book, it makes them feel heard, understood, appreciated and not left alone [19].

**Limitations of Digital Communications in the Fight Paediatric Cancer in the Region:** We shall consider some limitations of digital communications in the fight against cancer. It has been established that digital communication has expressive vacuum or limitations [20]. This paper shall consider four limitations which include:

First, while mobile technologies have become a dominant mode of access, allowing us to connect at almost any time and place, it doesn’t achieve

that without a commensurate risk to privacy. When healthcare providers use these means to communicate with patients, professional duties of confidentiality may also be placed in jeopardy. Most hospitals have poor cybersecurity. If email, mobile devices and networks are not secure, then communications are at risk. People's devices could get lost or stolen which puts the information contained therein at greater risk of leakage [2].

Second, the inability to consider whether email is an appropriate channel of communication or not constitutes a limitation of digital communication as a tool for fighting paediatric cancer. Chances are that in a mediated communication between a child who is suffering from cancer and a doctor, the audience and purpose of communication are not considered. The challenge remains, is this a casual communication, an electronic consultation with a patient, or an electronic "curbside" consultation with a colleague? Therefore, in considering the channel of delivery, sometimes face-to-face dialogue is more appropriate especially if the issue is sensitive or complex [2].

Third, another limitation of digital communication in tackling paediatric cancers is the lack of access to technology and poor accessibility of health information provided to the public. The existence of a digital divide creates an epidemic in health illiteracy. The more comprehensive and sophisticated use of the internet and the subsequent increased gains among the high eHealth literate create new inequalities in the domain of digital health information. It is argued that communicating information is not enough because patients require education to make it meaningful to their health [2]. As such, patients must have access to, understand and synthesize information to make it relevant to their lives and health states. This is the only way electronic communication technologies can achieve its potential in enabling or improving health and healthcare.

Fourth, while encouraging patients to use the Internet to garner more information may be necessary, most times if patients are not told that the situation may require consent and the explanation of the risks and benefits given, it creates a huge challenge. Other risks include the fact that technology and security protocols can fail, health information may be leaked to third parties and information may become fragmented as it is dispersed through a variety of mediums. The potential benefits and burdens need to be relayed so that patients can knowingly assent to them [2].

## Result of Findings

### 1. A. Factors Militating against the Fight of Childhood Cancer in Africa

Factors Militating against the Fight of Childhood Cancer in Africa	
1.	Lack of specialist treatment centres and poor cybersecurity in most hospitals
2.	Widespread poverty and expensive treatment accounts for numerous pediatric cancer patients who could not access medical care
3.	Lack of proper diagnosis and insufficient personnel increases chances of childhood cancers
4.	Ignorance and illiteracy accounting for increased rates of the disease in Kenya and Nigeria
5.	Inadequate data and research in the sample countries
6.	Two significant extant efforts in South Africa and Egypt at paediatric services in Africa

Source: Author's views

### 4. D. Limitations of Digital Communications in the Fight Paediatric Cancer in Africa

Limitations of Digital Communications in tackling Childhood Cancers	
1.	Health information may be leaked to third parties which creates a risk to privacy.
2.	Information may become fragmented as it is dispersed through a variety of mediums.
3.	The existence of a digital divide creates an epidemic in health illiteracy.
4.	Technology and security protocols can fail

Source: Author's views

### 2. B. Extant Efforts at Paediatric Services in Africa and possible treatment

Extant Efforts at Paediatric Services		Possible Treatment	
1.	Clinical collaborative twinning Programmes	1.	In 2015, the National Academy of Sciences, paediatric cancers could be treated with radiotherapy with radiotherapy machines, integration of paediatric palliative care and psychosocial care.
2.	Only South Africa and Egypt have state-of-the-art paediatric healthcare centers	2.	Palliation, improved clinical trials and chemotherapy

Source: Author's views

### 3. C. How Digital Communication Can Fight Childhood Cancers in Africa

Digital Communication as tool for Fighting Paediatric Cancers	
1.	Digital Communication platforms like Facebook and Twitter helps in building relationships between doctors and children suffering from cancer.
2.	Parents and family members now turn to the internet sources such as Google and emails to look for and actively share information about their children's health care.
3.	Oncologists from Africa are capable of consulting experts from other climes using Skype, FaceTime on new paediatric cancer cases in view of getting new insights towards providing adequate medical care.
4.	Digital communications or development of social networks help people to look for answers to their questions, finding intellectual stimulation and sharing knowledge and know-how
5.	Family and friends who have children suffering from cancer can reach out to the patients on twitter, Facebook or Skype to encourage them not to lose faith.
6.	Twitter is one of many online platforms used by parents of children diagnosed with cancer to share information related to their child's cancer experience.
7.	Journaling helps paediatric cancer patients to find meaning in their struggles.

Source: Author's views

## Recommendations

### Screening, Palliative Care And Follow Up

Since this paper has decried the lack of adequate cancer-screening centers in Africa, a way out is having routine screening, access to palliative care and long-term survivorship follow-up care across multiple transition points as well as having care settings. To achieve this, it is appropriate to minimize, monitor and treat side effects and late effects across the care continuum [21]. This is a task for various governments in the continent and stake-holders in the health sector. In a situation where medial tourism to Asia, Europe and America holds sway, access to screening, palliative care and follow up for children suffering from cancer would remain a far cry in Africa.

### Advocacy And Awareness Creation

Advocacy and creating public awareness are key points if Africa is to move towards tackling childhood cancers [13]. An expert agrees that advocacy and creating public awareness are essential steps to tackling childhood

cancers [8].

### 8.3 Putting State-Of-The-Art Facilities In Place

There is an urgent need for establishing state-of-the-art centre for enhancing cancer-related paediatric care. Children health care facilities like the Nelson Mandela Children's Hospital in South Africa which was Mandela's lasting wish for children of Africa and his legacy for future generations [5] should be replicated throughout the African continent.

### Observing National And International Cancer Day

Holding international and national cancer awareness days should be coupled with continuous awareness efforts [13]. This would help in creation of awareness about the dangers of childhood cancers and how to access proper medical care.

### Indefectible Role of Ngos

Non for Profit Organisations or Non Governmental Organisations (NGOs) as they are called in this clime have an indispensable role to place in reducing the spate of cancer among children in Africa. Organisations like Islamic Relief USA and Islamic Relief UK have made a difference on the African continent through contributing \$7.7 million for the hospital by the Islamic Relief global family as well as donating \$1.75m and \$2.5m in that order. In fact, they have succeeded in removing barriers to high-quality healthcare [4]. Groups specifically targeting children have been set up, like the Kenya Childhood Cancer Trust and Hope for Cancer Kids. Health care financing for all aspects of treatment of childhood cancers are now being considered by the National Health Insurance Fund [13].

### Addressing Health Disparities and Synergy Between Rich and Poor Countries

To address childhood cancer in Africa, it is necessary to examine the impact of diagnosing and treating the disease on family food, energy and housing security as well as emerging care models aimed at addressing health disparities [21]. To this end, establishing twinning programmes linking centers in resource-rich countries with those in resource-limited is crucial. Since it has worked well in Ethiopia and Ghana and is improving capacity and patient survival [13] in those countries, it can be replicated in other African countries.

### More Efforts at Improved Clinical Trials

Clinical trials that can improve survival as well as enhance capacity need to be performed [13]. As part of these clinical trials, "Developing, embedding, and documenting patient-and-family-reported outcome measures and findings to support delivery of optimal care that helps minimize pain, symptoms, distress, and other suffering as part of disease-directed treatment and follow-up care" [20] is essential.

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### Debuting a JPCSS Initiative

Since doctors work hand in hand with chaplains and psychologists in various hospitals, this paper proposes a Joint-Pediatric-Cancer Counseling and Spiritual Support (JPCSS) which provides a platform for patients, their parents, doctors, psychologists and chaplains to seek divine intervention as well as counseling for child-cancer cases given the lack of automatic cure for the disease. This could take the form of prayer and counseling session which seeks to deepen the faith of patients and their parents in God who is able to turn a worse situation around for good. This is also to dispel the myth that childhood cancer is a visa to death. "Improving and expanding early integration of paediatric palliative care and psychosocial care in all care settings to support emotional and physical functioning, care continuity and goal-concordant care for the affected child and family members" [21] is equally vital.

### Ongoing Training for Health Care Givers and Research

The International Society for Paediatric Oncology offers training information. Training can be more cheaply offered in other African countries with established training programmes including South Africa, Egypt and Ethiopia. Twinning could also help less well established programmes in other African countries [13]. There should be more efforts aimed at describing the current status of childhood cancer treatment in Africa as documented in publications, dedicated websites and information collected through surveys [7]. Studies have shown that a key strategy in nipping childhood cancers in the bud is fostering research and drug/therapeutic and diagnostic development for paediatric cancers which prioritizes improved survival and good quality of life which is focused on data captured in paediatric oncology registries and other databases aimed at better care integration for children with cancer [21].

Also, debuting journals like the *Digging Deep Journal* which is a resource material created specifically for children and teens facing serious or chronic illness [19] would go a long way in fighting the disease. This would help the patients to "safely express their feelings about their diagnosis and share their journey with cancer, or whatever health challenge they face. As a keepsake, the journal becomes a tribute to their courage and bravery in fighting illnesses such as cancer" [19]. These resource materials are able to strengthen communication amongst families whose children are cancer patients.

### Initiating Health Insurance Funding for Children with Cancer:

Studies in public hospitals have shown that children with cancer who have health insurance funding have better chances of survival than those who do not. While there is still much to be done, these efforts will yield fruit with time. More coordination of the various stakeholders needs to be made to avoid duplication of efforts [13].

### Enhanced Compassionate Care and Communication with Patients and Family

*One of the ways of combating paediatric cancers* is through compassionate communication with the patient and the family concerning the findings, diagnosis, *treatment* options, plan and prognosis [22] of the disease. This further entails enhanced access to quality end-of-life care in all ramifications and bereavement care for families who have lost a child to cancer. This is in addition to facilitating a clear communication and transition from acute cancer care to long-term follow-up care across the life spectrum [20].

### Conclusion

This paper has established that treating paediatric cancer can be more cheaply obtained in African countries if organisations like the International Society for Paediatric Oncology [13] offer free training programmes for oncologists. We have also seen that the beauty and variety of digital communication creates an avalanche of opportunities for medical sciences especially as it relates to paediatric cancer. It is certain that when it is engaged in a wise and balanced way, it not only fosters various forms of dialogue and debate which, if conducted respectfully and with concern for privacy, responsibility and truthfulness, can reinforce the bonds of unity between individuals and effectively promote the harmony of the human family [16]. This is truer between caregivers and their patients.

To this end, there is a "great need for specialist paediatric services on the African continent, if the next generation of Africans are to survive and flourish" [5]. Another expert upheld this view when he reiterated that all efforts should be directed in developing functional and reliable childhood cancer registries across the African continent [6]. Health care experts must influence health-care policies to facilitate access to cancer care for all children in Africa [7]. This is in addition to the imperative of establishing broad-based cancer-related-centers for further research which includes clinical trials to identify suitable treatments towards improving treatment outcomes [13] in the continent. In fighting the menace of paediatric cancer, there is equally urgent need for increased multinational investments in cancer research and the application of existing cancer control knowledge across all segments of the society [23].

While digital communication is crucial to the fight against paediatric cancer, a patient-and-family-centered approach in paediatric health care is also important because parents are involved in making key decisions about their child's health care and advocating for the best interest of the child [17]. As such, in fighting child cancers, the exchange of information between kids suffering from the disease and their parents or doctors can become a true communication, develop into full blown friendships and facilitate real communion. This great potential can be achieved if people make a conscious effort to be authentic bearing in mind that in communication, it is not only ideas and information that are shared but ultimately our very selves too [16].



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