Original Article

Oncology Education in the Nigerian Medical Curriculum: A Cross-Sectional Review

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Abstract

Background: The quality of a physician is arguably related to the depth and quality of medical education received. As cancer devastates the health and economy of developing countries like Nigeria, it becomes increasingly important for physicians in these countries to be equipped with basic knowledge and skill to adequately detect, diagnose, refer and manage common cancers. This study reviewed exposure to oncology training as a component of the medical school's curriculum in Nigeria from the trainee's perspective.

Methodology: In a cross-sectional review of medical students and recent graduates of universities across Nigeria, data were collected using a predesigned tool.

Results: Entries from 228 participants were recorded and analysed. The mean age of study participants was 25.4 ± 2.9 years; 53.1% were female. Respondents were primarily in government-owned medical schools. Over half (55.7%) reported none to minimal oncology exposure during their preclinical classes, 38.6% reported oncology as a distinct clinical rotation in their medical schools and only 44.3% spent time in at least one oncology unit during clinical rotations. The mean duration spent in oncology units was 3.4 weeks.

Conclusion: Doubtless, Nigeria needs more oncology specialists but, it is just as important for even general practitioners to have basic oncology knowledge. This study shows slow exposure to oncology training for medical students, which has contributed to the lack of confidence in treating common cancers seen in Nigeria and low desire among medical students to specialize in oncology. As cancer incidence rises, the need for oncology knowledge in the general physician community is increasingly evident.

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Quick Response Code:

Introduction

The evolution of the human diet, increase in the prevalence of sedentary lifestyle, and the consumption of tobacco and alcohol has led to an increase in the incidence of obesity, which along with other less clearly delineated factors, has resulted in a concurrent rise in the global incidence and prevalence of non-communicable diseases including cancer. Physicians living and working in developing countries, such as Nigeria, historically had to contend primarily with infectious disease conditions. However, recent studies have shown that as urbanisation, along with western diets, habits, and lifestyles are increasingly adopted, developing countries, plagued with inadequate infrastructural and financial resources, as well as inadequate training, are unable to effectively manage the disproportionate emergence of resultant diseases.

Recent Global Burden of Cancer Study (GLOBOCAN) data places the global cancer burden at 18.1 million new cases per annum, with an estimated 9.6million cancer-related deaths. Within these statistics lies a disproportionate skewing of mortality towards developing countries like Nigeria. In West Africa, the cumulative risk of cancer is 10.1% in males and 12.7% in females and data continue to predict an upward trend in these figures, particularly in developing countries. Physicians, therefore, intending to work in this evolving environment in developing countries like Nigeria must be versatile and armed with extensive clinical knowledge and skills, as cancer management becomes increasingly prevalent in their practice.

A critical factor impacting the quality of clinicians and by extension, the quality of service they provide is the medical curriculum used in their training. It is well-founded that the curriculum not only directly impacts the level of exposure, and clinical acumen of the physician but closely relates to the confidence a physician demonstrates in managing patients. As such, to ensure the best quality of care for patients living with cancer in Nigeria, current and future generations of medical professionals must be trained to have in-depth knowledge of oncology ranging from a solid understanding of disease pathology to clinical presentation and diagnosis. Additionally, they must acquire skills in essential management of malignant diseases across the disease trajectory regardless of their role or level in the hierarchy of primary, secondary, or tertiary healthcare and specialisation.

There is not a lot that is currently known or has been documented in formal literature regarding the scope of the Nigerian medical curriculum especially as it regards the inclusion of oncology in its basic training of physicians. This knowledge becomes more relevant in the light of the acute deficiency of expertly trained specialists in proportion to the country's population which translates into generalists being required to provide services that should normally be reserved for specialist level care. Despite this, there is currently no clear and uniformly accepted national standard for medical school level oncology training. This study, therefore, reviewed medical student exposure to oncology training as a component of their respective school's medical curriculum and reviewed the current level of inclusion of oncology in undergraduate medical education in Nigeria from the trainee's perspective.

Materials and Methods

A cross-sectional study was undertaken between February and March 2020.Ethical approval was obtained from the health, research, and ethics committee of the Lagos University Teaching Hospital. The study population included medical students from privately owned, state and federal-owned universities in Nigeria. The minimum sample size calculated from a previous study carried out in Nigeria was 178.

Data collection was through a predesigned data collection tool which was available both in a physical form and an electronic copy which was made available to participants should they desire it or if they were in universities outside of Lagos. Students who had already completed the hard copy forms within Lagos were also not allowed to complete the online surveys. This was ensured by explaining the options to the participants before filling in the forms.

The predesigned tool was derived from an extensive literature review of previous studies on the same or similar subjects since no pre-existing survey tool was found. The tool was then pretested to ensure relevance to the curation of necessary data to answer the research questions. The tool consisted of four parts. The first section outlined the purpose of the study and required an indication of the respondents' informed consent. The second section solicited information about the sociodemographic characteristics of respondents including their age, sex,

ethnicity, and marital status. The third section contained information about the educational history of respondents, including prior university degree, name, location, and type of medical school, medical school level, and the format of medical education (teaching delivery method). The fourth section focused on oncology as part of the medical curriculum, including questions that explored how often oncology was included as part of preclinical and clinical training, as well as the respondent's comfort and confidence level in diagnosing, referring, or proposing treatments for common cancers. In total, the tool contained 30 questions, consisting of 'multiple choice' and 'fill in the blanks.'

Convenience sampling methodology was used until the expiry of the study period. The online survey tool was shared on groups and social media platforms for students in the respective institutions within Nigeria and was made available within the eight-week study period, with weekly reminders shared on the platforms. A total of 250 hard copy tools were distributed.

All data collected were recorded and analysed using the Statistical Package for Social Sciences (SPSS) software (version 20.0). Results were presented in frequency tables, graphs, and figures.

Results

In addition to the online survey forms, a total of 250 hard copy forms were distributed among students; 112 hard copies forms were received, representing a response rate of 44.8%. Additionally, 116 online surveys were completed. Entries from the 228 study participants were recorded and analysed. The mean age of study participants was 25.4 ± 2.9 years. There were more female (53.1%) than male respondents (46.9%). The majority of respondents were single (90.8%) and had no prior university degree (76.8%) (Table 1).

Respondents were primarily distributed in government-owned medical schools almost half were affiliated with federally owned hospitals (45.6%) hospitals, 43.4% were affiliated with state-owned hospitals and the remaining 11.0% were privately-owned institutions. In general, participants were from 16 medical schools across Nigeria. The most common educational system was mixed (self-taught and didactic), in which students learned via both self-created tutorials and presentations, as well as didactic lectures and demonstrations (Table 1).

Of all respondents, <2% (1.8%) selected oncology as their proposed area of specialisation. The most commonly considered area of specialisation was internal medicine (36.0%) (Figure 1). Among86.7% of respondents who selected a proposed or favoured specialty, the reason for their choice stemmed from passion or interest that developed either during classes or clinical rotations.

Over half (55.7%) of respondents reported minimal to no oncology exposure during their preclinical classes (Table 2). For those who reported oncology exposure in preclinical years, 29.9% reported taking an average of one to three classes, most commonly in pathology (48.2%), haematology (35.6%), or pharmacology (5.8%).

One-third of study respondents (38.6%) reported oncology as a distinct clinical rotation in their medical schools. However, in 79.6% of these, the rotation was elective, and not all students were able to participate in the oncology rotation. Only 44.3% of respondents spent time in at least one oncology unit during their clinical rotations. The mean duration of time spent by respondents in oncology units was 3.4weeks in total (Table 2).

Assessment of the respondent's ability to evaluate, diagnose, and manage patients with the most common cancer types in Nigeria revealed a relatively low percentage of respondents who reported they felt comfortable evaluating (31.1%), diagnosing (28.9%) or treating (13.6%) patients with breast cancer, the most common female cancer in Nigeria. These figures were lower with colon cancer. Less than one-fourth of all respondents reported they felt comfortable evaluating (19.3%), diagnosing (17.5%), and managing (7.5%) patients with colon cancer (Figure 2).

Table 1: Sociodemographic characteristics of respondents

Variables (n=228)	n(%)
Gender	
Male	107(46.9)
Female	121(53.1)
Marital status	
Single	207(90.8)
Married	21(9.2)
Prior university degree	
Yes	53(23.2)
No	175(76.8)
Type of medical school	
Government (Federal) medical school	104(45.6)
Government (State) medical school	99(43.4)
Private medical school	25(11.0)
Level	
Preclinical	5(2.2)
Clinical	187(82.0)
Graduate (<3yrs)	36(15.8)
Format of medical education	
Self-Taught	1(0.4)
Mixed self-taught & Didactic	209(91.7)
Didactic	18(7.9)

Table 2: Oncology in the medical curriculum

Variables (n=228)		n(%)
Is Oncology taught as a distinct subject in preclinical years?		
Yes		47(20.6)
No		181(79.4)
Is oncology a distinct clinical rotation during clinical years		
Yes		88(38.6)
No		140(61.4)
Inclusion of Oncology or oncology-related topics taught as part of other courses		127(55.7)
1-3 topics		38(29.9)
4-6 topics		67(52.7)
>6 topics		22(17.3)
Time spent in Oncology units in clinical rotations		101(44.3)
Adult medical oncology	4.2 ± 2.1 weeks	48(21.1)
Surgical Oncology	2.4 ± 0.8 weeks	8(3.5)
Paediatric Oncology	3.8 ± 1.2 weeks	22(9.6)
Gynaecology Oncology	3.6 ± 1.1 weeks	44(19.3)
Radiation oncology	1.9 ± 0.2 weeks	4(1.8)
Haematological oncology	4.1 ± 0.9 weeks	33(14.5)
Elective rotation in oncology	3.9 ± 1.7 weeks	6(2.6)
Ever clerked an oncology patient		
Yes		81(35.5)
No		147(64.5)
Ever in attendance during a review of an oncology patient		
Yes		54(23.6)
No		174(76.4)

Discussion

In Nigeria, the initial and consistent aim of the national medical school curriculum is to train and produce doctors who can work effectively within a health team and hierarchy to provide intensified levels of comprehensive health care to individuals in the community. In 2012, Nigeria created a national template for the Bachelor of Medicine and Surgery/Bachelor of Dental Sciences (MBBS/BDS) curriculum. This was the first documented evidence of a collaborative effort to create uniformity in the national curriculum. Within this new template, Radio diagnosis and Radiotherapy are listed under disciplines for which an increased emphasis is suggested. The suggested time frame for 200 and 300 level medical students in radio diagnosis and radiotherapy disciplines is 8 weeks. The four core postings (internal medicine, surgery, paediatrics, and obstetrics and gynaecology are assigned 20 weeks each (We

conducted this study eight years later, yet only 55.7% and 44.3% of respondents reported having oncology classes and clinical rotations, respectively, in their medical schools. Additionally, in those who reported having rotations, the mean duration of time spent in oncology units was 3.4 weeks. This finding reveals a significant deficiency in the training of these medical students which could potentially impact their management of future patients.

Admittedly, there are significant variations in the course content and teaching/learning methods of oncology in medical schools across the world, in this study, for instance, in the majority of medical schools globally, medical and radiation oncology rotations are elective, a finding in tandem with those of the current study which shows that in 79.6% of participants who reported spending time in an oncology unit, the rotation was elective.

Similar studies from all over the world have noted the under-representation of oncology in medical curricula just as seen in this study, a 2007 study by Cave et al. in the United Kingdom (UK) reviewed undergraduate oncology teaching and found that < 40% of UK medical students received any specific teaching in oncology. A 2015 study by Kwan et al. in Canadian medical schools found that from 2000–2012, only 9.0% of students (233 of 2578) opted to complete an oncology research project. From 2008–2014, oncology electives constituted only 2.2 % of all clerkship's elective choices (209 of 9596). Similarly, in Australia, McRae et al. reported a similar poor representation of oncology in medical school curricula, with only a small proportion of these schools incorporating mandatory rotations in oncology and palliative care, resulting in suboptimal levels of oncology knowledge and skill in early career doctors. These investigators concluded that while the scope of the oncology curriculum had grown for a decade, further work was needed to improve medical students' knowledge of cancer. Defining minimum curricular content, emphasizing content based on population needs, and ensuring educational delivery with the support and expertise of oncologists and non-oncologists were noted as essential next steps.

Furthermore, from the present study, it can be opined that the lack of exposure to oncology resulting in poor management of patients can be confirmed with the documented unfamiliarity and discomfort with diagnosis and management of the common cancer types seen in Nigeria. Breast, cervical, colon, and prostate cancers represent 40.8%, 24.0%, 7.6%, and 21.7% of gender-specific cancer incidence in Nigeria, respectively. When the majority of the emerging medical workforce do not feel confident in their ability to identify or make fundamental clinical management decisions for the four cancers with the highest incidence in the country even before specialist evaluation and care, the situation is critical. In a country where there is an oncologist to patient ratio of 1:>500, and a population of 200 million people, it is a matter of urgency that physicians at all levels of healthcare be able to identify cancer, refer them for specialist treatment, and offer some basic management options.

An overwhelming majority (86.7%) of respondents in this study noted that their choice of future specialty was closely related to the interest garnered in those specialties during exposure in preclinical and clinical classes, with 33% of participants going further to say that the reason for lack of interest in oncology as a career was due to lack of exposure. This finding could therefore explain the low percentage (1.8%) of participants who noted interest in oncology as a viable career specialty choice. A finding similar to that reported by Neely et al., in which the median participant was only "slightly" likely to pursue an oncological specialty during residency and/or fellowship as a result of poor exposure. The impact of this sustained low interest in oncology as a specialty could be potentially hazardous for a country that is already disproportionate low in oncologist-patient ratio, with the resultant shortage in the number of specialists sure to adversely impact patient outcomes now and in subsequent years. This, therefore, underscores the need for broader exposure of budding physicians to oncology during their training even at the undergraduate level.

It is undeniable that the multifaceted, multidisciplinary nature of oncology could be the single most critical obstacle to creating a unified teaching program for oncology. Often, the integration of oncology into the medical school curriculum is non-uniform and unspecific. As such, it is profoundly challenging for both educators and administrators to develop an explicit, consistent, reproducible, and comprehensive oncology curriculum. The resulting overlap and sometimes disjointed content may create situations that allow for, or even encourage, the omission (albeit inadvertent) of essential oncologic content. These blurred lines and overlap in different oncology disciplines and subspecialties create a lack of clarity and even add confusion in material/curriculum. There is a resultant inability of students to fully understand and experience the multidisciplinary nature of cancer care, and consequent inability to confidently and sufficiently evaluate, diagnose and refer patients seen even in their general

practice. If cancer survival in Nigeria is to improve in upcoming years, the physicians who will treat these patients must be equipped with the education and skill set they required to do it right.

Conclusion

As cancer incidence and prevalence continue to rise in Nigeria, the need for oncology knowledge even in the general physician community is increasingly evident. The current study has highlighted a gap in the training of the Nigerian medical student which could potentially worsen the survival indices of cancer patients in subsequent years. There is, therefore, a need to broaden the scope of the medical training in Nigeria, to include oncology at all levels to improve the quality of healthcare professionals produced across the board and possibly increase interest in oncology as a viable career option in coming years.

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