

## Commentary

# The Perception of Clinical Medical Students Towards Medical Research and Interest as A Career at College of Medicine and Allied Health Sciences, University of Sierra Leone

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- Clinical Medical Students
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**Abstract**

**Introduction:** Gaining research experience as a medical student is linked to a successful postgraduate research career as well as a suitable research pathway. Additionally, it enables the physician to make judgments about clinical practice that are supported by data.

**Objectives:** Aim of the study was to understand from medical students the perception of research studies as part of their course and explore factors that will influence their interest to pursue research as part of clinical practices in Sierra Leone.

**Methodology:** A descriptive cross sectional study design was used. All clinical medical students of College of Medicine and Allied Health Sciences, who were willing to participate were included in the study. Information was obtained using a self-administered questionnaire.

**Results:** Out of 207 students, a total of 157 students participated in the Study (response rate 75.8%). The mean age was 26.2 years with 58% males and 42% female. Majority 96.8% were of the opinion that research is important to the practice of Medicine, whilst 73.2% opted for mandatory research work in Medical school and 64.3% agreed students were encouraged to participate in Research. Although only a minor proportion 35% have ever participated in research apart from the mandatory student project and 83.4% intend to pursue a career in research. Barriers to students' involvement in research included lack of funding 38.2%, lack of time 26.7%, and lack of mentoring 20.4%. Predictors of research as a career among students showed both Male and Female students with increased interest to pursue a career in Research. Students who had previously participated in Research work and those with no previous experience both showed a higher proportion with interest to pursue a career in Research. The study also showed that students who had not been exposed to research, expressed interest to pursue a career in research (85.4 %) than those with previous research history (80.9%).

**Conclusion:** The majority of students have favourable perceptions about research and express interest to pursue as a career. However there is a need to create a conducive environment such as mentoring, technical and resource to enable them to use their full potential in the area of research as part of their study and towards research career prospects. One systemic change request is to institutionalise a career guidance program as part of medical education.

**INTRODUCTION**

The prevention, diagnosis, and treatment of diseases as well as the creation of legislation governing health care programming have all gained directly or indirectly from medical and health related research.

The findings from this research has resulted in data-driven decision making towards policy changes for health care delivery that are cost effective and sustainable. The importance of medical

research is fully recognized as the platform for shaping health systems interventions in both routine care and also in cases of disease outbreaks. In view of this most Ministry of Health in the region have designated Directorate or Unit of Research linking to training for human resource development, programming, implementation strategy and the overall planning to meet the national health indices target through the directorate of planning.

Generally research study is introduced at tertiary academic institutions. However the level at which it is introduced varies

according to the institution or course structure. At undergraduate level, students are exposed to research studies in the final year and they are expected to complete a research theme, write and defend the dissertation as part of the qualifying condition. In professional graduate courses such as Medicine and Pharmacy, which include clinical placement that extend the time for qualification, it is even more tasking to undertake research if the concepts are not introduced early in the course. Therefore research is viewed as a barrier to completion of their courses given the final year could be the first time for application of self-motivation and innovations required for research.

Many research studies have reported findings of negative attitudes, with students sometimes questioning the usefulness at Bachelors level. However other researchers have also documented that there is a correlation with low knowledge, negative attitude towards research and poor student performance in the research unit. Furthermore causal models have extrapolated that attitudes are mediators between past performance and future achievement.

The perception of research not only hinges on attitude but also includes personality such as effort level, learning environment, sociocultural, availability of resources and envisaged benefit. A key outcome of view that will allow for positive changes towards research studies and its potential as a career path.

Due to the fact that the majority of students are unaware of the connection between research and healthcare, it has become necessary for medical students to be introduced to research during their undergraduate training. In the University of Sierra Leone, the completion requirements for the MBBS degree at the College of Medicine and Allied Health Sciences include the submission of a project work, which requires every student to actively participate in research. The Department of Community Medicine oversees the supervision of this project work, which is mostly carried out by a Senior Lecturer, as well as the instruction of research techniques to the students. The same department is responsible for placing medical students for rural postings, and occasionally the research project is completed during the posting term.

It has been determined that developing research skills while still in college is a crucial step in producing high calibre researchers in the future. This study is to assess the perception, attitude and gain insight that will result in clear understanding from the student point of view that will allow for positive changes towards research studies and its potential as a career path.

Due to the fact that the majority of students are unaware of the connection between research and healthcare, it has become necessary for medical students to be introduced to research during their undergraduate training. In the University of Sierra Leone, the completion requirements for the MBBS degree at the College of Medicine and Allied Health Sciences include the submission of a project work, which requires every student to actively participate in research. The Department of Community Medicine oversees the supervision of this project work, which is mostly carried out by a Senior Lecturer, as well as the instruction of research techniques to the students. The same department is responsible for placing medical students for rural postings, and occasionally the research project is completed during the posting term.

It has been determined that developing research skills while still in college is a crucial step in producing high calibre researchers in the future.

Given that the disease load is larger in developing nations relative to the availability of doctors, this will be beneficial to them. Unfortunately, it has been found that, when compared to students in developed countries, those in poor countries have more difficulties undertaking research. Therefore there is a major deficit in research awareness and knowledge by students as the exposure to research is usually at the end stages of study courses in Sierra Leone.

The purpose of this study is to ascertain how clinical medical students at the College of Medicine and Allied Health Sciences, University of Sierra Leone felt about research and their interest in pursuing research-related employment.

## INTRODUCTION

Research is a process of systematic inquiry that entails collection of data; documentation of critical information; and analysis and interpretation of that data/information, in accordance with suitable methodologies set by specific professional fields and academic disciplines.

- Research is conducted to evaluate the validity of a hypothesis or an interpretive framework.
- To assemble a body of substantive knowledge and findings for sharing them in appropriate manners.
- To help generate questions for further inquiries.

In common terminology, Perception is defined by Longman Dictionary of Contemporary English as

- a) the way you think about something and your idea of what it is like;
- b) the way that you notice things with your senses of sight, hearing etc.
- c) the natural ability to understand or notice things quickly.

In philosophy, psychology, and cognitive science, perception is the process of attaining awareness or understanding of sensory information. The word "perception" comes from the Latin words *perceptio*, *percipio*, and means "receiving, collecting, action of taking possession, and apprehension with the mind or senses [1].

## Knowledge of Research and Research implementation in Sierra Leone

After 11 years of destructive civil war, which destroyed and robbed the country's already ailing research and higher education infrastructures, Sierra Leone has made amazing progress in her post-conflict recovery drive.

Since the end of the war in 2002, the government has adopted results-driven efforts to restructure the public sector with the help of its donor partners. This has included Local governance and decentralisation, security and justice sector change, and education sector review (Ministry of Education, Science and Technology, 2007) have all been examples of this.

Before the outbreak of the Ebola Viral Disease (EVD) in May 2014, the country's population steadily increased from 4.9 million in 2004 (Statistics Sierra Leone, 2006) to 6.3 million in 2015, representing a percent annual growth rate dominated by a young population (roughly 70%) between the ages of one and 35.

Sierra Leone was one of the fastest growing economies in the sub-region from 2009 to 2013, with double-digit GDP growth rates of 15.2 percent and 20.1 percent in 2012 and 2013, respectively, thanks to a bright economic outlook (African Economic Outlook, 2015).

Sierra Leone lags behind in Research because it lacks a clear national policy on research excellence and publishing, as well as state-organised and sponsored research councils to direct research output at both the higher education and public sector governance levels.

This study aims to provide a brief, but thoroughly grounded desk review of literature on the overall research and knowledge systems (including policies, priorities, actors, interaction, implementation, and funding)

### Research and knowledge systems

The relevance of research-led higher education as an engine for economic growth and development in Africa - has been well documented.

Research has been identified as an important component of higher education, long before humanity entered the so-called global knowledge era. By the beginning of the new millennium, the World Bank - a leading actor in cutting state expenditure on higher education in the 1980s and 1990s - had acknowledged that research-driven higher education is a 'critical pillar for human development'; supplying not only the labour market's skills requirements, but also public service delivery professionals such as nurses, doctors, engineers, and lawyers.

In Sierra Leone, as in most post-independence Africa countries, the higher education landscape is controlled, sponsored and monitored by the government through the education ministry. The 2004 Education Act solidified the Education Ministry's control over higher education management, finance, and monitoring (Ministry of Education, Science and Technology, 2007).

Despite the government's overwhelming control of the higher education sector - evidenced by the fact that until 2005, Sierra Leone had only one state-owned university - Sierra Leone lacks a coherent research and higher education policy, which encapsulates the government's strategic plan for the development and harnessing of research and higher education in line with changing demographic, economic, and scientific realities of the twenty-first century, as well as the country's development priorities.

This is worsened by the lack of a research funding council in Sierra Leone, analogous to the UK's Economic and Social Research Council (ESRC), to fund, develop, and direct research and knowledge dissemination across national and academic endeavours (The Economist Intelligence Unit, 2014). Both the

government's poverty reduction strategy papers (PRSPs) - the Agenda for Prosperity (2013-2018) and its predecessor, the Agenda for Change (2007-2012) - emphasise the need to promote education as a crucial pillar for economic growth and development.

### Main institution producing research:

**Scientific and policy-related, size (academic staff and students) and other notable organisations:** The lead institutions and agencies supporting the production and dissemination of research in Sierra Leone are the University of Sierra Leone - made up of three constituent colleges: Fourah Bay College (FBC), the Institute of Public Administration and Management (IPAM), and the College of Medicine and Allied Health Science (COMAHS); Njala University - Njala and Bo campuses; the University of Makeni, the Sierra Leone Agricultural Research Institute, as well as international donor partners (notably the World Bank, UNDP, and DFID) and the private sector - particularly mining and agricultural companies.

The two public institutions are still the largest and most populous in terms of size. With a total student enrolment of 9,408 (2011/12 academic year) and 349 academic staff - 34 of whom have PhDs - the University of Sierra Leone is the largest, followed by NU with a total student enrolment of 6,154 (2011/12 academic year) and 319 academic staff - 20 of whom have PhDs (World Bank, 2013).

### Background of Medical Education in Sierra Leone

The College of Medicine and Allied Health Sciences (COMAHS) was established in 1988 and since 2005 is part of the University of Sierra Leone. COMAHS is the only Medical school in Sierra Leone that educates Doctors. Its medical undergraduate curriculum spans six years and is based on the West Africa Health Organisation (WAHO) harmonised curriculum (COMAHS. Curriculum for the Bachelors of Medicine and Surgery (MBChB). Freetown: COMAHS; 2014.)

Basic sciences teaching mostly takes place at the campus in Kossoh Town (a coastal suburb about ten miles east of Freetown) and Connaught Hospital (tertiary hospital in central Freetown). Clinical rotations are predominantly in three public teaching hospitals in Freetown - Connaught Hospital for medicine and surgery, Princess Christian Maternity Hospital for obstetrics & gynaecology, and Ola during Children's Hospital for paediatrics). Students can also gain practical experience in private hospitals and clinics in the capital.

Most medical students precede their undergraduate course with one or two years of pre-medical education. All graduates are required to undergo a two-year internship programme before gaining full registration with the Sierra Leone Medical and Dental Council and being able to apply for further education in a specialised area of medicine.

### Research: publication and communication

One of the most critical difficulties in Sierra Leone's research and higher education sectors is scientific research and publication. Since the beginning of the civil war in the early 1990s, academic members at higher education institutions have published in peer-reviewed journals at an all-time low.

This is largely due to central government funding cuts to higher education during the peak of structural adjustment in the late 1980s and early 1990s, as well as the destructive civil war (which targeted higher education facilities and killed its scarce personnel), and the resulting brain drain of top university academics to Europe and other parts of Africa. Adams and colleagues [2] claim that (2010, cf World Bank 2013:24).

Sierra Leone's scientific research output is ranked below countries like Rwanda, the Gambia, Eritrea, Guinea Bissau, Rwanda, Mauritania, Central African Republic, Guinea, Chad and Burundi in terms of quality and volume of publication between 1998 and 2008' from locally based higher education faculty members.

Sierra Leone research community is shrinking everyday due to poor conditions of services and the non-availability of research and publication facilities, such as internet and subscription to academic journals (The Economist Intelligence Unit, 2014).

The absence of scientific research and publication has obvious implications for future researcher training in the country. There are no clear figures on the number of current postgraduate students enrolled in the country's higher education intuitions or the quality of research produced –if any is produced at all–due to a lack of senior academic capacity among higher education intuitions and a poor data collection and regulatory framework both within the TEC and among higher education institutions themselves.

Despite the existence of postgraduate schools at the two major public universities, whose mission is to coordinate postgraduate study and research under the supervision of the TEC, there are no structured postgraduate research programs with the explicit goal of producing scientific research worthy of publication in a peer-reviewed journal.

### **Prognosis Research studies as a component of Clinical treatment outcome**

In clinical medicine, the term prognosis refers to the risk of future health outcomes in people with a given disease or health condition. Prognosis research is thus the investigation of the relations between future outcomes (endpoints) among people with a given baseline health state (startpoint) in order to improve health.

The study of prognosis has never been more important, as globally more people are living with one or more disease or health impairing conditions than at any previous time (Mathers 2002 -2030). For this reason, governments across the world are increasing their interest in the outcomes of healthcare currently provided for people with disease. Similarly, research funders and researchers are increasingly focused on translating new interventions and technologies from the laboratory to clinical practice and then healthcare policy in order to establish and implement new standards of high quality care and improve patient outcomes.

As a result, data from prognosis research should be used in clinical decision-making, healthcare policy, and the discovery and evaluation of new ways to patient management. The stringent

standards required in other domains, such as pharmaceutical trials and genetic epidemiology.

1. There is a framework of four independent but interrelated prognostic research issues in the Prognosis Research Strategy (PROGRESS) series (www.progress-partnership. The course of health related conditions in the context of the nature and quality of current care fundamental prognosis research)
2. Specific factors (such as biomarkers) that are associated with prognosis (prognostic factor research) (Riley 2013)
3. The development, validation, and impact of statistical models that predict individual risk of a future outcome (prognostic model research) (Steyerberg 2013)
4. The use of prognostic information to help tailor treatment decisions to an individual or group of individuals with similar characteristics (stratified medicine research) (Hingorani 2013).

The PROGRESS series' primary goal is to show how each of these four prognosis research themes delivers crucial knowledge that may be applied across many (translational) routes to improve clinical outcomes.

### **Importance of Prognosis research in the pathways toward improved health outcomes**

In order to make decisions, healthcare professionals, persons with diseases or health conditions, funders, and policymakers need credible, reliable evidence about the consequences of diseases and health conditions. Starting at the applied, healthcare delivery end, This study examines the potential influence of such evidence throughout translational routes in healthcare under the following headings:

#### **Importance of Public Health Policy:**

To predict the population burden of diseases and analyse the relative contribution of healthcare delivery among individuals with disease (secondary prevention) and those without disease, public health policymakers need estimates of average prognosis (primary prevention).

Modelling the impact of population interventions aiming at early detection and primary and secondary prevention, for example, has aided the public health goal of reducing total coronary heart disease mortality (a conflation of incidence of non-fatal coronary disease and subsequent death).

These models employ an average prognosis of heart attack survival from the date of diagnosis across age and sex strata to assign quality adjusted life years (and health-care expenses associated with disease management) that would be saved if successful prevention could be achieved.

In contrast to improvements in cardiovascular disease prognosis over time, there is little indication that the average prognosis (based on symptom relief) for patients with low back pain has altered over the last 20 years, nor that it differs between nations with various healthcare systems.

This shows that healthcare does not have a significant impact



on the average symptomatic outcome in patients suffering from back pain. However, there are significant differences in the outcome of sickness absence over time and between nations, implying the importance of the broader public health context of working patterns and chronic illness benefit payments.

### Importance of discovering new diseases

Definitions of disorders for which therapies are sought are driven by basic prognostic research. Such study aids in defining our existing understanding of the various clinical disorders that exist, as well as the potential role that novel clinical tests may play in reclassifying disease entities (nosology). "What is the prognosis of this condition?" you might wonder. "is inextricably linked to the question "what is this ailment?" For example, the entity of non-fatal myocardial infarction was discovered only after decades of clinical prognostic observation that symptoms of chest pain could precede death, displacing the belief that myocardial infarction was always and instantly fatal. Prognosis research has lately aided in the redefining of non-fatal acute myocardial infarctions.

### Recommendations for improving the quality and impact of prognosis research

Important obstacles must be addressed and opportunities grabbed in prognostic research as a whole for each of the four themes to reach its potential for improving clinical outcomes. The scientific community must address severe inadequacies in prognosis study design, conduct, and reporting, as well as recognize the clinical importance of solid prognostic findings.

### Research – a component for the award of a degree

At a time when there is a greater demand for evidence-based treatment and research, the number of medical scientists is dwindling. Involving medical students in active research throughout their undergraduate periods has been demonstrated to boost the likelihood that they will continue to be research active after graduation, according to studies [3].

Medical students' research has made numerous significant contributions to our understanding and practice of medicine throughout history. Researchers Frederick Banting and his second-year medical student helper Charles Best discovered and purified insulin, while Jay Mclean, a medical student at John Hopkins University, discovered and purified the anticoagulant Heparin. Due to the expanded knowledge and complexity of medical science, such great discoveries may now be beyond current medical students; yet, this should not distract from the importance and value of medical students' involvement in research [4].

The Association for Medical Education in Europe (AMEE) published a guidance titled "Developing research abilities in medical students" in 2012, recommending that every medical student learn about research procedures and the benefits of research to their profession [5]. This guide stated that promoting students' active engagement in research activities can considerably improve their comprehension of research. This aligns with the WFME's quality improvement guideline from 2015.

Medical curriculum regulators encourage research. For example, the General Medical Council states in its Outcomes for Graduates that "Newly qualified doctors must be able to apply scientific method and approaches to medical research and integrate these with a range of sources of information used to make care decisions" under the Clinical research and scholarship outcome [6]. There is no information on how medical degree courses might handle this issue. This scoping review aims to close this knowledge gap by researching ways to involve students in components of original research, rather than just 'using research.'

Amgad et al. [7], presented an integrated mixed methods systematic review and meta-analysis about medical students' involvement in research in 2015. Their main goals were to look at the impact of curricular and extracurricular undergraduate medical research on medical students' scientific productivity and career choices in the short and long run.

Active involvement in research may be a positive component of undergraduate medical curricula [8]. According to Simunovic, the advantages may outweigh the disadvantages. Simunovic indicated that the majority of medical schools may value student research as an important element of their undergraduate program, but that few attempts have been made to explain why [9]. The impact of research engagement on medical school admissions, the impact on the medical curriculum, the costs, the availability of mentors, and the consequences on the institution's educational culture are all pragmatic concerns [10]. Cheung questioned the advantages of active research for students, as well as some of their incentives for participating in it [11]. He talked on Pathipati et al. [12], findings' on student motives for research. They polled students at five highly recognized research medical schools in the United States. The most common reasons students take years off for research, according to the 328 respondents, are to "improve competitiveness for residency application" (32%), "time to seek other options" (24%), and "academic curiosity" (23%). In his article, Cheung also examined the comparatively low rates of student publication in 'excellent' journals, as well as the pressures of academic writing for medical students from a student's perspective.

### Significance of the problem

In developing countries like Sierra Leone, medical professionals recognize the need of forming clinical practice on scientific data to improve health care delivery. However because of the limited research undertaken, there has been substantial reliance on research data from developed countries to help shape national health policy.

A solid postgraduate research pathway and the desire to pursue a career in research have been shown to be connected with undergraduate research experience for medical students. Yet the majority of students are unaware of the connection between research and healthcare delivery and do not put as much effort in the research module as is required for quality dissertations that are publishable or to be used for decision making.

This pilot seeks to understand from the student's point of view barriers in conducting research, how to improve on the current systems and their interest in research.

## Aims

To understand from medical students their perception of research studies as part of their course and explore factors that will influence their interest to pursue research as part of clinical practices in Sierra Leone.

1. 3.15. Objective to examine the knowledge in research implementation in Sierra Leone
2. To investigate the gaps and challenges in undertaking research as medical students.
3. To investigate perception of research studies as a component of clinical treatment outcome.
4. To investigate the perception of research as a component for the award of a final degree for medical students.
5. To investigate the perception of medical students on research to be pursued as a career option in the long term.

## METHODOLOGY

### Study Site

Sierra Leone is a country in West Africa, on the Atlantic ocean. Its capital city has over 2 million people. The study shall be done among students in Clinical Years 4 to final Year 6 at College of Medicine and Allied Health Sciences, attending classes at the Connaught Hospital and the Princess Christian Maternity Hospital.

### Study design

To undertake this study (descriptive cross sectional study), a design that will provide the information from the response which will then systematically describe the findings to support the inference

### Tool Development

1. A self-administered questionnaire was developed, coded for anonymity and distributed among the Clinical students on the following defined themes eKnowledge To explore the knowledge on research studies
2. Attitude/ perception: to understand the attitude toward research as within the medical course
3. Challenges in undertaking research
4. Potentials in research studies
5. Open Comments on research by students

The tool will elicit questions on the sociodemographic characteristics of respondents, their perception of research, previous participation in research projects apart from the mandatory student projects and intention to pursue a career in research. The barriers/difficulties in research participation by medical students while in the medical school is also included in the questionnaire.

### Study population

The study population shall include all Clinical medical students who are willing to participate in the study.

## Sample Size

All registered students in year 4 to 6 Medicines at COMAHS.

### Inclusion criteria

All Clinical Students those are willing to participate in the study after asking for their informed consent.

### Exclusion criteria

Clinical Students those are unwilling to participate in the Study. Each Student is at liberty to not participate or to pull out of the study at any time during the course of the study.

### Ethical Consideration

Permission to conduct the study was sought from the Head of Department, Department of Community Medicine at the College of Medicine and Allied Health Sciences, University of Sierra Leone An Informed consent tool explaining the concepts and principles of this survey was developed and administered to each participant prior to distributing the questionnaire. Each questionnaire was coded and kept confidential.

### Overall Ethical Approval will be sought through the Sierra Leone Ethics and Research Committee.

**Data Collection Method:** The questionnaire tool will be self-administered by participants following distributed informed consent. Students were given the option to complete the questionnaire within 24 hours and hand back to the investigator.

### Data Analysis

**Statistical analysis** - Data entry and analysis was done using Statistical Package for Social Sciences (SPSS) version 20. Frequency tables and cross tabulations were generated. Chi square tests of statistical significance and multivariate analysis using binary logistic regression were used in the analysis and the level of statistical significance was determined in determining the predictors of research career of the students.

## RESULTS

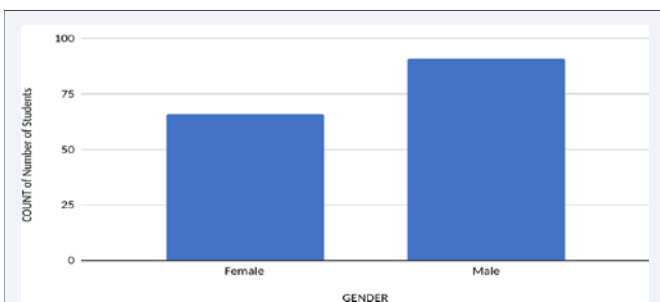
The socio-demographic characteristics of the respondents are shown in Table 1. A total of 157 out of 207 students from the Clinical classes participated in this study, with 91 of the students being Males and 66 females. The respondents' average age is 26.2 years. The majority of responders (62.4 percent) are between the ages of 25 and 29, while the least number (10.19 percent) are 30 years or older.

Males made up the majority of the responses, with 58 percent being men. In addition, 86.6 percent of the respondents were not married. The majority of the respondents' fathers (65 percent) had a tertiary degree, with the lowest proportion having only a primary education (1.9 percent). Similarly, the majority of the respondents' moms (41.4 percent) have a tertiary degree, while only 5.7 percent have a primary education (Figure 1 and 2).

The students' perceptions on research are shown in Table 2. The vast majority of responders (96.8 percent) believe that research is critical to medical practice. In addition, the majority of the respondents (95.6 percent) believed that research should be included in medical school curricula. The majority of respondents

**Table 1:** Socio-demographic characteristics of the respondents.

Variable	Frequency (n = 157)	Percent (%)
<b>Age of Respondents</b>		
Mean	26.2	
<b>Age of Respondents in Groups</b>		
<25 years	43	27.4
25 - 29 years	98	62.4
≥ 30 years	16	10.19
<b>Level of study</b>		
Fourth year of study	50	31.8
Fifth year of study	58	36.9
Sixth year of study	49	31.2
<b>Gender</b>		
Male	91	58
Female	66	42
<b>Religion</b>		
Christianity	77	49
Islam	80	51
Other	nil	nil
<b>Marital Status</b>		
Married	20	12.7
Single	136	86.6
Separated	1	0.6
<b>Educational attainment of the Mother</b>		
No formal education	40	25.5
Primary education	9	5.7
Secondary education	43	27.4
Tertiary education	65	41.4
<b>Educational attainment of the Father</b>		
No formal education	31	19.7
Primary education	3	1.9
Secondary education	21	13.4
Tertiary education	102	65



**Figure 1** Count of Number of students according to Gender.

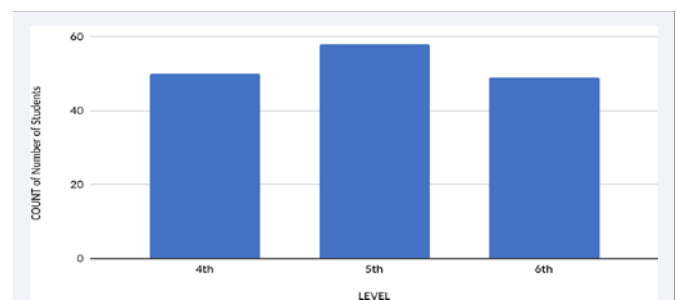
(94.3 percent) agreed that medical school training should include conducting research, and (73.2 percent) said that mandated research time should be included in medical school.

Table 3 depicts the students' desire to pursue a research career as well as the impediments to research engagement. Only 35 percent of those polled have ever participated in research other than the one they were asked to do.

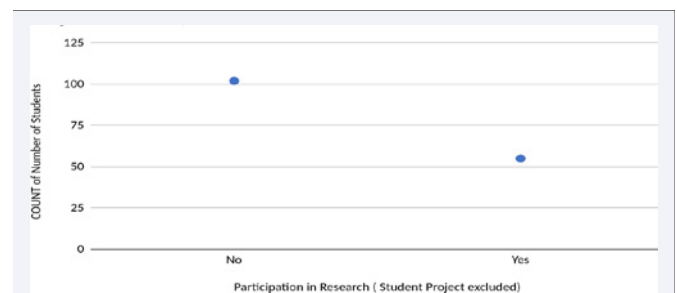
In addition, 64.3 percent of respondents thought medical students are being encouraged to participate in research. 83.4 percent of those surveyed want to pursue a career in research.

Lack of funds was cited by 38.2 percent of students as a barrier to research involvement, 26.7 percent cite a lack of time as a result of restrictive medical curricula, and 20.4 percent cite a lack of mentoring. 12.1 percent cited lack of interest as a reason for not pursuing a research career path (Figure 3).

Table 4 shows factors associated with intentions to pursue a career in research among the Students. Both Male and Female students showed increased interest to pursue a career in Research. Students who had previously participated in Research work and



**Figure 2** Count of Number of students according to Level.



**Figure 3** Count of Number of students vs Participation in Research.

**Table 2:** Respondents' Perception of Research.

Variable	Frequency (n = 157)	Percentage (%)
<b>Research is important to the practice of Medicine</b>		
Strongly do not agree	5	3.2
Do not agree	nil	
Average	nil	
Agree	14	8.9
Strongly Agree	138	87.9
<b>Research should be part of the medical curricula</b>		
Strongly do not agree	4	2.1
Do not agree	nil	
Average	3	1.9
Agree	40	25.5
Strongly Agree	110	70.1
<b>Medical school training should involve conducting Research</b>		

Strongly do not agree	3	
Do not agree	1	1.9
Average	5	0.64
Agree	53	3.2
Strongly Agree	95	60.5
<b>Research should be mandatory for medical students</b>		
Strongly do not agree	2	1.3
Do not agree	10	6.4
Average	30	19.1
Agree	47	29.9
Strongly Agree	68	43.3
<b>Submission of thesis should be a requirement for the award of medical degree</b>		
Strongly do not agree		
Do not agree	6	3.8
Average	19	12.1
Agree	56	35.7
Strongly Agree	61	38.9
<b>Research experience be a criterion for admission into residency training</b>		
Strongly do not agree	3	1.9
Do not agree	19	12.1
Average	39	24.8
Agree	47	29.9
Strongly Agree	49	31.2

**Table 3:** Intention to pursue a research career by the students and barriers to research participation.

Variable	Frequency (n=157)	Percentage (%)
<b>Ever participated in Research (student Project excluded)</b>		
YES	55	35
NO	102	65
<b>Are Medical students encouraged to participate in research</b>		
YES	101	64.3
NO	56	35.7
<b>Do you intend to pursue a career in research</b>		
YES	131	83.4
NO	26	16.6
<b>Barriers to research among Medical students</b>		
Lack of funding	60	38.2
Lack of time	42	26.7
Lack of mentoring	32	20.4
Lack of interest	19	12.1
Other reasons	4	2.5

**Table 4:** Factors associated with intention to pursue a career in research.

Variable	Intend to pursue a career in Research (n =157)	
	Yes	No
	N (%)	N (%)
<b>Age of Respondents</b>		
<25 years	38 (88.4)	5(11.6)
25 - 29 years	82 (83.7)	16(16.3)
≥ 30 years	11 ( 68.8)	5(31.3)
<b>Gender</b>		
Male	75 (82.4)	16(17.6)
Female	56 (84.8)	10 (15.2)
<b>Marital Status</b>		
Single	113(83.1)	23 (16.9)
Married	17(85)	3 (15)
<b>Previous participation in Research</b>		
Yes	55(80.9)	13(19.1)
No	76(85.4)	13(14.6)
<b>Had career guidance during Medical Training</b>		
Yes	61(86)	10(14.1)
No	70(81.4)	16(18.6)

those with no previous experience both showed an increased interest to pursue a career in Research. In Fact the students with no previous research work had more of them seeking to pursue a career in research (85.4%) than those with previous research work history (80.9%). Also students with career guidance during medical training and those with no guidance both showed interest to pursue a career in Research.

## DISCUSSION

The majority of respondents, 96.8 percent in this Study, believed that research is essential to the practice of medicine. 91.3 percent of respondents agreed that research is relevant to the practice of medicine in a study of a similar nature conducted at a university in Sudan that has been offering research training for more than seventeen years [13]. Also 96.6 percent of respondents to a study conducted at the Ebonyi State University in Nigeria agreed that research was important to medicine [14]. This can be linked to medical students' ongoing exposure to research which may have improved their perception in this area.

In a study among clinical medical students in a University in Cape Town, South Africa. 71.0% of the respondents perceived research as very useful to medical curricula [15]. Similar to this, 95.6% of respondents in this study agreed that research should be included in medical curricula. Likewise, in a study in Egypt, 86.0% of the medical students supported student's participation in clinical research projects [16]. This supports the requirement that medical students continue to be exposed to research. The situation is the same outside of Africa, as research among medical undergraduates in India found that the majority of students supported the inclusion of research in the medical curriculum with 83.4 percent [17], and 84.4 percent [18], respectively.

Gender differences in this study had no appreciable impact on students' knowledge, attitudes, or involvement in research



activities. Both male and female students showed increased interest to pursue a career in research, Gender did not affect any of these criteria, according to a recent comprehensive assessment by Amgad and colleagues, but males were more likely than females to publish their medical school projects [19]. However, there are clear gender variations in how medical students approach research in the United States, where it was discovered that females were much less likely than males to express interest in research among matriculating students and graduating doctors. Additionally, female students who demonstrated a great interest in research after matriculation showed a decline in that interest after graduating [20]. In Iran, however, things are different because female medical students have much more research knowledge than their male counterparts [21]. Additionally, in a study of medical students in Madinah, Saudi Arabia, a much larger percentage of female students than male students participated in medical research [22].

The majority of respondents in this study have a positive view of research; 94.3 percent thought that performing research should be part of medical school training, and 73.2 percent agreed that research should be mandatory of medical students. Additionally, 74.6 percent of the students believed that submitting a thesis should be necessary in order to receive a medical degree. Similar results were reported from a study in Sudan [13]. According to a close examination of the results of the two studies, the submission of a thesis as a condition for the award of a medical degree was supported by the smallest percentage of medical students compared to the high percentage of students in support of a research based curriculum and mandatory research work. The majority of the students' support for a research-based curriculum should be fostered and maintained because it has been discovered that the two main causes of poor research among medical students are a lack of student motivation and the absence of research from the curriculum.

Research experience should be a key consideration for admission to residency training, according to percent of the students. A research conducted among Sudanese medical students likewise produced comparable results [13]. In contrast, a study in Saudi Arabia had only 43% of students endorsing research experience as a key consideration for admission into residency training [19].

Analysing the interest in research seen in the different stages of the Clinical levels (4th year, 5th year, 6th year) there is a relatively homogeneous and high distribution across all years in this study. Similar research done in porto alegre Brazil likewise had comparable results. In Contrast a study at the Faculty of Medicine, Ain Shams University, Cairo, Egypt showed an increase in research interest, perception and participation more among the 4th year Medical students.

A little above a quarter of the students, 35%, have ever participated in research apart from mandatory medical student projects. Similar numbers have taken part in research in other studies as well [13,14]. However, according to a survey conducted in India, just 13.1% of medical students in their final year participated in research that was not part of their regular course work [23]. In this Study 41.8% of final year medical students have participated in research outside the medical curriculum

with lesser percentages in the other classes. These minimal percentages of students participating in extracurricular research may be due to the demanding schedule of medical education. It clearly demonstrates that some students may choose not to take part in research if the submission of a thesis by medical students is optional.

This was demonstrated in a study of medical students in Porto Alegre, Brazil, where just 4.7% of the students thought that research, above theory and practice, was the most significant aspect of their medical education. As expected, the majority of pupils (70.7%) chose practice.

Lack of funding (38.2%), lack of time (26.7%), and lack of mentoring (20.4%) were the main obstacles for students to participate in research. These results concur with those from other studies [15,16,18,24,25], These findings were anticipated because it has already been noted that students from underdeveloped nations had more difficulty conducting research than those from developed nations [23,24]. Even senior researchers in developing countries also complain of poor funding opportunities hence it makes sense that medical students are in this position. In contrast, medical schools in the United States of America spend an average of \$111 million on medical research each year, in addition to the money granted by the National Institutes of Health [26]. One hopes that as time goes on, several medical students' research initiatives will be supported in an effort to pique their curiosity about the field. Additionally, medical students are known to have rigorous academic schedules, making it difficult to find time for extracurricular research projects.

Lack of mentoring was the one obstacle that the students cited that could be successfully overcome. This is because lack of support by university authorities results in poor interest in research among medical students. Only a modest number of the students, 64.3 percent, said that they were encouraged to participate in research, which may be the outcome of this subpar mentorship of students. It goes without saying that if students are introduced to research at the earliest opportunity, even the required student research project will be well-received and have superior results.

This should be viewed as a challenge by university lecturers, particularly those in the Departments of Community Medicine, and they should provide enough guidance to students interested in research and its activities.

Majority of the students intend to pursue a career in research (83.4), This is encouraging given that the only research emphasis placed on students is the required student research project that is due in their final year of study. If students are motivated to engage in research and appropriately supervised, it is anticipated that this percentage may rise.

This point is buttressed by findings from Ebonyi state university Nigeria where a considerable sum of students too have an interest to pursue a career in research [27].

Making evidence-based decisions in clinical practice requires understanding of research and participation by clinicians [28-31].

## CONCLUSION

The majority of students view research favourably despite a minority have engaged in study outside of the required student research assignment.

A high proportion of the students were also willing to pursue a career in research, but there are limitations such as Lack of funding, Mentorship and Time, mentioned as the major barriers to participating in research.

While addressing the mentioned impediments, there is a need to inspire and motivate students to show an interest in health research. Firstly there is need to introduce career counselling so that students may fully comprehend the concepts, and opportunities research presents.

The current trend is that majority of medical students would like to pursue specialised medical training after graduation, but the interrelationship between research within speciality disciplines are not fully articulated.

With more emphasis on the need, uses and processes involved in research in the medical field, research will be seen an essential tool that improves clinicians' capacity to make judgments based on evidence in clinical practice.☒

Examining future practitioners' education is necessary to get to the point where clinical practice can be affected and informed by research. This can only effectively done if the systems and structures such as are made favourable for students to comprehend, analyse, and critique research; more importantly the course curriculum is restructured to informed by in order to judge its reliability and avoid accepting all studies at face value.

The need for early introduction and more weighting on research component of the formal curriculum in medical school cannot be overemphasized. The goal will be to improve students' comprehension and/or conduct of professional research. Clinical medical students will then be able to use these experiences and can start to contribute to research as part of a lifelong learning process with early research education.

All of these have led to the recommendation that undergraduate medical students be given access to a supportive research environment and the requirement for a research-focused medical curriculum at this phase of training. Thus necessitating the introduction of research as early as possible during their course and to explore reforms needed on research curriculum, training techniques, facility and learning environment that will facilitate positive perception and attitude by medical students at COMAHS.

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