

PERCEPTION OF RESEARCH AND PREDICTORS OF RESEARCH CAREER: A STUDY AMONG CLINICAL MEDICAL STUDENTS OF EBONYI STATE UNIVERSITY ABAKALIKI, SOUTHEAST NIGERIA

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ABSTRACT

INTRODUCTION: Acquisition of research experience by medical students is associated with good research pathway at the postgraduate level and also in the pursuit of a research career. Also, it assists the physician to make evidence based decisions in clinical practice.

OBJECTIVES: Aim of study was to determine the perception of research and predictors of research career among clinical medical students of Ebonyi State University Abakaliki, southeast Nigeria.

Methods: A descriptive cross sectional study design was used. All clinical medical students of Ebonyi State University who were willing to participate were included in the study. Information was obtained using a self administered questionnaire.

RESULTS: A total of 235 students participated in the study, (response rate, 87.0%). The mean age was 24.8±2.8 years and majority, 61.3% were males. Majority, 96.6% were of the opinion that research is important in the practice of Medicine, 66.4% opted for a mandatory research time in medical school and 18.3% agreed that students were encouraged to participate in research. A minor proportion, 24.3% have ever participated in research apart from the mandatory student projects and 40.4% intend to pursue a career in research. Barriers to students' involvement in research included lack of funding, 43.4%, lack of time, 23.8% and lack of mentoring, 22.1%. Predictors of research as a career among the students included being a male student, (AOR=2.1; 95% CI: 1.1-2.8), previous participation in research, (AOR=2.0; 95% CI: 1.1-5.8), and students that had career guidance, (AOR=3.7; 95% CI: 2.0-7.0).

CONCLUSIONS: Majority of the students have a good perception of research. However only a minor proportion have participated in research and were willing to pursue a career in research. There is the need to encourage and motivate the students towards having interest in health research while also addressing the identified barriers. Career guidance should be institutionalized in our medical schools.

KEYWORDS: Perception, research career, clinical medical students. Ebonyi state, southeast Nigeria.

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BACKGROUND INFORMATION

Health research has been of relevance in the prevention, diagnosis and treatment of diseases and in the formulation of policies related to health care programmes.¹ Thus it has been of immense importance in the delivery of health services to the people.² This has necessitated that medical students are exposed to research during their undergraduate training period,³ since most of the students are oblivious of the relevance of research to health care.⁴

In medical schools in Nigeria, the submission of a project work which invariably means an active

participation in research by every student is part of the fulfillment for the award of the MBBS degree. The supervision of this project work which is mostly done in groups of three or four students and the teaching of research methodology for the students are coordinated by the Department of Community Medicine or its equivalent in the various medical schools in the country. This is the same department that is in charge of the rural community postings of medical students,⁵ and in some instances the research project is carried out during the period of this posting. With exceptions for a few, these research works are never published in journals.

Imbibing research capacity at the undergraduate level has been identified as a building block in the making of high quality researchers in the years to come.⁶ The involvement of physicians in research has also been known to increase the number of recorded clinical

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Variable	Frequency (n=235)	Percent (%)
Age of respondents	Mean±(SD)	24.8±2.8
Age of respondents in groups		
<25 years	112	47.7
25-29 years	111	47.2
≥30 years	12	5.1
Level of study		
Fourth year of study	72	30.6
Fifth year of study	96	40.9
Sixth year of study	67	28.5
Gender		
Male	144	61.3
Female	91	38.7

Table 1: Socio-demographic characteristics of the respondents

RESULTS

Ethical approval: Ethical approval for the study was obtained from the Research and Ethics Committee of Ebonyi State University Abakaliki, southeast Nigeria. The students were required to sign a written informed consent form before participating in the study. Participation in the study was voluntary and participants were assured that there would be no victimization of any student who did not want to participate or who decided to withdraw after giving consent.

Data analysis: Data entry and analysis were done using Statistical Package for Social Sciences (SPSS) version 20. Frequency tables and cross tabulations were generated. Chi square test of statistical significance and multivariate analysis using binary logistic regression were used in the analysis and the level of statistical significance was determined by a p value of less than 0.05. In determining the predictors of research career of the students, variables that had a p value of less than 0.2 on bivariate analysis were entered into the logistic regression model. The results were reported using adjusted odds ratios (AOR) and 95% confidence interval.

Study instrument: The study instrument was a pre-tested, semi-structured questionnaire which was developed by the researchers. The questionnaire was self administered. It elicited questions on the socio-demographic 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 was also included in the questionnaire.

Study participants: The study population were all clinical medical students of Ebonyi State University Abakaliki who gave consent to participate in the study. A total of 235 students participated in the study representing a response rate of 87.0%.

Study design: This was a descriptive cross-sectional study.

Setting: Ebonyi State was created on 1st October 1996 out of the present Enugu and Abia states in southeast Nigeria. The Abakaliki campus of the then Enugu State University of Technology was upgraded to Ebonyi State University College by the State Edict of 1998 and it remained affiliated to its parent university until 1999 when it became a full fledged university. Its medical school started in the year 1999.

METHODOLOGY

Ebonyi State University Abakaliki, southeast Nigeria. There is evidence that research experience at the undergraduate level for medical students is associated with good research pathway at the postgraduate level and also in aspiring to a career in research.^{4,13} This will have a positive impact on developing countries as majority of medical students in this region have preference for specialist medical training after graduation.^{14,15,16} The relevance of research participation for physicians is far reaching as it has also been identified that knowledge of research enhances the ability of clinicians to make evidence based decisions in clinical practice.^{17,18,19} All these have culminated in the recommendation that medical students should be provided with a favourable research environment at the undergraduate level²⁰ and the need for a research centered medical curriculum at this period of training.²¹ This study was designed to determine the perception of research and the predictors of research career among clinical medical students of Ebonyi State University Abakaliki, southeast Nigeria.

This is of great importance to the physician community based on the observation that there has been a decrease in the number of physician scientists over the years.^{8,9} Thus encouraging physicians to participate in research especially at undergraduate level in developing countries will boost the number of physician scientists in this region and thus enable these countries to be self sufficient in several aspects of health care and research.⁶ This will benefit the developing countries bearing in mind that the burden of disease is higher in these countries relative to the number of physicians.¹⁰ Unfortunately, it has been identified that students in developing countries encounter more difficulties in conducting research when compared with their counterparts in the developed countries.^{11,12}

Marital status		
Single	226	96.2
Married	9	3.8
Ethnicity		
Igbo	233	99.1
Others	2	0.9
Religion		
Christianity	233	99.1
Islam	2	0.9
Educational attainment of Father		
No formal education	18	7.7
Primary education	25	10.6
Secondary education	60	25.5
Tertiary education	132	56.2
Educational attainment of Mother		
No formal education	14	6.0
Primary education	24	10.2
Secondary education	62	26.4
Tertiary education	135	57.4

Table 1 above shows the socio-demographic characteristics of the respondents. The mean age of the respondents was 24.8 ± 2.8 years. The highest proportion of the respondents, (47.7%) were less than 25 years old, (47.7%) while the least proportion, 5.1% were 30 years and above. Majority of the respondents, 61.3% were males. Also, majority of the respondents, 95.2% were not married. Majority of the fathers of the respondents have attained tertiary education, 56.2% while the least proportion had no formal education, (7.7%). Similarly, majority of the mothers of the respondents have attained tertiary education, (57.4%) while the least proportion, 6.0% had no formal education.

Table 2: Respondents' perception of research

Variable	Frequency n=235	Percent (%)
Research is important to practice of Medicine		
Yes	227	96.6
No	8	3.5
Research should be part of Medical curricula		
Yes	210	89.4
No	25	10.6
Medical school training should involve conducting research		
Yes	202	86.0
No	33	14.0
Research should be mandatory for medical students		
Yes	150	63.8
No	85	36.2

Submission of thesis should be a requirement for award of Medical degree		
Yes	124	52.8
No	111	47.2
Research experience be an important criterion for admission into Residency training		
Yes	160	68.1
No	75	31.9
Mandatory research time in Medical school		
Yes	156	66.4
No	79	33.6

Table 2 above shows the perception of research by the students. Majority of the respondents, 96.6% were of the opinion that research is important to the practice of Medicine. Also, majority, 89.4% agreed that research should be part of medical curricula. Majority, (86.0%) conceded that medical school training should involve the conduction of research while 66.4% were in support of a mandatory research time in the medical school.

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

Variable	Frequency n=235	Percent (%)
Ever participated in Research (student project excluded)		
Yes	57	24.3
No	178	75.8
Medical students encouraged to participate in research		
Yes	43	18.3
No	192	81.7
Intend to pursue a career in Research		
Yes	95	40.4
No	140	59.6
Barriers to research among Medical students		
Lack of funding	102	43.4
Lack of time	56	23.8
Lack of mentoring	52	22.1
Lack of interest	6	2.6
No specific reason	19	8.1

Table 3 above shows intention to pursue a research career by the students and barriers to research participation. A minor proportion of the respondents, 24.3% have ever participated in research apart from the

mandatory research project which is part of medical curricula. Also, a minor proportion, 18.3% were of the opinion that medical students were encouraged to participate in research. Less than half of the respondents, 40.4% intend to pursue a career of research. The barriers to research participation by the students included lack of funding, 43.3%. lack of time as a result of tight medical curricula, 23.8% and lack of mentoring, 22.1%.

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

Variable	Intend to pursue a Career in Research (n=235)		^a p value	^b AOR (95%CI)
	Yes N (%)	No N (%)		
Age of Respondents				
≤25 years	56 (37.6)	93 (62.4)	0.243	NA
≥26 years	39 (45.3)	47 (54.7)		
Gender				
Male	69 (47.9)	75 (52.1)	0.003	2.1 (1.1- 2.8)
Female	26 (28.6)	65 (71.4)		
Marital status				
Single	90 (39.8)	136 (60.2)	0.346	NA
Married	5 (55.6)	4 (44.4)		
Education of Father				
Tertiary education	46 (34.8)	86 (65.2)	0.049	0.6 (0.3-1.1)
Secondary education and less	49 (47.6)	54 (52.4)		
Education of Mother				
Tertiary education	51 (37.8)	84 (62.2)	0.337	NA
Secondary education and less	44 (44.0)	56 (56.0)		
Work experience before entry to Medical school				
Yes	24 (45.3)	29 (54.7)	0.413	NA
No	71 (39.0)	111 (61.0)		
Academic level of study				
Fourth year of study	30 (41.7)	42 (58.3)	0.467	NA
Fifth year of study	42 (43.8)	54 (56.2)		
Sixth year of study	23 (34.3)	44 (65.7)		
Surgery as choice of specialty				
Yes	22 (53.7)	19 (46.3)	0.057	
No	73 (37.6)	121 (62.4)		1.8 (0.9- 3.9)
Obstetrics & Gynaecology as choice of specialty				
Yes	4 (25.0)	12 (75.0)	0.193	0.7 (0.2- 2.8)
No	91 (41.6)	128 (58.4)		

Community Medicine as choice of specialty				
Yes	5 (100.0)	0 (0.0)	0.010	NA
No	90 (39.1)	140 (60.9)		
Previous participation in Research				
Yes	31 (54.4)	26 (45.6)	0.014	2.0 (1.0- 3.8)
No	64 (36.0)	114 (64.0)		
Had career guidance during Medical training				
Yes	45 (61.6)	28 (38.4)	<0.001	3.8 (2.0- 7.0)
No	50 (30.9)	112 (69.1)		

^ap value on bivariate analysis

^bAdjusted odds ratio (95% confidence interval)

Table 4 above shows the factors associated with intention to pursue a career in research among the students. The respondents who were males were twice more likely to pursue a career in research when compared with those who were females. Also, the students who had previously participated in research were twice more likely to pursue a career in research when compared with those who were yet to participate in research. The respondents who received career guidance in medical school were three times more likely to pursue a career in research when compared with those who had no form of career guidance while in medical school.

DISCUSSION

Majority of the respondents, (96.6%) were of the opinion that research is important in the practice of Medicine. In a similar study in a university in Sudan which has provided research training for more than seventeen years, 91.3% of the respondents were also in agreement that research is of relevance in the practice of Medicine,²² while from a study in Saudi Arabia, 97.1% of the respondents agreed that research was of importance to Medicine.⁴ This could be attributed to the continued exposure of medical students to research which may have enhanced their understanding in this regard. This exposure is of importance as it has been observed that medical students are unaware of the importance of research to medical practice.⁴

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 curricula²³. Similarly, majority of the respondents in this study, 89.4% approved of research being part of medical curricula. Likewise, in a study in another African country, 86.0% of the medical students

supported students participation in clinical research projects.²⁴ This justifies the need for the continued exposure of medical students to research. The situation is not different outside the continent of Africa as studies among medical undergraduates in India revealed that majority of the students, 83.4%²⁵ and 84.4%²⁶ supported the inclusion of research in medical curriculum.

Majority of the respondents had a good perception of research as 86.0% were of the opinion that medical school training should involve conducting research and 63.8% supported the position that research should be mandatory for medical students. Also, 52.8% of the students were of the view that submission of a thesis should be a requirement for the award of the medical degree. Similar results were reported from a study in Sudan.²² A close scrutiny of the results of the two studies revealed that the submission of thesis as a requirement for the award of a medical degree was supported by the least proportion of medical students. These positions of the students in which majority of the students were in support of a research based curriculum should be encouraged and sustained as it has been found that the most important determinants of poor research among medical students were lack of motivation for the students and research not being included in the curriculum.²⁵

Majority of the students, 68.1% were of the opinion that research experience should be an important criterion for admission into Residency training. A similar result was also obtained in a study among medical students in Sudan.²² It is however surprising that the students should come up with this verdict as this is not the case in Nigeria at the moment. However in recent times majority of medical students in Nigeria and other developing countries prefer to pursue specialist medical training after graduation.^{14,15,16} In Nigeria, the only required qualification for that admission is a primary fellowship pass in that specialty/faculty from the National Postgraduate Medical College of Nigeria or the West African Postgraduate Medical College.

Based on the increasing number of medical students interested in specialist medical training in Nigeria, there has been a call for an increase in the number of institutions/centers accredited for such trainings,¹⁴ relying on the fact that health services in the country are not properly planned.¹⁴ It is possible that if these training centers are not increased in relation to future demands as expected that additional screening measures may be applied by the various training institutions in selection of candidates for specialist training and this may include evidence of interest in research. Perhaps the students are aware of this and are bracing up for that experience as they are conscious of

the inadequate number of spaces for medical internship in the country at the moment. This is the situation in present day United States of America, where research plays a crucial role in the selection of doctors for the residency training programme especially when the competitive specialties are involved.²⁷

Majority of the students, 66.4% were in favour of a mandatory research time in medical school during the period of training. It is important to point out that a time like this already exists in the curricula of medical schools in Nigeria and this is the period of rural community postings. There is evidence that the majority of medical students are dissatisfied with this posting which is an indication that the various medical schools in Nigeria have lost touch with the values that informed the initiation of the programme.⁵ Interestingly, the students made several suggestions on how to improve the rural community postings which were recommended by the researchers⁵ and their implementations will greatly improve the posting and in addition stimulate the interest of the students in research since this is the period earmarked for medical research for the students.

Approximately a quarter of the students, 24.3% have ever participated in research apart from the mandatory medical student project. Similar proportions have also participated in research in other studies,^{22,23,24} However, in a study in India, only a minor proportion of final year medical students, 13.1% have participated in research outside the medical curriculum.²⁸ Perhaps the tight schedule of medical education could be responsible for these minor proportions of students being exposed to extra-curricular research. It goes a long way to show that if the submission of a thesis by medical students is optional that several students may prefer not to participate in researches. An instance of this was revealed in a study among medical students in Porto Alegre, Brazil in which only 4.7% of the students considered research as the most important of their medical training among research, theory and practice.²⁹ Expectedly, the majority of the students, (77.7%) opted for practice.

The barriers to the participation of the students in research included lack of funding 43.4%, lack of time 23.8% and lack of mentoring 22.1%. These findings are similar to that of other studies.^{4,22,24,26,30} These results are expected as it has already been observed that students in developing countries when compared with their counterparts in the developed countries encounter more difficulties in conducting research.^{11,12} Even senior researchers in developing countries also complain of poor funding opportunities hence the

position of medical students is understandable. This is unlike the situation in the United States of America where medical schools invest an average of \$111 million dollars on medical research apart from the funds provided by the National Institutes of Health.³¹ One hopes that with the passage of time, a number of medical students research projects will be sponsored as a way of stimulating their interests in research. Also, medical students have been known to run a tight academic schedule and it is only a proper planning that could create time for outside the curriculum research endeavours.

The only identified barrier by the students that could be effectively addressed is lack of mentoring. This is because lack of support by university authorities results in poor interest in research among medical students.³² It may be this poor mentoring of students that resulted in only a minor proportion of the students, 18.3% acknowledging that they were encouraged to participate in research. It is obvious that if the students are exposed to research at the earliest possible time then even the mandatory student research project will be well appreciated and with better outcomes too.

University lecturers especially those in the Departments of Community Medicine of the various institutions should see this as a challenge and adequately mentor students in research and its activities especially those who have shown such interest. Incidentally, the Association of Public Health Physicians of Nigeria of which all the lecturers in this department belong to have initiated a National Mentoring Programme for junior members of the Association and this should be sustained. Such initiatives in the medical schools will be a big boost to the research interests of medical students. For example from a study in Cape Town, South Africa, the barriers to student participation in research included lack of adequate training, time and research opportunities.²³ A good mentoring programme will adequately take care of the training and same time provide the students with good research opportunities. This was demonstrated by the results of a study in a Sudanese university in which majority of the students 56.1% were of the opinion that their supervisors provided them with a positive attitude to research.²² This may have informed the conclusion of a study that with adequate training and proper support for medical students solely in the field of research that many of them will be encouraged to aspire to a research career.²⁸ All these observations may have prompted the suggestion that medical schools should provide enough research opportunities for medical students, stimulate the students to publish research articles before graduation and kindle the interest of a scientific career among the students.¹³

Less than half of the students, 40.4% intend to pursue a career in research. This is encouraging bearing in mind that the only emphasis on research for the students is the mandatory student research project which comes up in the final year of study. Moreover it has also been found that medical graduates worldwide do not embrace careers in research and academia.^{13,33} It is expected that this proportion may increase if students are encouraged to participate in research and properly guided also. This point is buttressed by the finding from a study in India where even though submission of research project is part of the fulfillment for the award of a medical degree, only 8.5% of the students preferred research as a career option.²⁸ This may be an indication of lack of support and poor mentoring of students in the field of research. However from the results of a study in New Zealand, 35% of medical students who participated in the study intend to be involved in research throughout their medical career,³⁴ while from a study in Pakistan, 58.1% preferred to pursue research as a career.³⁵

The results of our study revealed that male medical students were twice more likely to pursue a research career when compared to their female counterparts. In recent times, the number of female medical students in Nigeria has been on the increase however it appears that the future of the profession still lies in the hands of male doctors and as such this finding is expected. Gender differences in approach to research among medical students is however evident in the United States of America, where it was found that among matriculating students and graduating doctors, females were significantly less likely to indicate interest in research.³⁶ Also, the female students who expressed strong research interest after matriculation had a reduced interest after graduation.³⁶ The situation is different in Iran as female medical science students had a significantly higher knowledge of research when compared to their male counterparts.³⁷ Also, in a study among medical students in Madinah, Saudi Arabia a significantly higher proportion of female students contributed to medical researches than the male students.³⁸

The students who have participated in research apart from the official student research projects were also twice more likely to have a research career when compared with those who did not have that experience. A similar result was also obtained in India.²⁸ This points to the merits of exposing medical students to research during the period of their training. It has also been found that students who gained extracurricular research experience publish more journal articles after graduation than students without that experience.¹³ This has led to the conclusion that exposing medical

students to research at the undergraduate period of training is associated with good research pathway at the postgraduate level and in kindling interest in a career of research.^{4,13} Still on the positive side, it has also been found that knowledge and participation in research by physicians enables them to make evidence based decisions in clinical practice,^{17,18,19} hence the need to stimulate research interest among the students.

Interestingly, students who had some form of career guidance during their stay in medical school were about four times more likely to pursue a research career when compared to those who did not have any form of career guidance. It has already been observed that there is no institutional career guidance in medical schools in Nigeria,¹⁴ and this has necessitated calls for career guidance for the students.^{14,39} This result is an added advantage on the need to institutionalize career guidance in medical schools in Nigeria and in other developing countries.

CONCLUSION

Majority of the students have a good perception of research. However only a minor proportion have participated in research apart from the mandatory student research project. A very minor proportion of the students were also willing to pursue a career in research. There is the need to encourage and motivate the students towards having interest in health research while also addressing the identified barriers. A strong emphasis should be placed on career guidance for medical students in medical schools in Nigeria.

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