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# Medical Students – Self-Assessed Confidence Level Before a Major Physiology Examination: Affective Factors in a Nigerian Medical School

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## Original paper

### SUMMARY

Self-reported confidence before any examination in all levels of medical training is a product of previous experience, attitudinal inclinations overtime, degree of self subjection to tenets of professionalism and possibly, the inadvertent role of the medical

school environment including colleagues, teachers and faculty members, comfort, satisfaction and psychosocial stability; which may be addressed as sub-factors that determine the level of preparedness. Let medical schools in Nigeria; adopt a continuous and regular assessment of students' self confidence before any minor or major

examination, to monitor and ensure a certain psychological and academic level of preparedness among the students. This will avoid some cases of attrition resulting from self-doubt and lack of preparedness.

**Key words: medical schools, Nigeria, affective factors, self-assessed confidence level.**

## 1. INTRODUCTION

The essence of medical education is to train knowledgeable, competent and professional physicians that will promote the nation's health, advance the science of medicine and promote public health (1). In Nigeria, the medical education leading to the award of Bachelor of Medicine and Bachelor of Surgery (MBBS) is a six (6) year program consisting of twelve (12) months of studying the basic sciences and eighteen (18) months of preclinical training involving Anatomy, Physiology and Biochemistry. The remaining period of the study is devoted to clinical training. These periods of intense academic activities are marked by high frequencies of depression, anxiety and stress among the students<sup>2</sup> that may alter their perception of themselves and the value of training (2, 3).

Little and Rodnick (1) stated that self reported confidence of medical students is thought to reflect the influences of prior and current attitudes as well as of the information

gained through formal and informal educational experiences; all of which is pointer to the attitudinal changes during training (4). Therefore, it is possible that these attitudinal changes may affect the confidence of these students towards their professional examinations.

Studies have attempted to establish a relationship between clinical experiences and students' confidence in Medicine and Surgery clerkships (3, 5). Others have also attempted to measure students' confidence in the context of specific student-patient encounters during clinical experience (6). However extensive studies on confidence of students have not been carried out in the preclinical setting which forms the foundation of clinical training and confidence in the profession. The new studies should be developed and monitored over the period of training; and generally, literature on the issues of medical students' confidence during and after training is scarce. We believe that self reported confidence should

have a straight link with good self esteem which has been associated with the individual's position on success. This is because the individuals with low self-esteem downplay the importance of appearing competent to others (7). Therefore, the confidence should be considered as an important variable as it has been shown to be a subjective marker of competence and one component of the ability to function competently (5).

As a result, this study is designed to assess the level of self reported confidence of medical students in a Nigerian University preparing for their second MBBS professional examination in physiology. The study has purposely chosen this specific population of students because it is at this stage of preclinical training (Basic Medical Sciences) that the highest rate of attrition is recorded among the medical students<sup>8</sup> and level of self-assessed confidence may be related to student attrition. Secondly, it is important to note that no study so far has attempted to as-

sess the factors that influence the self reported confidence of medical students to face professional examinations at both preclinical and clinical stages of their training. In this regard, it is important to X-ray these factors in order to make appropriate recommendations for a more effective training, professionalism and learning in our medical school environments.

**2. SUBJECTS AND METHODS**

The data used in this study was obtained from sixty six (66) medical students of Ebonyi State University, Abakaliki, Southeast Nigeria who were just about to face their second professional (2<sup>nd</sup> MBBS) examination in Physiology. These students were eligible candidates who had met all laid down criteria, qualified for the examination and were consenting and randomly selected.

A Self-administered questionnaire approved by the ethics/research committee of the Faculty of Basic Medical Sciences, Ebonyi State University, was developed and used to assess the confidence level of the medical students. The questionnaire was designed to elicit data that are qualitative and quantitative for factual and attitudinal information to be gathered. It consists of three sections - one that requires demographic information, the other that assesses self-confidence before the examination and possible factors that may be associated with self-confidence. Confidence level was assessed using a visual analogue scale of 1-10 where 1 was the lowest level of confidence and 10, the highest. The students were subjected to ascertaining the degree of effect of some factors hypothesized to be associated with improved self-reported confidence. These examined factors include number of attempts at the examination, role of the learning environment, role of teachers and faculty and role of colleagues and classmates. The third part is an open ended part of the questionnaire where the respondents were asked to state any group of factors that could affect their confidence to achieve success in medical train-

ing. The stability and validity of the questionnaire was tested through the test retest procedure by using the individuals not involved in this study. A correlation coefficient (r) of 0.74 was obtained which indicated a relatively high stability of research instrument. Results from the open ended section were literarily transcribed and categorized into major themes. Finally, the obtained results obtained were analyzed using Statistical Package for Social Sciences (SPSS 16.0). Independent sample t-test was used to make comparison between the confidence levels of the affective variables.

**3. RESULTS AND ANALYSIS OF RESULTS**

The 66 students who responded to questionnaire were aged between 20 and 34 years (the mean was: 23.09±2.62). They were 42 males and 24 females. They had a confidence level of 6.98±1.75 (4-10). 92.4% of the students were unmarried and 87.9% of them were residing outside the campus. 78.8% were sitting for the examination the first time while 21.8% were repeat candidates. Only 28.8% of the medical students agreed to the postponement of the examination while the rest disagreed.

As Table 1 indicates, 60% of the respondents agreed that the learning environment affects their level of self assessed confidence while 89.4% and 90.9% were affected by their teachers and colleagues respectively.

Table 2 shows that most of the variables did not show any significant difference in the confidence level of the students in the respective categories at P<0.05 as being significant. However, effect of learning environment and the effect of teachers and faculty showed significant difference in self-assessed confidence between the positives and the negatives (P=0.02 and P=0.01 respectively).

Table 3 indicates that majority of the students (24.1%) believe that

Examined Factors that may affect confidence level	Agree (%)	Disagree (%)
Positive Contribution of learning environment	60.6	39.4
Contribution of Teachers and Faculty	89.4	10.6
Colleagues contribution	90.9	9.1

**Table 1.** Examined factors associated with improved confidence and percentage of Medical Students that agreed/disagreed

Variable	Confidence level	P-value
Sex: Male	7.0±1.66	0.927
Female	6.95±1.94	
Residence: Within campus	7.25±2.18	0.653
Off-campus	6.94±1.71	
N0 of attempts: 1 <sup>st</sup> -attempt.	6.88±1.71	0.376
2 <sup>nd</sup> attempt (Repeat)	7.35±1.94	
Postponement of exam: Agree	6.78±1.81	0.570
Disagree	7.06±1.74	
Effect of learning environment: Agree	7.40±1.61	0.02*
Disagree	6.34±1.81	
Effect of Teachers/Faculty: Agree	7.10±1.80	0.01*
Disagree	6.0±0.81	
Effect of Colleagues: Agree	6.98±1.71	0.987
Disagree	7.00±2.36	

**Table 2.** Comparative analysis of confidence levels between some variables using independent sample t-test (level of Significance, P<0.05)

Factors that affect confidence before an examination	Percentage occurrence.
Lecturer/Faculty- Student relationship	16.5%
Level of preparedness	24.1%
Poor Learning Environment	22.0%
Level of Anxiety/Psychological Stability/poor health and finance.	13.3%
Relationship with Classmates/Family/God	13.8%
Academic ability/Performance in previous Exams	10.3%

**Table 3.** Medical Students' opinion of factors that affect Self-assessed confidence level before an Examination.

their level of preparedness has most effect on their self-assessed confidence before any examination while their individual academic ability and performance in previous examinations was ranked lowest

(10.3%) among factors that affect their self-assessed confidence.

#### 4. DISCUSSION

Medical school curriculum is designed to ensure that every graduate is knowledgeable, skillful, and professional (9), which should lead to a conscious development of Self-confidence. Self-confidence can be described as belief in one's abilities; the ability to achieve the competence in your responsibilities and the absolute absence of self doubt. Self confidence bridges the gap between knowledgeableness and performance. For medical students in training, it involves great belief in the ability to pull through the rigors of medical training and achieve the highly cherished medical certificate. These rigors are patterned in such a way that every stage is marked by its own level of anxiety, stress and pressure. Ability to believe in one's self in the face of these rigors makes a confident medical trainee.

The results from this study have shown the self-assessed confidence level of medical students before sitting for a professional examination in physiology. The confidence level was quite high ( $6.98 \pm 1.75$  ranging from 4-10), which is indicative of a general belief in the ability to achieve success in Physiology main examination and may also be linked to the general level of interest in course/subject.

However, the other side of confidence, (i.e doubt in one's abilities-self doubt), which also manifested in this study may be related to the previous experience of the students, of gradual failure in physiology in-course assessments without a conscious repositioning of the individuals mind to succeed in the professional examination- a factor in low self-esteem and psychological disbelief. This finding was corroborated in the students' opinion of factors that affect self-assessed confidence in Physiology examination where 10.3% of them stated that academic ability and performance in previous assessments could affect their confidence in the main examination.

In this study, 92.4% of the subjects were unmarried and all subjects

were within the age of 20-34 years typifying most African academic settings with a mix of the young and relatively mature. Personal life events, which may include marital status, of medical students have been reported to impart on their cognitive outcomes<sup>10</sup>. However, it did not significantly affect the level of confidence in this case possibly because only few students reported to have been married.

Students' place of residence should be a principal component of comfort and satisfaction and was assessed to check relationship with the level of self-assessed confidence. In this case, a greater and large percentage of the students (87.9%) lived off-campus which is indicative of a non-accommodating in-campus environment. As a result, the students may be exposed to a myriad of social distractions that may affect the discipline required for professional training of future clinicians. In this study, surprisingly, the comparative analysis of self-assessed confidence between off-campus and in-campus students didn't indicate any significant difference ( $P=0.653$ ) even though the in-campus students reported a higher level of confidence ( $7.25 \pm 2.18$  as against  $6.94 \pm 1.71$ ). This could be attributed to the fact that the off-campus students may have acclimatized with the inconvenience of coming to school from the outside and possibly have achieved comfort in their off-campus residence.

Repeating and re-sitting of the exams are normal trends in medical training. They are based on the fact that previous experiences can affect self-reported confidences. The effect on self-assessed confidence was determined by comparing the confidence level of repeaters and first timers. The insignificant difference observed could possibly be due to the a result of the few (21.2%) repeating students who participated in the study. Surprisingly, repeated candidates showed a higher level of confidence, which may be indicative of an improved interest and determination to succeed.

Students who opined that the examination be postponed showed a

lower confidence level than those who agreed with non-postponement (though not significant). This outcome expected and may be due to low level of preparedness on the side of the students. This level of preparedness topped the list of factors that influence the self-assessed confidence in the students' opinion pool. Level of preparedness, though subjective, has two (2) sub-factors: The student's psychological preparedness and academic preparedness. These factors work *pari passu* and should absolutely complement each other for a high level of preparedness, which could also be a product of all other factors in the students' opinions.

A greater percentage (60%) of students believed that the learning environment has a huge influence on their self-assessed confidence before an examination. The self-assessed confidence of students who were positive about the learning environment was significantly higher ( $P<0.5$ ) than students who were unhappy with their learning environment (Table 2). In their opinion, 22.4% of the students believed that the learning environment affects the self-assessed confidence before any examination. Anyaehie et al (11), in a study of medical students' evaluation of physiology learning environment reported that students' predominant learning environment were lectures, practical classes, peer-tutored discussions and private study. They went even further to state that the lecture and practical environments were made unfriendly by large groups, time constraints and the lack of interactions. However, the other components of the learning environment were friendly, allowing for a livelier environment that may be improved by improving the electricity supply.

There was also a significantly higher level of confidence ( $P<0.05$ ) among students who believed that Teachers and faculty have positively affected their training. This supports the students' opinion where 16.5% of the respondents opined that lecturer/faculty-student relationship influences their level of self-assessed confidence. Therefore, avenues for

staff-students interaction should be created for students to emulate and get oriented on the principles of positive learning, time management in examinations, and general principles of professionalism.

Contrary to already established fact that peer tutored discussions form the most preferred part of the learning environment (11, 12), just 13.8% of the respondents believed it (Contribution from colleagues and mates) influences self-assessed confidence. In the comparative analysis, there was no significant difference in confidence level between those who were positively influenced by colleagues and those who were not; even though 90.9% of the students thought they were affected positively by colleagues. This high percentage of thought could be attributed to the fact that their colleagues truly present a more interactive environment that may lead to a different understanding of subject (11), but some of these interactions may not be properly structured by the trainees leading to a certain degree of smoke screen on important subject matters. Therefore, faculty should aid students to structure more organized peer-tutored discussions that should entail discipline and objective communications.

Other factors reported by students to affect the self-assessed confidence level before examinations include health and financial status, relationship with God and level of Psychological stability and anxiety. Obviously, the health status of a student has the ability to reduce self-confidence to the worst level and even psychological instability and anxiety are mental-health-undermining factors.

Over many years, the anxiety and psychological morbidity have been observed among medical students (13, 14, 15). This finding has been linked to poor academic performance; an outcome of failed confidence and the belief in one's self. Fandem et al<sup>15</sup> established a correlation between the academic performance and parental income and financial status. This may be a pointer to the effect of financial status on the level of an individual's self-

assessed confidence because confidence and competence/performance should be related.

Since the level of preparedness constitutes the highest cause of low self-assessed confidence during examinations, it could be the resulting factor of all other mentioned causes. Psychological instability and mental and physical health, low financial status, poor learning environment and poor faculty-student relationship could eventually lead to poor level of preparedness. How can a high level of preparedness be achieved among the medical students about to face a major professional examination? How can we enhance the absolute confidence associated with knowledgeableness in the medical training?

The teachers and faculty have a huge role to play in the continuous/regular assessment of medical students' self-assessed confidence before any major professional examination since it is a pointer to level of preparedness.

And to ensure a high level of preparedness, programs that monitor students' psycho sociocognitive inclinations should be designed and adopted to ensure easy identification of struggling students who may have been hunted by health (physical and mental) problems, financial problems, religious problems since Nigeria is a very religious country; and the teacher/faculty-student relationship should be enhanced by the division of students' classes into smaller bond-groups and teachers made to have regular counseling meetings with the member students.

This should avail an opportunity to clear all self-doubts of the students and reposition them for a more confident disposition in facing challenges of examinations and training in the medical school.

Even though Morgan and Cliff-Hogg (16) and Bansley et al (17) have reported a lack of relationship between confidence and performance in clinical skills, it is absolutely necessary to re-emphasize the need for self confidence in medical training and practice. This is needed because this practice enhances a near-per-

fect belief in the practitioner by patients (that should not be false) and by doing so, the tenets of professionalism are further enthroned.

It should be importantly stated that "examination(s)" used in the context of this study may also imply all forms of the cognitive assessments during training and this report may serve as a guidepost to future outcomes of self-assessed confidence of future student trainees and post-graduate trainees.

## 5. CONCLUSION

Self-reported confidence before any examination at all levels of medical training is a product of previous experience, attitudinal inclinations achieved, degree of self-subjection to tenets of professionalism and possibly, the inadvertent role of the medical school environment including colleagues, teachers and faculty members, comfort, satisfaction and psychosocial stability. All of the above mentioned factors may be addressed as sub-factors that determine the level of the psychological and academic preparedness. Let medical schools in Nigeria; adopt a continuous and regular assessment of students' self confidence before any minor or major examination, to monitor and ensure a certain psychological and academic level of preparedness among the students. This action shall avoid some cases of attrition resulting from self-doubt and a lack of preparedness.

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