

## Perceptions of medical students undergoing cadaveric training: a sociocognitive perspective

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**ABSTRACT:** The emotional and sociocognitive aspects of human dissection are important aspects of professionalism in medical training and so should be critically evaluated in the present day changing society. Medical students of Ebonyi State University, Nigeria completed 390 questionnaires. The questionnaires included questions seeking demographic information; open-ended questions on their first experience of dissection and suggestions on improvements in training. The Visual analogue scale (VAS) was used to assess anxiety and satisfaction levels. The questionnaires were analyzed statistically with  $P < 0.05$  indicating level of significance. Majority (35.7%) of the students was excited/fulfilled after their first experience and 41.5% were of the opinion that life in humans is more appreciated by dissection. Their mean anxiety level was 3.42 while satisfaction rating was 7.13 on a scale of 1-10. A greater number of students suggested that conducive learning environment and improved preservation techniques would improve satisfaction (30.3% and 33.1% respectively). A Conducive environment and better preservation of cadavers are the major factors that improve satisfaction. Psychosocial factors should be assessed constantly to ascertain attitudinal changes of students, which will be helpful in quality of professional formation.

**KEY WORDS:** Perceptions; Medical Students; Sociocognitive; Cadaveric Training

### INTRODUCTION

Cadaveric training in all Medical Schools has always been a prerequisite for award of Medical and Allied Medical degrees. The affective and emotional aspects of human dissection are salient ingredients in professional formation, and professionalism signifies medical integrity and guarantees correct professional conduct<sup>1</sup>. Following the crowding of Medical curriculum by cellular, sub-cellular and experimental sciences in recent time, Anatomists and Medical educators rethought what dissecting a human

body could offer medical students. Hence, modifications of curricula ensued with a gradual reduction in dissecting periods to accommodate a reciprocal increase in the study of other experimental sciences. That notwithstanding, several studies recently reiterated the importance of dissection stating that it is the best way for medical students to deeply understand the structure of human body, makes learning interesting and introduces them to emergency procedures<sup>2</sup>.

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Considering the indispensability of dissection to medical training, a confluence of various ideas has revived attention to the emotional experience of dissection and sparked a renewed discussion about the relationship between the affective components of learning anatomy and the professional formation of future healers<sup>1</sup>. The affective and emotional components impart sociocognitive consequences on the development of these medical trainees, which ultimately manifests in attitudinal changes, anxiety and satisfaction or dissatisfaction in the learning environment with a likely extended effect on their perceptions towards some medicolegal and ethical aspects of professionalism and interpersonal relationships in the social setting. To the best of our knowledge, this work has not been done.

This study has critically examined the trends of perceptions of medical students in Ebonyi State University, Abakaliki, Nigeria as related to sociocognitive aspects of dissection of human body in a 21<sup>st</sup> century modernized approach to the study of anatomy.

#### METHODOLOGY

400 self-administered questionnaires were designed and distributed to pre-clinical medical students undergoing cadaveric training in the Department of Human Anatomy, Faculty of Basic Medical Sciences, Ebonyi State University, Abakaliki, Nigeria. Ethical approval was obtained from the ethics/research committee of the faculty of Basic Medical Sciences, Ebonyi State University, Abakaliki.

**Questionnaire Design:** The Questionnaires were designed to elicit quantitative and qualitative data to gather factual and attitudinal information. In summary, the questionnaire contained questions, which sought demographic information (age, sex, class), whether they had anxiety on learning of cadaveric training; and a 10-point Visual analogue scale (VAS) question was used to assess the level of anxiety, satisfaction or dissatisfaction towards the entire training process. Sociocognitive behaviors were assessed with open-ended questions which sought answers and reactions on how students felt dissecting cadavers for the first time, how dissection has changed their perception about their fellow humans and if they will prefer the use of computer assisted learning (CAL) and models to dissection. Also, question on whether improvement is needed in their training and to suggest what the authorities should do to improve on their training. Finally, they were

asked to rate their level of adaptation to the cadaver experience. No pre-testing was done but the questionnaire was piloted among seven part IV medical students who had undergone cadaveric training. Their comments on the questionnaire were collated and reflected in the final questionnaire.

**Inclusion criteria:** All medical students who have been consistent in dissection classes and had attained 75% attendance were included in this study. This means that the student must have attended 30 dissection classes out of about expected 40 dissection classes in a semester. This was to ensure adequate emotional and affective disposition towards the process of cadaveric training and those that had evaluated personally the prospects and consequences of dissection.

**Exclusion criteria:** Students who had not met with 75% attendance to dissection classes were excluded from this study. This was to avoid the interference of inadequate experience to dissection, which will alter individual's attitudinal changes along the process of training. The results were analyzed using Statistical Package for Social Sciences (SPSS) program version 11.0. Since there were multiple responses for the questions, recorded qualitative information were literarily transcribed and categorized into major themes. Content analysis was done.

#### RESULTS

A total of 390 questionnaires were returned and analyzed statistically using the SPSS 11.0 software. The respondents were 206 males (52.8%) and 184 females (47.2%) with mean age of  $21.32 \pm 2.36$ . 61.6% students felt anxiety on first experience with an average of 3.42 on a 10-point Visual analogue scale (VAS). 79.1% of the students preferred learning with cadavers to computer assisted learning (CAL) and human models while 20.9% preferred a computer based learning approach and the use of models to cadaveric learning/dissection.

263 respondents were satisfied with the pattern of professional training with an average satisfaction level of  $7.13 \pm 2.21$  while 117 students were dissatisfied with an average dissatisfaction level of  $6.23 \pm 2.70$ . On whether they needed improvement in their cadaveric training or not, 97.1% of them said "YES" while 2.9% said "NO". Suggestions on what the authorities should do to improve training are summarized in the tables.

**Table 1** shows the summary of feelings of students on their first exposure to dissection. A greater percentage of the students were fulfilled and excited (35.7%) while another large percentage felt discomfort (28.8%).

**Table 2** shows how cadaveric training has changed their perception about their fellow humans. 41.5% of them had increased value for fellow humans.

**Table 3** illustrates the respondents' suggestions on how their cadaveric training should be

improved. A greater percentage (33.1%) suggested improvement in preservation techniques. 30.8% were of the opinion that providing a conducive environment for dissection and employing more demonstrators can improve quality of training.

**Table 4** shows the students' adaptation rates to cadaveric training. Majority of them had a fairly good adaptation rate (58.9%).

**Table 1: Summary of Narration of feeling after first experience**

Narration	Frequency	Percentage (%)
Excited/Fulfilled	136	35.7
Discomfort	110	28.8
Life is undervalued	58	15.2
Scared	47	12.2
Normal	31	8.1

**Table 2: Summary of perception of feeling about fellow humans**

Perception	Frequency	Percentage (%)
Humans are learning instruments	62	17.1
Humans should be more appreciated	149	41.5
Humans are like animals.	114	31.7
No effect	35	9.7

**Table 3: Summary of suggestions for improvement in their training**

Suggestions	Frequency	Percentage (%)
Conducive learning environment and employing more demonstrators	115	30.8
Use of models and Computer assisted learning (CAL)	43	11.5
Improve on preservation techniques	123	33.1
Provision of more cadavers	89	23.1
No suggestions	3	0.8

**Table 4: Adaptation rate of the students to cadaveric training**

Rating	Frequency	Percentage (%)
Excellent	97	25.9
Fairly good	221	58.9
I don't know	12	3.2
Poor	32	8.5
Very poor	13	3.5

## DISCUSSION

Cadaver-based anatomical education is a pre-requisite for optimal training and is necessary for establishing the primacy of the patient, apprehension of the multidimensional body, anatomical variability, learning the basic language of medicine and touch-mediated perception of the cadaver/patient<sup>3</sup>. The sociocognitive perspective of this learning has a philosophical backing that is phenomenological and relates to individuals only knowing what they experience through attention to perceptions and meanings, which awaken their conscious awareness<sup>4</sup>. The perceptions of these students inadvertently influence their problem solving ability, which has within it the concept of decision-making<sup>5</sup>. This concept of decision-making will in the long-run affect the underlying principles of professionalism.

About one-tenth (11.5%) suggested that the use of models and Computer-assisted learning (CAL) as a supplement to dissection could improve the quality of their training. This is similar to the finding of a previous study which reported that blending dissection with CAL helps to expedite and enhance preparation for a patient-based medical profession<sup>3</sup>. Various suggestions made by students (**Table 3**) conform to a previous study<sup>6</sup> which suggested continued modifications in anatomy curriculum and teaching methods. The anxiety level of the students to cadaveric training was quite low on the Visual analogue scale (3.82). This is probably due to the acquaintance already established by their senior colleagues thereby making most of them ready to an extent to face cadaveric training. This indirectly relates to the high percentage of students who felt excited on their first experience of dissection (35.7%). The discomfort felt by less than one-third (28.8%) of respondents could be attributed to the irritating smell of the fixatives used and the seemingly unfriendly environment. 15.2% were induced by their sight to think that life is undervalued through dissection at that initial stage and may not have evaluated the importance of dissection in their training. Only 8.1% of the students were not affected by this first experience and may represent small fraction that have totally conditioned their minds towards the type of training required in the medical school.

On whether cadaveric training has affected the way they perceive humanity and life, 41.5% of them were of the opinion that dissection has increased their value for life. This is important in the recent arguments on certain ethical and

professional issues like criminal abortion, mercy killing etc. 31.7% felt that dissection made them look at humans as special animals and 17.1% felt that every human is a potential instrument of anatomical learning. This may be a pointer to the issue of encouraging self-whole-body donation to medical schools for cadaveric training of future students since they feel that their bodies are necessary for update of knowledge in Anatomy. Also such perceptions could negatively impart on some ethical and medicolegal considerations whereby patients are taken as learning apparatus for acquisition of medical knowledge.

The general satisfaction towards training was high (7.13 on the Visual analogue scale) and could be an extended outcome of the fulfillment and excitement felt on their first experience. However, 30.53% of the respondents were dissatisfied with their training (6.23 on the Visual analogue scale) and could be a guidepost to some causes of medical student attrition in the medical school<sup>7</sup>.

Even with the high satisfaction level, the students suggested improvements that could be made in their training. Most students suggested improved comfort within the dissecting environment (30.8%) with the provision of room furnishings like air-conditioners, odor control agents and also, the employment of more instructors for guidance during dissection. 33.1% of the respondents suggested improvements in preservation techniques used on the cadavers by provision of extra-large preservation tanks to avoid compression of the stored cadavers and if possible, using less irritating fixatives; a challenge to histochemists and all anatomists in Nigeria. Also avoiding the purchase of battered bodies can help sustain preserved bodies. This raises the question of sources of cadaver supply within our environment where most bodies are either unidentified persons in auto crashes (already battered) or are those of executed robbers with varying degrees of gunshot injuries. At times, these bodies are near decay before they are brought to the medical schools for use. Therefore, such improvement might be difficult in the context of our environment. The idea of providing more cadavers to improve training was equally suggested by 23.8% of the students. This suggestion conforms to a previous study which noted that more cadavers reduce number of students per group and encourages teamwork, respect for the body, familiarization of the body, application of practical skills, integration of theory and practice, preparation for clinical

work, and acknowledgement of the status of dissection within the history of medicine<sup>8</sup>.

The students self-rating on adaptation rate were quite encouraging and 58.9% adapted fairly well while 25.9% felt they adapted excellently. The rest felt they had poor and very poor adapting abilities/skills and may be related to the level of dissatisfaction and student attrition stated earlier. Through these perceptions outlined, there is always a gradual build up of attitudinal changes in the course of their training, which may affect conceptualization of the basics of anatomy and ability to connect with clinical aspects of training. And because more students still prefer the use of cadavers to outright use of models and CAL in their training, it is very pertinent to constantly evaluate the sociocognitive impact of dissection, bearing in mind that volition is distinct when cognition is at work and as such, ethical and professional values may be on the precipice disintegration when the impacts are negative as seen in the students' equation of humans to animals and learning instruments. Therefore, constant inculcation, directions and redirections should be encouraged during orientation and reorientation programs for the prime values of life to be sustained in anatomy and medicine.

In Nigeria and most developing countries, there has been a steady fight to increase funding in universities. Medical Schools should equally seek special funding to help alleviate the physical and infrastructural problems that handicap training in anatomy, which indirectly affects cognition and optimal didacticism. Such funds should be used to provide more cadavers, employ more instructors, provide modern CAL processes to supplement dissection and initiate small group, problem based learning that ultimately improves training quality of our future healers and teachers.

**Limitations of study:** The study was conducted in only one medical school due to limited time and funds available. Even though the sample size may appear small and may not be generalized to all medical schools in Nigeria, nevertheless, the study center mirrors a typical Nigerian setting and as such measures recommended here should be applied to all schools. Future research directions include the impact of the cognitive and affective aspects of students' responses to

dissection on their academic performances and post-graduate aspirations.

## CONCLUSION

Sociocognition imparts on quality of knowledge and as long as cadaveric training is concerned, its role in professionalism cannot be overemphasized. Hence, factors that improve positive perceptions and satisfaction in learning, like conducive environment, adequate dissection instructors and steady orientation and reorientation of these students on emotional, affective and cognitive aspects of dissection should be thoroughly engaged in the training of our future anatomists and medics.

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