



## **Attitudes of Students towards the Profession of Medical Laboratory Science in Faculty of Medical Laboratory Sciences of Usmanu Danfodiyo University, Sokoto, North-Western Nigeria**

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### **Authors' contributions**

*This work was carried out in collaboration between all authors. Authors KKI, AG and OE designed the study, performed data analysis and wrote the first draft of the manuscript respectively. Authors ASM, AHB, OA and MS managed the data collection and compiled the data. Authors MKD, MHY, IBA, AU, MLJ and AAN managed the literature searches. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Aim:** To look into the attitudes of Medical Laboratory Science students towards the profession of Medical Laboratory Sciences (Bachelor of Medical Laboratory Science) in Faculty of Medical Laboratory Science, Usmanu Danfodiyo University (UDU), Sokoto, North-Western Nigeria.

**Study Design:** This is a cross-sectional study designed to address the attitudes of Medical Laboratory Science students towards the profession of medical laboratory science; before and after admission.

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**Place and Duration of Study:** Faculty of Medical Laboratory Science, Usmanu Danfodiyo University, Sokoto, North-Western of Nigeria, between January and April, 2016.

**Methodology:** A structured self-administered questionnaire was designed and distributed for this purpose. After explaining to the students, the research objectives, how to fill the questionnaire's different components and questions, a self-administered 15-item questionnaire was distributed to them for completion. Five Hundred and Six (506) questionnaires were distributed to the students (from 100 level to 500 level), but only Four Hundred and Eighty-Three (483) were returned completed.

**Results:** Of the 483 students participated in this study; 331(68.5%) were male and 152(31.5%) were female. About 218(45.1%) students initially (before admission) applied for Bachelor of Medical Laboratory Sciences (BMLS), 210(43.5%) applied for Medicine and Surgery (MBBS), while 24(5.0%) applied for Pharmacy and the remaining 31(6.4%) students applied for the other courses.

**Conclusion:** Although, This study indicates that, almost half of the Medical Laboratory Science students surveyed in the Faculty of Medical Laboratory Sciences of Usmanu Danfodiyo University initially (before admission) applied for medical laboratory science as their future career, many of the students considered Medicine and Surgery (MBBS) as their future career, because they wanted to be involved in patient care. This may due to lack of awareness to the profession of Medical Laboratory Sciences.

*Keywords: Students' attitudes; profession of Med. Lab. science; UDU; Sokoto; North-Western Nigeria.*

## 1. INTRODUCTION

The role of the medical laboratory scientists in medicine is always changing and it is even more obvious in today's world of considerable scientific and technical advances. Hence, in the years ahead, the medical community will require greater numbers of better trained medical scientists to meet these emerging challenges in health care [1]. Medical Laboratory Science, otherwise known as Biomedical Science in the United Kingdom or Clinical Laboratory Science in the United States of America and Canada, is the practice which involves the analysis of human and animal tissues, body fluids, and excretions etc [1].

The number of Medical Laboratory Scientists in Hospitals in the northwest geopolitical zone is far below the minimum requirement as outlined by the Medical Laboratory Science Council of Nigeria. The same sad situation obtains in almost all the public and private health delivery centers in Sokoto, Niger, Kebbi, Zamfara and Katsina States. This glaring imbalance necessitated the establishment of the School by the authorities of the Usmanu Danfodiyo University Sokoto in 2002/2003 academic session with a total of twenty (20) pioneer students enrolled for the programme [2]. Precisely, the instrument given birth to the School was the 225<sup>th</sup> Senate meeting of Wednesday, 30<sup>th</sup> July, 2003. National University Commission (NUC) granted full accreditation in 2005 while the Medical

Laboratory Science Council of Nigeria (MLSCN) granted its accreditation in 2006 [3].

The main aim of Medical Laboratory Sciences program is to train competent clinical laboratory personnel to meet present and future needs of the health care services. In order to meet these demands and challenges, institutions must do their best to structure curricula and design new training programs to meet the health needs of hospitals and clinical services in the country. It is useful to study the attitudes of students towards the profession of Medical Laboratory Sciences programs and educational needs to help in the implementation of changes for the best possible improvements [4].

## 2. MATERIALS AND METHODS

### 2.1 Study Area

This study was carried out in the Faculty of Medical Laboratory Science, Usmanu Danfodiyo University, Sokoto, North-Western of Nigeria. Sokoto state is located in the extreme North-West of Nigeria, near to the confluence of the Sokoto River and the Rima River [5]. The major indigenous tribes in the state are the Hausa and Fulani and other groups such as Gobirawa, Zabarmawa, Kabawa, Adarawa, Arawa, Nupes, Yorubas, Ibos and others [6]. Majority of the Hausas' are farmers while Fulanis are nomadic and are engaged in animal rearing [7]. Based on 2006 population census, Sokoto state had a population of 3,696,999, with an average

estimate of 4,806,098 in 2015 based on the population annual growth rate of 3% [8].

## 2.2 Study Population

The study population in this cross-sectional study included 483 students comprising male and female. The participants were recruited from the Faculty Medical Laboratory Sciences of Usmanu Danfodiyo University, Sokoto, North-Western of Nigeria using Simple random sampling technique.

## 2.3 Methodology

Data was collected from 483 BMLS students who participated in this study. After explaining to the students the research aim, how to fill the questionnaire's different components and questions; a self-administered 15-item questionnaire was designed and distributed for completion. Five hundred and Six questionnaires were distributed and Four Hundred and Eighty-Three were returned with complete data, so sample reduction was due to missing data. There were fill-in the blanks, yes/no questions and multiple-choice responses. Data was collected under the supervision of the chief investigator.

## 2.4 Study Design

This is a cross-sectional study designed to address the attitudes of Medical Laboratory Science students toward the profession of medical laboratory science. This study will help to gain a better understanding of Bachelor of Medical Laboratory Science (BMLS) students' attitudes towards the profession of Medical Laboratory Science program before and after admission.

## 2.5 Sample Size Estimation

The sample was calculated using the following formula [9]:

$$n = Z^2pq/d^2$$

Where

n = minimum required sample size in population >10,000

Z = standard normal deviate set at 95% (1.96).

p = proportion of success or prevalence

q = proportion of failure (= 1- p)

d = precision, tolerable margin of error, expected difference set at 5%.

Attrition rate of 10% was added.

57.7% participants chose working in hospital laboratory (i.e made their Career choices in Medical Laboratory Technology) in Saudi Arabia [10].

$$n = Z^2pq/d^2$$

$$z = 95\% (1.96)$$

$$p = 57.7\% (0.577)$$

$$q = 1-0.5 = 0.423$$

$$d = 5\% (0.05)$$

$$n = Z^2pq/d^2$$

$$n = (1.96)^2(0.577)(0.423) / (0.05)^2$$

$$n = 375.049 = 375.1$$

$$\text{Sample Size} = 375.1$$

$$\text{Attrition rate of } 10\% = 37.5 = 38 + 375 = 413$$

$$\text{Therefore, sample size} = 413$$

### 2.5.1 Inclusion criteria

Students admitted to the Faculty of Medical Laboratory Sciences of Usmanu Danfodiyo University, Sokoto, North-Western Nigeria.

### 2.5.2 Exclusion criteria

Students in the Faculty of Medical Laboratory Sciences of Usmanu Danfodiyo University, Sokoto, North-Western Nigeria, who had other conditions such as sickness, students expelled from the Faculty and on clinical posting out of Sokoto city.

## 2.6 Statistical Analysis

The data obtained were analyzed using Statistical Package for Social Science (SPSS) version 20. The results were expressed as the mean  $\pm$  S.D simple percentage or proportion. Comparisons were made using  $X^2$  test and  $p < 0.05$  were considered statistically significance.

## 3. RESULTS AND DISCUSSION

Of the 506 questionnaires distributed, only 483 were returned completed. This study comprises of 331(68.5%) male and 152(31.5%) female as shown in the Table 1. This study attempted to explore some possible explanations for the discrepancy between having the qualifications for a Medical Laboratory profession and Medicine and Surgery (MBBS).

Data was collected from Four hundred and Eighty-three students comprising 331(68.5%) male and 152(31.5%) female in the Faculty of

Medical Laboratory Sciences of Usmanu Danfodiyo University, Sokoto, North-Western Nigeria, for this study.

**Table 1. Gender distribution of the study population**

Gender	Frequency	Percent (%)
Male	331	68.5
Female	152	31.5
Total	483	100

This table shows the distribution of the study population based on classes (levels) with three hundred levels (300 level) having the highest number.

**Table 2. Distribution of the Study Population based on the Classes/levels (year of study in the university)**

Levels (classes)	Frequency	Percent (%)
100	83	17.2
200	108	22.4
300	162	33.5
400	70	14.5
500	60	12.4
Total	483	100

These tables described the attitudes of students towards the profession of medical laboratory from the courses they initially applied, the initial courses given by the university, to the final courses they accepted as their future career. Of the 483 students participated in this study; 218(45.1%) students initially (before admission) applied for Bachelor of Medical Laboratory Sciences (BMLS), 210(43.5%) applied for Medicine and Surgery (MBBS), while 24(5.0%) applied for Pharmacy and the remaining 31(6.4%) students applied for the other courses.

**Table 3.0. Courses initially applied to the university**

Course applied	Frequency	Percent (%)
MED. LAB. SCI.	218	45.1
M.B.B.S	210	43.5
PHAR. SCI.	24	5.0
COMP. SCI.	9	1.9
BIOCHEM.	7	1.5
NURSING SCI.	4	0.8
Others	11	2.2
Total	483	100

**Table 3.1. Courses initially given by the university**

Course initially given by university	Frequency	Percent (%)
MED. LAB. SCI.	339	70.1
M. B. B. S	13	2.5
VET. MED.	10	2.1
CHEMPUR/APP	27	6.0
COMP. SCI.	15	3.1
BIOCHEM	14	3.0
PHARM. SCI.	9	1.7
NURSING SCI.	2	0.4
Others	54	11.1
Total	483	100

**Table 3.2. Change of course to Med. Lab. Sci.**

Change of course	Frequency	Percent (%)
Change to MED. LAB. SCI.	144	29.8
Accepting MED. LAB. SCI.	339	70.2
Finally	483	100
Total	483	100

*MED. LAB. SCI. = Medical Laboratory Science, M. B. B. S. = Medicine and Surgery, PHARM SCI. = Pharmaceutical Sciences, BIOCHEM. = Biochemistry, NURSING SCI. = Nursing Science, CHEMPUR/APP. = Chemistry Pure and Applied, COMP SCI. = Computer Science, VET MED. = Veterinary Medicine*

The potential explanation for the lack of interest in the careers in clinical Medical Laboratory Science could be the mindset that this occupation (Medicine and surgery) is the ultimate or only career that affects patient care, and this may contribute to the small proportion of qualified candidates seeking career in Medical Laboratory sciences [11]. This present study varies with the study done in Saudi Arabia [12], which indicated that a large majority of students surveyed considered their careers to end in medicine.

The levels of awareness between the students in the classes were compared, and the junior classes (100level and 300level (year of study in the university i.e 100level = first year in the university) were shown to be more enlighten about the profession of Medical Laboratory Sciences as shown in Table 4.

Lack of interest in Medical Laboratory Sciences as a career is also linked to being unfamiliar with the career. McCoy, 1997 reported that the low visibility of the Medical Laboratory Science

**Table 4. Comparison of the Level of Awareness among the Students based on the Level S/Class of Study**

Levels	Awareness			X <sup>2</sup>	p-value
	Yes	No	Total		
100	59	14	73	6.7	0.151
200	90	18	108		
300	131	31	162		
400	58	25	83		
500	42	15	57		
Total	380	103	483		

professionals has contributed to the public's ignorance of the profession, but it is surprising that science students at the college level are unaware of the field of Medical Laboratory Sciences [13]. It stands to reason that students with a strong interest in being involved with patient care may consider a career in Medical Laboratory Science, if they were exposed to the technical skills required in the profession of Medical Laboratory Sciences [14]. Student's awareness about a program plays an important role in the choice of their future careers [15]. In this study, 380 (78.7%) of the students have ideas (before admission) on the profession of Medical Laboratory while the remaining 103 (21.3%) had no ideas about the profession. Our study is in variance with the study done in Saudi Arabia [16], which revealed that many students were unaware of the profession of Medical Laboratory Sciences. This could also be linked to the facts that many students considered MBBS as the ultimate or only career that affects patient care.

The comparison of level awareness between the students based on classes, shows no statistically significance difference ( $p > 0.05$ ). This indicated that the level of awareness will be increasing in future.

#### 4. CONCLUSION

Even though, This study indicates that almost half of the Medical Laboratory Science students surveyed in the Faculty of Medical Laboratory Sciences of Usmanu Danfodiyo University initially (before admission) applied for medical laboratory sciences as their future career, many students applied for Medicine and Surgery because they want to be directly involved in patient care, but when they failed to meet up with the university requirements for entrance into Medicine and Surgery (MBBS). They later have to consider Medical Laboratory Sciences as an alternative for their future career. There are now

Many Nigerian Universities offering careers in Medical Laboratory Sciences; it stands to reason that academia has strong support networks for science students to be aware of medical laboratory science profession and the potential benefits attached to the profession of medical laboratory sciences. There are also many Professors who are competent in these areas because they themselves have taken this same career path, they should providing mentoring, encourage, support and give guidance to science students to consider Medical Laboratory as their future careers. Offering Medical Laboratory Science courses with an occupational focus does not dilute the science but rather enhances the material through practical application. This will heighten awareness of career opportunity in laboratory sciences and enhance academic and career planning.

#### CONSENT

All authors declare that written informed consent was obtained from the patients (or other approved parties) for publication of this paper.

#### ETHICAL CONSIDERATION

All authors declare that all experiments have been examined and approved by the ethics committee of Usmanu Danfodiyo University Teaching Hospital, Sokoto, North Western Nigeria.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

#### REFERENCES

1. Agbonlahor DE, Ihimekpen G, Okara GC, Saliu I. Evaluation of medical laboratory science profession in Nigeria. Association

- of medical laboratory scientists of Nigeria; 2014. ISBN 978-978-943-850-1: 6-91.
2. UDUS. The 8<sup>TH</sup> induction ceremony of 2014/2015 Medical Laboratory Science graduands, School of Medical Laboratory Sciences, College of Health Sciences, Usmanu Danfodiyo University, Sokoto. 2016;15.
  3. UDUS. Student's hand book and curriculum. Faculty of Medical Laboratory Sciences, Usmanu Danfodiyo University, Sokoto. 2014;10-21.
  4. Bashawri L, Ahmad MA, Al-Mulhim AA, Awari B. Medical laboratory technology program at King Faisal University: A 10 year Experience. *Journal of Family and Community Medicine*. 2009;1:33-40.
  5. Mamman AB. A people united, a future assured (Survey of States). Mamman, A. B., Oyebanji, J. O. and Peters, S. W. (eds.). Vol. 2. Gabumo Publication Company Ltd., Calabar, Nigeria. 2000; 123-134.
  6. Sokoto State Diary. Ministry of Information Sokoto. 2008;4-5.
  7. Iman A. Prevention of coliform bacteria on environmental surface in day care centre and nursery schools in Sokoto metropolis. *Nigerian Journal of Basic and Applied Sciences*. 2006;16(1):82-86.
  8. National Population Commission. NPC. Malaria indicator survey. Abuja Nigeria (2006). 2010;2-9.
  9. Araoye MO. Research methodology with statistics for health and social sciences. Nathadex Publishers, Ilorin. 2004;118.
  10. Layla AM, Bashawri MD. Professional attitudes and career choices of female Medical Laboratory Technology students and graduates: Experience from Eastern Saudi Arabia. *Journal of Family and Community Medicine*. 2005;12(3):149-155.
  11. Celia F. Lab organizations respond to tight labor market - National Accrediting Agency for Clinical Laboratory Sciences. *American Journal of Medical Laboratory, Obstetrics*. 2001;10-15.
  12. Al-Mulhim AA, Al-Kuwaiti A. Second GCC Conference of Faculties of Medicine. Saudi Arabia: King Fahd Hospital of the University Al-Khobar;. Nov 15-16, The Future of Allied Profession in Saudi Arabia. *Medical Education*. 2000;2-15.
  13. McCoy C. Clinical laboratory science (CLS) education programs: Status and future Directions. *Journal of Clinical Laboratory Science*. 1997;10(1):32-7.
  14. Harmening DM, Castelberry BM, Lunz ME. Technologists report overall job satisfaction; a 10-year retrospective study examines career patterns. *American Journal of Laboratory Medicine*. 1994;25(12):773-5.
  15. Reuter ML. Professional perspectives. The future of the medical technologists. *Journal of Laboratory Medicine*. 2003;31(11):598-9.
  16. Bashawri LA, Ahmad MA, Bahnassy AA, Al-Salim JA. Attitudes of Medical Laboratory Technology graduates towards the internship training period at King Faisal University. *Journal of Community Medicine*. 2006;13(2):89-93.

## RESEARCH QUESTIONNAIRE

**Study Title:** Attitudes of Students towards the Profession of Medical Laboratory Sciences in the Faculty of Medical Laboratory Sciences of Usmanu Danfodiyo University, Sokoto, North-Western Nigeria.

I am Ibrahim K. Kwaifa, currently an Assistant Lecturer in the Department of Haematology, Faculty of Medical Laboratory Sciences, Usmanu Danfodiyo University, Sokoto. This is a survey study developed to address the attitudes of students towards the profession of medical laboratory science. You are kindly requested to complete this questionnaire. It is entirely voluntary, and in no way will it have any effect on your grade. This survey is anonymous so I am asking that you do not write your name or any other identifying marks anywhere on this questionnaire. If you should have any question, please feel free to ask.

**Please fill or circle or tick your answers to the questions or check boxes provided.**

1. Age .....
2. Sex: Male  Female
3. Level/Class.....
4. Mode of entry into the University: UME/JAMB  Matriculation
5. What was your score? .....
6. Course applied for (e.g zoology) .....
7. Initial Course given by the University .....
8. Any change of course? Yes  No
9. If yes, to question 7 above which course? .....
10. Awareness about Medical Laboratory Science before admission: Yes  No
11. Is it your choice to study Medical Laboratory Science (MLS): Yes  No
12. I am not considering a career in Medical Laboratory Science because:
  - A. I have no interest in the profession
  - B. There are few jobs in Medical Laboratory Sciences
  - C. The job does not pay enough
  - D. I am not familiar with this career
  - F. I don't want to be infected
13. The interest on Medical Laboratory Science is because:
  - A. There are more jobs than applicants in the field of Medical Laboratory Science.
  - B. The course gives job satisfaction.
  - C. The course can make me self-employed.
  - D. Good salary
  - E. I considered patient Benefits
  - F. Opportunity for advancement.

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