



Perception and Acceptance of the Doctor of Medical Laboratory Science (MLSD) Degree (A Professional Doctorate Degree) among Medical Laboratory Scientists in Nigeria

**Kemzi N. Elechi-Amadi^{1*}, Ojoye N. Briggs¹, Valerie E. Ugochi²,
Obeta M. Uchejeso³ and Abdulsalam Yakubu⁴**

¹Department of Medical Laboratory Science, Rivers State University, Port Harcourt, Nigeria.

²Department of Medical Laboratory Science, University of Calabar, Calabar, Nigeria.

³Department of Medical Laboratory Management, Federal School of Medical Laboratory Science, Jos, Nigeria.

⁴Department of Laboratory Services, Federal Teaching Hospital, Gombe, Nigeria.

Authors' contributions

This work was carried out in collaboration among all authors. Author KNEA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors ONB and VEU managed the analyses of the study. Authors OMU and AY managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JAMPS/2020/v22i930193

Editor(s):

(1) Dr. Robert Dymarek, Wroclaw Medical University, Poland.

Reviewers:

(1) Kiril Slaveykov, Trakia University, Bulgaria.

(2) Kurylenko Nataliia, Kherson State University, Ukraine.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/63090>

Original Research Article

Received 18 September 2020

Accepted 22 November 2020

Published 11 December 2020

ABSTRACT

Background: The practice of Medical Laboratory Science has witnessed advancement globally, with increasing need for laboratory input in modern healthcare delivery. This has brought about the need for advanced education and training for practitioners of Medical Laboratory Science.

Objectives: This descriptive, cross-sectional study assessed the perception and acceptance of the Doctor of Medical Laboratory Science (MLSD) degree among Medical Laboratory Scientists in Nigeria.

Methods: The study involved five hundred (500) Medical Laboratory Scientists across Nigeria, who

*Corresponding author: E-mail: kemzi.elechi-amadi@ust.edu.ng, kemzi89@gmail.com;

participated based on informed consent. The survey instrument was a structured questionnaire that contained demographic information and 16 items which the respondents responded to.

Results: Out of the 500 respondents, 380(76%) were male while 120(24%) were female, with majority of them within 20 to 49 years of age. On the perception of the MLSD degree, 355(71%) of the respondents agreed that MLSD will increase employment opportunities for practitioners, 460(92%) agreed that it will offer practitioners enhanced emoluments while 490(98%) agreed that MLSD will enhance the knowledge base and clinical expertise of practitioners. Also, 400(80%) agreed that MLSD will help reduce quackery and impersonation of Medical Laboratory Scientists, 485(97%) agreed that it will enhance the prestige of the profession, 470(94%) agreed that it will enhance laboratory diagnosis and biomedical research. Data on acceptance show that 420(84%) of the respondents indicated that they would like to obtain the MLSD degree, 345(69%) will like one of their children to obtain the MLSD degree, 305(61%) do not support quasi-specialization in MLSD, 445(89%) agreed that MLSD without quasi-specialization will broaden the clinical knowledge and skills of practitioners and improve patient-care while 415(83%) believe that the MLSD without quasi-specialization will give more meaning to postgraduate specialization.

Conclusion: It is concluded that the MLSD has positive perception and acceptance among Medical Laboratory Scientists in Nigeria. Therefore, MLSD is recommended for adoption and implementation for the training of Medical Laboratory Scientists in Nigerian universities.

Keywords: Medical laboratory science; MLSD; perception; professional doctorate degree; Nigeria.

1. INTRODUCTION

Medical Laboratory Science is the practice involving the analysis of human or animal tissues, body fluids, excretions, production of biologicals, design and fabrication of equipment for the purpose of medical laboratory diagnosis, treatment and research; and includes medical microbiology, clinical chemistry, chemical pathology, haematology, blood transfusion science, virology, histopathology, histochemistry, immunology, cytogenetic, exfoliative cytology parasitology, forensic science, molecular biology, laboratory management, etc [1], and many other areas depending on the country of practice. As a field of study, Medical Laboratory Science deals with the diagnosis, prognosis, treatment, prevention and control of diseases in human beings, animals and the environment through analysis of body fluids and tissues [2]. Medical Laboratory Science practice in contemporary times also includes design and fabrication of laboratory equipment for the purpose of laboratory diagnosis [3]. Although known as Medical Laboratory Science in Nigeria and some other countries, the profession is also called Clinical Laboratory Science, Medical Laboratory Technology, Biomedical Science or Biomedical Laboratory Science, depending on the country of study and practice [4].

In the pre-colonial Nigeria, the only medical system used by the indigenous people was the traditional medical system [5]. Modern (western) medical system was introduced into Nigeria by the Europeans, which the European missionaries

extended to the indigenous people that occupied the present-day Nigeria [6]. Therefore, there was no practice of Medical Laboratory Science in the pre-colonial Nigeria, since medical laboratory testing is an integral part of western medical system. The practice of Medical Laboratory Science in Nigeria started like that of other healthcare professions. Like her sister healthcare professions, the practice of Medical Laboratory Science in Nigeria started as an offshoot of the British system [7]. The training of indigenous Medical Laboratory Scientists was done by way of sponsorship of Nigerians to London, with the first being in 1950. They were awarded the Associate Diploma of the Institute of Medical Laboratory Technology of the United Kingdom (AIMLT) on successful completion of their study [7].

When, in 1956, the training of Medical Laboratory Scientists commenced fully in Nigeria, the training institutions continued with the award of the Associate Diploma to graduates. However, this was replaced with the Bachelor of Science degree in 1981, when university training commenced for Medical Laboratory Scientists, and in 2001 the National Universities Commission (NUC) approved the Bachelor of Medical Laboratory Science (BMLS) degree, which replaced the Bachelor of Science degree. The training of Medical Laboratory Scientists in Nigeria started in three hospitals; Adeoyo General Hospital (later University College Hospital, UCH), Ibadan, National Veterinary Research Institute (NVRI), Vom, and General Hospital, Broad Street, Lagos [8].

In recognition of the advances in Medical Laboratory Science practice and the pivotal role of the medical laboratory in healthcare delivery, the West African Health Organization (WAHO) in 2009, approved the Doctor of Medical Laboratory Science (MLSD) as the entry qualification for the practice of Medical Laboratory Science in the West African sub-region. Globally, there is an increased demand for laboratory services in modern times [9], and this may have necessitated the commencement of doctorate programmes in Medical Laboratory Science globally. Examples include the Doctor of Clinical Laboratory Science (DCLS) in the USA, Doctor of Medical Laboratory Science (DMLS) in Pakistan, Doctor of Medical Laboratory Science (MLSD) in Ghana, etc. Advances in practice of other healthcare professions have led to similar doctorate level entry qualifications in those professions. Examples include Doctor of Optometry (OD), Doctor of Pharmacy (PharmD), Doctor of Physical Therapy (DPT), Doctor of Osteopathy (DO), and so on.

The MLSD, among others, is expected to afford practitioners improved skills and competence in their practice, since Medical Laboratory testing is an essential part of quality healthcare which provides other healthcare professionals with objective information for patient-care [10]. In other words, it is no longer enough for the medical laboratory professionals to just perform laboratory testing; they are required to play professional roles in the development, performance, assessment and interpretation of laboratory results [11]. This is occasioned by a number of factors, including advances in technology, expansion in the range of laboratory services, and the need for consultation services in laboratory test utilization, interpretation of test results and informatics [12]. The growing need for laboratory contributions in modern medical institutions has led to the need for training and retraining of specialists in the medical laboratory.

This study provides a descriptive cross-sectional study of the perception and acceptance of the Doctor of Medical Laboratory Science (MLSD) degree among Medical Laboratory Scientists in Nigeria.

2. METHODOLOGY

2.1 Study Population

This descriptive cross-sectional study was carried out in five hundred (500) Medical Laboratory Scientists in Nigeria. The sample size

was determined using online sample size calculator developed by Survey Monkey (www.surveymonkey.com/sample-size-calculator).

2.2 Eligibility Criteria

Subjects for this study were Medical Laboratory Scientists practicing in Nigeria, irrespective of gender, tribe or region of practice.

2.3 Survey Instrument

The instrumentation is made of a self-designed questionnaire captioned "Perception and acceptance of professional doctorate degree (MLSD) among Medical Laboratory Scientists in Nigeria"

The questionnaire was made up of two (2) sections, A and B. Section A contained the demographic data while section B contained 16 items to which the respondents responded.

2.4 Validity of Instrument

The instrument was scrutinized by the authorities in the area of Medical Laboratory Science education. The corrections and observations made by these authorities were used to modify the survey instrument. Based on this, the instrument was considered valid enough for the study.

2.5 Reliability of Instrument

The test - retest method was adopted to assess the reliability of the items. By this method, ten (10) copies of the instrument were administered on individuals who are practitioners of Medical Laboratory Science. After two weeks, fresh copies of the same instrument were re-administered to the same individuals. The correlation co-efficient obtained was 0.78, indicating that the responses were constant and the instrument was therefore said to be reliable and adopted for the study.

2.6 Administration of Instrument

The instrument was administered via online mode to the respondents.

2.7 Data Analysis

Data from this study were analyzed descriptively. Results were presented in percentages and in charts.

3. RESULTS

3.1 Demographic Data

Table 1 contains demographic information on the respondents, containing gender, age, academic qualifications and areas of practice.

3.2 Perception of MLSD

Table 2 contains results of responses on questions that assessed the perception of the MLSD among Medical Laboratory Scientists.

3.3 Acceptance of MLSD

Table 3 contains results of responses on questions that assessed the Acceptance of the MLSD among Medical Laboratory Scientists.

4. DISCUSSION

This study was carried out to assess the perception and acceptance of the Doctor of Medical Laboratory Science (MLSD) - a professional doctorate degree- among Medical Laboratory Scientists in Nigeria. The data showed that 380(76%) of the respondents were male while 120(24%) were female. This may mean that there are more male Medical Laboratory Scientists in Nigeria than female Medical Laboratory Scientists, since this study involved medical laboratory practitioners across the country. Some researchers have reported a similar finding in their studies involving Medical Laboratory Scientists [13,14].

The data on age distribution indicated that 120(24%) of the respondents were within 20-29 years, 215(43%) were within the age range of 30-39 years, 105(21%) were within 40-49 years, 55(11%) were within 50-59 years while 5(1%) were 60 years and above. The majority of the respondents represent the productive age bracket of a society; indeed, they are the future of the profession. Also, 320 (64%) of the respondents hold the basic professional degree of Bachelor of Medical Laboratory Science (BMLS) required to practice Medical Laboratory Science in Nigeria, 135(27%) and 45(9%) hold MSc and PhD respectively. The data on area of practice indicated that the large majority of the respondents- 350(70%)- work with the public (government) service. It has been reported that there are more government-owned health facilities than private health facilities (67% government-owned versus 33% private facilities) in Nigeria

[15]. These public health facilities expectedly engage the available healthcare professionals at the Federal, State and Local Government levels. Thus, the government is the highest employer of Medical Laboratory Scientists and other healthcare professionals in Nigeria.

In this study, the perception of MLSD degree was assessed based on consideration to individual Medical Laboratory Scientists (the practitioners), the practice of the professional and also the healthcare system in the country. With regards to the individual practitioner, 355(71%) of the respondents agreed that MLSD will afford the holders higher chances of employment, 460(92%) agreed that it will offer practitioners enhanced emolument/higher pay package while 490(98%) agreed that the MLSD will enhance the knowledge base and clinical expertise of practitioners. This means that the Medical Laboratory Scientists have a positive perception of the MLD degree with respect to their professional knowledge and commensurate emoluments. In terms of professional practice and professional image, respondents also hold a similarly positive perception of the MLSD degree, with 400(80%) of the respondents agreeing that MLSD will help to reduce quackery and impersonation of Medical Laboratory Scientists, 400(80%) agreed that MLSD will eliminate the inadequacies of the BMLS curriculum while 485(97%) agreed that MLSD will enhance the professional prestige of the profession. With regards to the healthcare delivery system, 470(94%) agreed that MLSD will enhance laboratory diagnosis and biomedical research in Nigeria, while 485(97%) agreed that MLSD is an indication of advances in the knowledge and scope of practice of Medical Laboratory Scientists. The advances in Medical Laboratory Science practice is a pivotal contribution to modern healthcare. It has been reported that the practice of modern medicine would be impossible without the input of the laboratory [16].

The data from this study also show that the MLSD degree has acceptance among Medical Laboratory Scientists in Nigeria. From the data, 420(84%) of the respondents indicated that they will like to obtain the MLSD degree, 345(69%) will like one of their children to study Medical Laboratory Science and obtain the MLSD degree, 455(91%) of the respondents agreed that the degree will open up greater opportunities while 465(93%) agreed that the MLSD degree will improve the competence of Medical Laboratory Science practitioners. This

observation agrees with the *human capital theory* which posits that individuals bear the cost of acquiring general educational and vocational training because they are the sole beneficiaries of the training [17]. So, medical laboratory practitioners in Nigeria accept this advanced practice degree.

From the inception of training for Medical Laboratory Scientists, it has been the pattern to have students in the final year to concentrate their training and knowledge in one of the Specialty areas in the profession- Chemical Pathology (Clinical Chemistry), Medical Microbiology/Parasitology, Haematology/Blood Transfusion Science or Histopathology. This leads to quasi-specialization for new entrants into the profession. The data from this study indicate that 305(61%) of the respondents do not support this quasi-specialization in final year of undergraduate study with MLSD, 445(89%) agree that removing the final year “specialization” will broaden the clinical knowledge and skills of practitioners thereby improving patient-care. Further, 415(83%) of the respondents agreed that the MLSD degree will give more meaning to postgraduate specialization for medical laboratory practitioners, whether through the academic route (MSc and PhD) or through Fellowship (such as WAHO-approved West African Postgraduate College of Medical Laboratory Science, WAPCMLS). The removal of the quasi-specialization is the one of the features of the MLSD curriculum as proposed by WAHO. This is understood by the respondents, as 405(81%) of the respondents agreed that they clearly

understand the general philosophy of the MLSD degree.

There has been emergence of new models of healthcare as a result of new technologies as well as other contributory factors [18]. This has made the Medical Laboratory Science as the centerpiece of modern healthcare delivery. Therefore, there is need for substantial modification on the training curriculum for Medical Laboratory Science practitioners in order to prepare the graduates for technological, regulatory, operational and other changes in Medical Laboratory Science practice [19].

The need for Medical Laboratory Scientists in the health system has skyrocketed [19]. This probably explains why majority of other healthcare professionals have favorable attitude towards Medical Laboratory Scientists [16]. There is need to sustain this positive perception of the profession by introducing a curriculum of training that will equip Medical Laboratory Science practitioners to render services that meet expectations and demands of modern healthcare delivery. The need for highly trained Medical Laboratory Scientists has become evident, especially in the wake of corona virus (COVID-19) global pandemic. The most marketable skill of a new entrant into the profession is the application of the principles learned in educational institutions in a broad spectrum of laboratory activities [19], including diagnostics, research, surveillance and other activities. It is important to introduce a training curriculum such as the MLSD, which offers this competence to practitioners.

Table 1. Demographic Data

Demographic characteristic	Frequency (%)
Gender	
Male	380(76%)
Female	120(24%)
Age (Years)	
20-29	120(24%)
30-39	215(43%)
40-49	105(21%)
50-59	55(11%)
60 and above	5(1%)
Academic qualifications	
BMLS	320(64%)
MSc	135(27%)
PhD	45(9%)
Area of practice	
Public service	350(70%)
Self-employed	30(6%)
Private sector	120(24%)

Table 2. Perception of MLSD

S/No.	Question	Agree (A)	Disagree (D)	Undecided (U)
1	Graduates of MLSD will have higher chances of employment	355(71%)	65(13%)	80(16%)
2	MLSD will offer enhanced emolument/pay package for Medical Laboratory Scientists	460(92%)	20(4%)	20(4%)
3	MLSD will help reduce quackery and impersonation of Medical Laboratory Scientists by non-Medical Laboratory Scientists	400(80%)	75(15%)	25(5%)
4	MLSD will enhance the knowledge-base and clinical expertise of Medical Laboratory Scientists	490(98%)	7(1.4%)	3(0.6%)
5	MLSD will eliminate the inadequacies of the current BMLS degree	400(80%)	60(12%)	40(8%)
6	MLSD will enhance the prestige and professional image of Medical Laboratory Scientists	485(97%)	5(1%)	10(2%)
7	MLSD will enhance laboratory diagnosis and biomedical research in Nigeria	470(94%)	10(2%)	20(4%)
8	Introduction of MLSD is an indication of advances in knowledge and scope of practice of Medical Laboratory Science	485(97%)	10(2%)	5(1%)

*MLSD- Doctor of Medical Laboratory Science, BMLS- Bachelor of Medical Laboratory Science

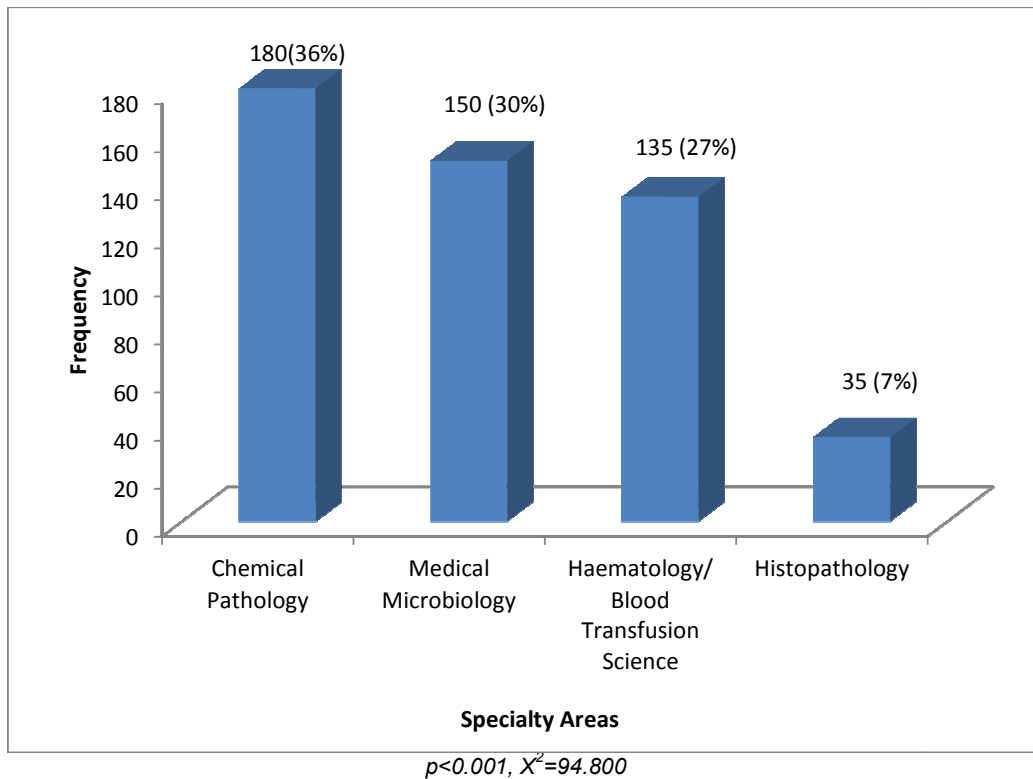


Fig. 1. Distribution of respondents according to Area of Specialization

Table 3. Acceptance of MLSD

S/N o.	Question	Agree (A)	Disagree (D)	Undecided (U)
1	I will like to obtain the MLSD degree	420(84%)	30(6%)	50(10%)
2	I don't support final year (undergraduate) specialization in the MLSD	305(61%)	150(30%)	45(9%)
3	I like the MLSD because it will improve the competence of Med Lab Scientists	465(93%)	20(4%)	15(3%)
4	I like MLSD because it will open up other opportunities for me in my field of practice	455(91%)	20(4%)	25(5%)
5	I will like one of my children to have MLSD degree	345(69%)	30(6%)	125(25%)
6	MLSD without undergraduate specialization will provide broader clinical knowledge and skills for improved patient-care	445(89%)	30(6%)	25(5%)
7	MLSD will give more meaning to our postgraduate specialization (MSc, PhD and Fellowship) in Medical Laboratory Science practice	415(83%)	60(12%)	25(5%)
8	I understand the general philosophy of MLSD	405(81%)	30(6%)	65(13%)

*MLSD- Doctor of Medical Laboratory Science, MSc- Master of Science, PhD- Doctor of Philosophy

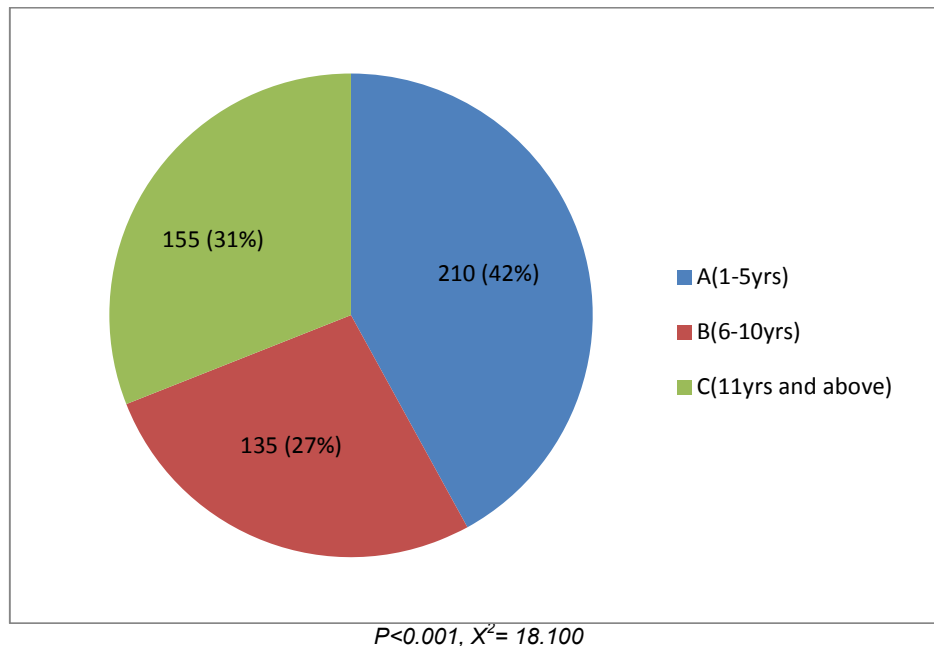


Fig. 2. Distribution of respondents according to number of years of practice

5. CONCLUSION

This study has shown that a greater percentage of Medical Laboratory Scientists in Nigeria have a positive perception and favourable acceptance of the Doctor of Medical Laboratory Science (MLSD) degree. They agree that this degree will offer broader knowledge base, clinical skills and competence to practitioners, with positive effects

on the practice of Medical Laboratory Science and as well contribute substantially to improving the health sector in the country. The majority of Medical Laboratory Scientists in this study also agreed that there should be no quasi-specialization at the undergraduate level for MLSD training. There is an urgent need for adoption and introduction of such a curriculum that prepares Medical Laboratory Science

practitioners to meet the needs of the modern healthcare delivery, by relevant regulatory and approving agencies of government like the National Universities Commission (NUC), Federal Ministry of Education and the Medical Laboratory Science Council of Nigeria (MLSCN).

CONSENT

Subjects were randomly enrolled for the administration of the questionnaire via online means. Questionnaires were administered to subjects who gave their informed and written consent to participate in this study.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Medical Laboratory Science Council of Nigeria (MLSCN) Act No.11, 2003. Federal Official Gazette; 2004.
2. Fashina AI, Oghome P. Rethinking Medical Laboratory Science today. African Journal of Medical Sciences. 2011;4(2):72-76.
3. Ibrahim KK, Umar A, Mohammed K, Garba A, Sanusi M, Mohammed OM. Factors Influencing Students Choice for Medical Laboratory Science as a Profession: A Case of Students at Usmanu Danfodiyo University (Udu), Sokoto, North-Western Nigeria. Asian Journal of Medicine and Health. 2017;2(2):1-8
4. Obeta MU, Maduka MK, Ejinaka OR. Medical Laboratory Science: the distortion of nomenclature across the globe. New Zealand Journal of Medical Laboratory Science. 2020;52.
5. Scott-Emuakpor A. The evolution of healthcare systems in Nigeria: Which way forward in the twenty-first century. Nigerian Medical Journal. 2010;51(2):53-65.
6. Ogaji D, Brisibe SF. The Nigerian healthcare system: Evolution, contradictions and proposal for future debates. Port Harcourt Medical Journal. 2015;9:S79-S88.
7. Ozuruoke DFN. History of Medical Laboratory Science: Nigeria in perspective. 2014. Lagos: Pundit Publishers
8. Agbonlahor DE, Ihimekpen G, Okara GC, Saliu I. Evaluation of Medical Laboratory Science profession in Nigeria. Association of Medical Laboratory Scientists of Nigeria. 2014;6-91.
9. Beletic A, Zima T. Continuing professional development crediting system for specialists in laboratory medicine within 28 EFLM national societies. Biochemia Medica (Zagreb). 2013;23:332-341.
10. Obeta MU, Maduka MK, Ofor IB, Ofojekwu NM. Improving quality and cost diminution in modern healthcare delivery: The role of the Medical Laboratory Scientists in Nigeria. International Journal of Business and Management Invention. 2019;8(3):08-19
11. Scalan PM. A review of Bachelor's degree Medical Laboratory Scientist education and entry level practice in the United State. The Journal of the International Federation of Clinical Chemistry and Laboratory Medicine. 2013;24(1):5-13.
12. Leibach EK. The doctorate in Clinical Laboratory Science: A view of clinical practice development. Clinical Laboratory Science. 2008;21(4):196-198
13. Ekwempu AI, Ede FR, Ojo OE, Ofojekwu M, Esien CU, Edeh NO, Adeshiya T, Damen J. A cross-sectional study of the knowledge and attitude of medical laboratory personnel regarding continuing professional development. Nigerian Medical Journal. 2015;56(6):425-428.
14. Koaje AU, Mohammed U, Mohammed Y, Ibrahim U, Alhassan S, Obi A, Raji MO, Anjo UM. Quality of Medical Laboratory Services in a tertiary health institution in Sokoto, Nigeria. 2017;4(4):246-259.
15. Makinde OA, Sule A, Ayankogbe O, Boone D. Distribution of health facilities in Nigeria: Implications and options for universal health coverage. International Journal of Health coverage. International Journal of Health Planning and Management. 2018; 33(4):e1179-e1192.
16. Derby A, Mekonnen D. Health professionals' stance towards Medical Technology: A cross-sectional study. Journal of Medical Laboratory and Diagnosis. 2017;8(3):12-17.
17. Ishola AA, Adeleye ST, Tanimola FA. Impact of educational, professional qualification, and years of experience on Accountants' job performance. Journal of Accounting and Financial Management. 2018;4(1):32-44.

18. Braithwaite J, Mannion R, Matsuyama Y, Shekelle PG, Whittaker S, Al-Adawi S, Ludlow K, James W, Ting HP, Herkes J, McPherson E, Churruca K, Lamprell G, Ellis LA, Boyling C, Warwick M, Pomare C, Nicklin W, Hughes CF. The future of health systems to 2030: A roadmap for global progress and sustainability. *International Journal for Quality in Health Care*. 2018; 30(10):823-831
19. Valdez AP. Competencies of career-entry Medical Technology graduates of Lyceum of Batangas: Basis for enhancement of the internship training program. *JPAIR Multidisciplinary Journal*. 2010;4:16-33.

© 2020 Elechi-Amadi et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/63090>