Original Article

International Best Practice: Understanding the Core Difference between Medical Laboratory Science and Clinical Laboratory Medicine in Nigeria

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Abstract

Introduction: International best practice (IBP) in the healthcare sector is an approach that is put in place globally, acceptable standards to ensure patients' safety while providing quality healthcare to the community. It achieves such standards by defining the job roles of various professionals in the healthcare sector. In the Nigerian healthcare sector, despite the clear definition of the job roles of the medical laboratory scientist and clinical laboratory physicians (pathologist) by the various Acts of Law of the Federal Republic of Nigeria that established these two professions, there seems to be a misapprehension of the differences between these two professions. This study aimed to evaluate the knowledge of the health workers as it concerns the IBP on the scope of practice of medical laboratory science (MLS) and clinical laboratory medicine in Nigeria. **Materials and Methods:** A cross-sectional, observational design was used for this prospective study involving 427 health workers from the six geopolitical zones in Nigerian and Abuja, using a proportionate sampling technique. It was facility-based research using a validated semi-structured self-administered questionnaire. **Results:** Over 50% of the participants believed that MLS was the same as clinical laboratory medicine. Two hundred and ten participants (49.2%) did not know that analyses of samples in a clinical laboratory was the job responsibility of a laboratory physician. **Conclusion:** There was knowledge gap in the practices of both the MLS and the clinical laboratory medicine by health workers. Therefore, there is a need to create awareness through interprofessional education, workshops, and seminars to ensure understanding of job roles as this may promote harmony between these two professions in the health sector.

Keywords: Clinical laboratory medicine, international best practice, medical laboratory science

Introduction

International best practice (IBP) is a method or approach to a procedure that has been globally accepted as superior to any alternative technique used in doing that same thing, because it has become a gold standard.[1] In the health sector, IBP targets the patients' safety, community participation, sustainability of quality of healthcare and healthcare system integration, collaboration, and development.[2,3] There is a need for the Nigerian healthcare sector to be assessed for IBP regularly to ensure that all the above targets, as it concerns the gold standard of practice, is met. The units of interest in this study is the medical laboratory science (MLS) and the clinical laboratory medicine which are the professions for medical laboratory scientists and laboratory physicians (also known as pathologists), respectively.

Based on IBP, science is a standardized enterprise that builds and organizes knowledge in the form of observation, hypothesis formulation, testable clarifications (experimentation), and predictions about nature.[4] MLS is a branch of applied science that uses scientific processes and knowledge to develop more practical applications or inventions in the medical laboratory.[5] In some countries, MLS, clinical laboratory science, and biomedical science are used interchangeably.[6] However, MLS is not used

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interchangeably with clinical laboratory medicine. In Nigeria, the MLS is legally a scientist and not a medical practitioner.[7] The "medical laboratory" prefix to the science is used in an adjectival sense, and it does not mean the same as "medicine" as some people may assume. This prefix was well defined in the 29th section of MLS Council of Nigeria Act.[7]

Medicine (medical profession), also based on IBP, is an applied science and art that deals in practice of the diagnosis, treatment, and prevention of diseases.[8] The branch of medicine that organizes testable clarification in a clinical laboratory for the diagnosis of diseases is known as laboratory medicine or pathology.[9] The unit in the hospital where body fluids, tissues, and excretions of the human are analyzed is known as clinical laboratory or hospital laboratory.[9-11]

The similarities in these two professions (MLS and laboratory medicine) are: they both analyze body fluids, tissues, and excretions of the human and are both involved in research. However, the core difference between the two professions lies in the endpoint of the analyses of the samples. The endpoint of the analyses of samples by the medical laboratory scientist based on Nigerian law is for making medical laboratory diagnosis which is in turn utilized for the production, storage of diagnostic reagents, and fabrication of diagnostic devices.[7] On the other hand, the endpoint of the analyses of samples by clinical laboratory physicians is for diagnosis of diseases, which helps for the treatment of patients and prevention of diseases in humans.[10] Another outstanding difference between these two professions is that medical laboratory scientists as permitted by Nigerian law is to analyze body fluids, tissues, and excretions of an animals;[7] the clinical laboratory physicians are not licensed to practice on animal samples.[10] Based on IBP, the pathologist is a core healthcare practitioner while the medical laboratory scientist is an allied health professional (support staff) while working in the clinical laboratory.[3]

The Acts of the Law that established these two different professions in Nigeria had spelt out the scope of practice, the laboratory to practice, their leadership, and regulatory agencies for each of them, which is in line with the IBP.[9] However, there seems to be a professional misunderstanding in the Nigerian healthcare sector which had not only ended up in repeated strikes and industrial disharmony but also in several misleading media publications and even seeking judgment from the courts of law.[12-15]

This study intended to evaluate the knowledge of the health workers as it concerns the IBP on the scope of practice of MLS and clinical laboratory medicine in Nigeria. It was hoped that this study will further create awareness in the country's health sector on the need to understand the job descriptions of the medical laboratory scientist and laboratory physicians (pathologists) based on the IBP.

Materials and Methods

The design for this research was a prospective, cross-sectional, observational study, using a semi-structured and self-administered questionnaire. The Sample size (427) was estimated using the Leslie Kish formula.

$$n = \frac{z^2 pq}{d^2}$$

where:

n = desired sample size,
z = standard normal deviate (1.96) which correspond to 95% confidence interval
p = proportion in the target population estimated to have desired characteristics (in the absence of a similar study in this environment, P has been set at 50% i.e., 0.5).
$q = 1 - P = 0.5$
d = degree of accuracy required (absolute error/precision set at 5%, i.e., 0.05).

The data were collected from all cadres of healthcare workers, ranging from doctors to ward assistants in the tertiary healthcare facilities located in one state from the six geopolitical zones (Borno, Cross River Lagos, Enugu, Kano, and Plateau) and Federal capital territory (Abuja) in Nigeria. These states were selected using simple random sampling while the participants were selected using a proportionate sampling technique with a proportionate ratio of 1:3.95 in various departments. Each study centre contributed 61 respondents to the total sample population. The duration for data collection was from November 2018 to February 2019. Statistical Package for the Social Sciences (SPSS) IBM, Chicago, Illinois, USA version 22 was used to analyse the data from this study. Descriptive statistics using frequency and proportions; while inferential statistics using Chi square and Fisher's exact tests; were done. The ethical approval for the study was gotten from the Health and Research and Ethics Committee, University of Calabar Teaching Hospital. All participants gave informed acquiescence to the study.

Results

The study participants were 427 health workers. There was a male-to-female ratio of 2.3:1 and majority of the participants (98.1%) were younger than 50 years of age. The results also revealed that most of the participants (234 [54.8%]) worked with teaching hospitals, while Federal Medical Centres had the least representation (7.7%).

There was a marked difference between awareness and nonawareness 247 (57.8%) of IBP in the health sector. Of these participants, 164 (38.4%) got this knowledge during strikes in the healthcare sector. Only a small difference (4–8, 0.9%–1.9%) existed between those who gained their information from workshops/seminars, reading research articles, social media, and the internet.

While 308 (72.1%) agreed that IBP is applicable in the health sector, the difference in number between those who did not agree that it was applicable and those who did not know about its applicability was 9 (2.1%) participants.

Over four- fifth (86.2%) of participants knew that IBPs classified healthcare workers into core health workers and allied health workers. In the same vein, 331 (77.5%) believed that medical laboratory scientists were core health workers. More than half of the participants (251, 58.8%) believed that the job of the medical laboratory scientist was the same as that of laboratory physicians [Table 1].

In Table 2, the results revealed that 65.6% of the participants did not know that medical laboratory scientists were recognized as scientists. About 179 (41.9%) respondents did not know that the pathologists were also called laboratory physicians. In Respect to if a profession known as laboratory medicine was in existence internationally, 240 (56.2%) respondents felt that there was no such profession. Two hundred and ten participants (49. 2%) did not agree that analysis of samples in a clinical laboratory was the job of a laboratory physician.

Table 2 also shows that more participants in all health cadres knew more about the existence of IBP than not, with the exception of Community Health Extension Workers (CHEWs), ward assistances, and pharmacy technicians. There was therefore a statistically significant relationship between various professional cadres and awareness of IBPs ($P < 0.000$). There was also a statistically significant relationship between place of work and awareness of IBP; however, the relationship between state of practice, years of practice, and awareness of IBP was not statistically significant ($P = 0.995$ and 0.175, respectively).

Table 1: Socio-demographic characteristics of participants

Characteristics	Frequency (427)	Percentage (100%)
Age (years)		
21-30	147	34.4
31-40	208	48.7
41-50	64	15
>50	8	1.9
Sex		
Male	298	69.8
Female	129	30.2
Profession		
Doctors	108	25.3
Ward Assistant	7	1.6
Dietician	5	1.2
Nurse	73	17.1
Pharmacist	36	8.4
Medical Laboratory Scientist	108	25.3
Optometrist	29	6.8
Admin Staff	31	7.3
CHEW	11	2.6
Physiotherapist	10	2.3
Pharm Tech	9	2.1
Place of work		
Teaching Hospital	234	54.8
Federal Medical Centre	33	7.7
Specialist Hospital	160	37.5
Years of practice		
<1 year	25	5.9
1-5 years	141	33
6-10 years	185	43.3
>10 years	76	17.8

Discussion

This study investigated the understanding of the core difference between MLS and clinical laboratory medicine with reference to IBPs among health sector workers in Nigeria. It was identified that most health sector workers were aware of IBP; however, they lacked understanding of the core differences between these two professions. The findings in this study further support the evidence in some publications which had clearly stated the erroneous belief that in Nigeria the role of medical laboratory scientists in the healthcare sector is the same as that of the laboratory physicians (pathologists), hence making them core professional colleagues.[14,15]

From this study, majority of those who had heard about IBP did so during strike actions in the health sector. This may be a strong reason why many of them are ignorant about their job roles and a significant reason to support foundational deficiencies in their profession. The knowledge of IBP is not only important in making healthcare workers versed in their job description and specification, but it also has a role in promoting industrial harmony as lines of duty will not be crossed. It has become imperative that there is an urgent need for interprofessional education through hospital seminars and interprofessional training for the dissemination of information about IBP and the Acts regulating these two professions.

Leotsakos *et al*. in a World Health Organization project, 2014 reported that standardization of clinical laboratory practice using standard operation protocols was a principle that ensured quality patient care and management.[2] In this study, the health workers did not know the job role of laboratory physicians and this may affect the quality of results from the clinical laboratories. It is important that the laboratory physicians should study the Act of the Law of Nigeria which is in line with IBP and pathologists must know the extant laws guiding clinical laboratory practice and also be aware that they are responsible for all laboratory reports emanating from the clinical laboratory. They should therefore take responsibility of vetting, standardizing, reporting, and endorsing clinical laboratory reports as these are medicolegal documents.

Conclusion

There is a wide knowledge gap in understanding the core differences in IBP with regard to MLS and clinical laboratory medicine in the Nigerian public health sector. To improve harmony in the healthcare sector, measures should be put in place to ensure adequate education of all health workers on IBP on job description of various cadre of health workers.

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Table 2: Awareness of International Best Practices by participants

	Frequency (427)	Percentage (100%)
Awareness and understanding of IBP		
Yes	337	78.9
No	90	21.1
Source of knowledge concerning IBP		
During strikes in the health sector	164	38.4
From Friends in Nigeria	29	6.8
From friends living abroad	39	9.1
During workshops and seminars	35	8.2
Read from articles	39	9.1
From social media and internet	31	7.2
IBP is applicable in health sector		
True	308	72.1
False	64	15
I don't Know	55	12.9
IBP classifies healthcare professionals into core and allied		
True	368	86.2
False	31	7.3
I don't know	28	6.6
IBP identifies allied health professionals as support staff in the health sector		
True	167	39.1
False	242	56.7
I don't know	18	4.2
Med Lab Scientist recognized as a core health professional		
True	331	77.5
False	77	18
I don't know	19	4.4
Med Lab Scientist does same job as Lab Physician		
True	251	58.8
False	138	32.3
I don't know	38	8.9

Conflicts of interest

There are no conflicts of interest.

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