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Pattern of Recruitment of Technical Staff in Gross Anatomy Laboratories: A Case Study of the South Western Nigerian Universities

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Authors' contributions

This work was carried out in collaboration between all authors. Author TAA designed the study, wrote the protocol and supervised the work. Authors OJO and AAD carried out all field work and performed the statistical analysis. Authors TAA and OJO managed the analyses of the study. Author TAA wrote the first draft of the manuscript. Author OJO managed the literature searches and edited the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Gross anatomy laboratories technologists are directly responsible for the management of laboratory facilities and the human cadavers used during Gross Anatomy instruction classes. It is important to state that this investigation is the first effort to examine this aspect of anatomical education and career in Nigeria. This study considered the recruitment pattern of technical staff in gross anatomy laboratories of universities in South West Nigeria. The technical staff in the gross anatomy laboratories of the twelve (12) universities in Southwestern Nigeria that were accredited for the award of either Bachelor of Science degree in Anatomy or Bachelor of Medicine and

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Surgery or both at the time of the study completed structured questionnaires. From the results: 86% of the technical staff were males while 14% were females; 59.6% were junior technical staff while others were senior technical staff members. In terms of educational qualifications, 42.1% of total sample had the Senior School Certificate (SSC), 10.5% had Ordinary National Diploma (OND), 7.0% had National Certificate of Education (NCE), 24.6% had Higher National Diploma and 15.8% had Bachelors degree. Observations show that the staffing patterns in the laboratories require attention towards improving on strategies and purposefulness in terms of the qualifications of employees and number of employees per laboratory. It is however important to state that all the studied institutions strongly believed in setting up functional and well equipped Gross Anatomy laboratories and they considered it a fundamental requirement for anatomical and medical education.

Keywords: Gross anatomy laboratories; recruitment pattern; technical staff; Nigerian Universities.

1. INTRODUCTION

According to the Canadian Centre for Occupational Health and Safety [1], a laboratory technologist is a person who performs the practical hands-on work in laboratories. Conventionally in Nigeria, technologists in the gross anatomy laboratories are directly responsible for the laboratory facility and the human cadavers used during Gross Anatomy instruction. Their specific duties include daily supervision and maintenance of the Gross Anatomy Laboratory facility (floors, sinks, walls, storage tank, cadaver tables, embalming equipments, body chamber and other teaching aids), maintenance and preservation of human cadavers utilized for gross anatomy instruction, disposal of cadaveric dissection debris, inventory control and ordering of all consumable reagents and supplies utilized in the anatomy laboratory, preparation of reagents, supplies, and preservative solutions, preparation of teaching aids (e.g. anatomical models) and specimens for teaching and examination purposes, distribution and return of all teaching specimens and anatomical models to students and staff, movement of cadavers from one location to another within the gross anatomy laboratory, interaction with and assistance of students during gross anatomy instruction (both scheduled and student self-directed learning sessions), interaction with and support of academic staff for a gross anatomy courses, interaction and support of other programs conducted in the gross anatomy laboratory, assistance with practical examination preparation, technical support of research activities of the academic staff in the department to mention but few.

The effective teaching of Gross Anatomy-including dissection sessions- is indispensable to the training of Medical and basic Medical scientists [2-6]. Interestingly, innovations such as the use of technology and computer are being introduced into the teaching of Anatomy to aid gross dissections and only skilled laboratory workers can cope with the skill requirements of such systems. Notwithstanding, technology may not always effectively replace humans; hence, dissections should only be complemented by technology [7].

This study aimed at establishing the recruitment pattern of technical staff in gross anatomy laboratories of universities in South West Nigeria, taking cognizance of sex, cadre and educational background. The current study is in line with the various and numerous attempt globally to review past methods and develop innovative new methods of leaning Anatomy [8].

2. MATERIALS AND METHODS

2.1 Sample

Sample was constituted by all the technical staff in the gross anatomy laboratories of the twelve (12) universities in Southwestern Nigeria, accredited for the award of either Bachelor of Science degree in anatomy or Bachelor of Medicine and Surgery or both [9] at the time of the study.

2.2 Instrumentation

Structured questionnaire was designed to collect and collate data on the number of staff and their sex, status or cadre at work and educational background in each university included in the study.

2.3 Ethical Approval and Informed Consent

We sought and obtained ethical approval to carry out this investigation from the Health Research Ethics Committee of Ekiti State University

Teaching Hospital, Ado-Ekiti, Nigeria. Informed consents of the heads of the departments of anatomy in the various universities were also obtained.

2.4 Questionnaire Administration; Data Collection, Analysis and Presentation

Each questionnaire was completed for the gross anatomy laboratory of each university by either a designated academic staff or the senior most technical staff who were able to provide necessary information. Copies of the questionnaire were retrieved and responses were collated and analyzed using descriptive statistics with the aid of the SPSS statistical software version 17.0. Results were presented as percentages, ratios and charts.

3. RESULTS AND DISCUSSION

3.1 General Staffing Pattern

Results show that a total number of 57 technical staff worked in different gross anatomy laboratories of universities in Southwestern Nigeria: 86% of them were male while 14% were females; 34 of them which represent 59.6% were junior technical staff while the remaining 23 (40.4%) were senior technical staff members. In terms of educational qualifications, 42.1% of total sample had Senior School Certificate (SSC), 10.5% had Ordinary National Diploma (OND), 7.0% had National Certificate of Education (NCE), 24.6% had Higher National Diploma and 15.8% had Bachelors degree.

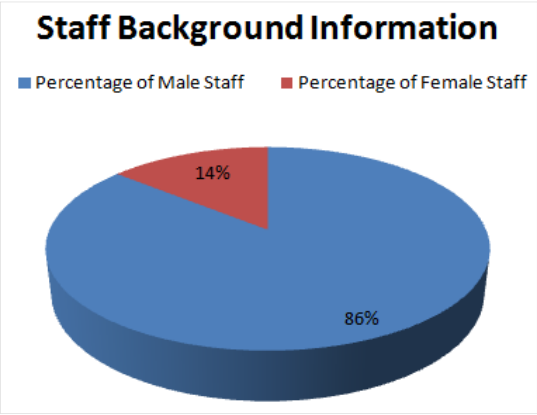

Fig. 1. Pie chart showing the gender distribution of the gross anatomy laboratory workers. Most workers are males and only 14% of the workers are females

Most of the senior technical members of staff had either the Bachelors degree or the Higher National Diploma. Out of the total of 23 who were senior technical staff members, 18 (78.3%) were holders of either Higher National Diploma (HND) or Bachelor of Science (B. Sc) in Science Laboratory Technology options, 2 (8.7%) were holders of Bachelor of Medical laboratory Science (BMLS) and 3 (13.0%) were holders of Bachelor of Science in Anatomy (B. Sc Anatomy). Eleven (11) of the eighteen (18) holders of either HND or B. Sc in Science Laboratory Technology have additional professional qualifications of the Nigerian Institute of Science Laboratory Technologists.

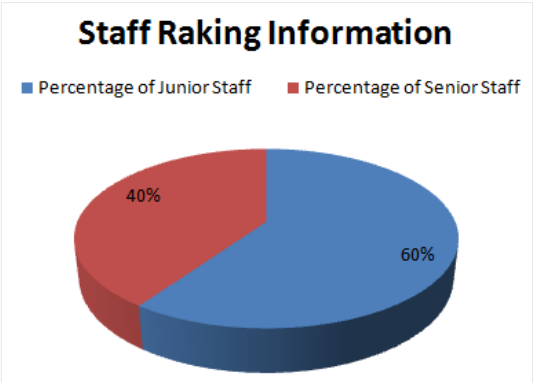

Fig. 2. Pie chart showing the staff raking information on the basis of junior and senior staff members. Two-fifth staff members are ranked senior by virtue of position, qualification and promotion

The average number of technical staff in the studied institutions is 5 [4.75]. Though this might be better appreciated when viewed with respect to the number of students in the institutions, which cannot be determined within the scope of the current investigation. It is however important to consider the distribution of duties among of these technical staff members relative to the job requirements of the typical gross anatomical laboratory. The technical job descriptions of the technical staff in a typical gross anatomy laboratory include the treatments and preparations of the cadavers for dissection and prosections, preservation, keeping and maintenance of organs and remains, processing of certain specimen [such as bone maceration] and the disposal of the wastes generated from dissected bodies. The job description typically does not also exclude the keeping and maintenance of the laboratories. In view of these job descriptions; it is worthy of note that an

average of 5 employees in total might reflect shortages in staff strengths in the Gross Laboratories being studied. Interestingly, only ≈16% of the staff strength had Bachelors degree or the Higher National Diploma- to be considered skilled for advanced laboratory job demands. This places the distribution of such category of staff at ≈1 per laboratory. This again indicates the challenge in carrying out specialized laboratory procedures such as prosections and special demonstrations of whole bodies or specific organs and tissues.

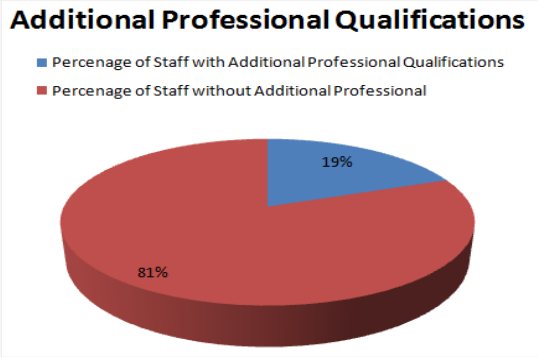

Fig. 3. Pie chart showing the additional professional qualifications of the gross anatomy laboratory staff. About two-fifth of the staff have extra or additional professional qualification

The above observations are indicators of potential limitations in carrying out advanced procedures in Anatomical Tissue demonstration procedures due to shortage in highly qualified manpower. On the average for instance, only about 1 out of the average of 5 staff member in the studied laboratories have any form of postgraduate or advance qualification including advanced diplomas. This also questions the feasibility of carrying out adequate case reports since most staff members lack advanced anatomical knowledge. Again, only 5.26% of the workers have a degree in Anatomy. It simply implies that on the average, only few laboratories employ a single graduate of Anatomy to work in their Gross *Anatomy* Laboratory. It is worth of note that this is has negative implications; it is very important to have graduates of the subject Anatomy work in the Gross Anatomy Laboratory, so as to optimize the efficiency of service and quality of service delivery. The Gross Anatomy laboratory is peculiar, in that, fundamental and quality knowledge of Anatomy is required to ensure quality service delivery. This anomaly is worth being considered critically by institutional employee recruiters. The rigorous and seemingly unrewarding nature of the Gross Anatomy Laboratory work, considering the working conditions may contribute to lack of many skilled workers in the laboratory [10-12]. Most employees fall into the category of junior staff; this is similar to the trends in typical working environments as the more skilled and senior workers are fewer.

Table 1. Staff qualifications information

	Staff qualifications information	Number [%]
1	O' level/Senior School Certificate	24[42.11%]
2	Ordinary National Diploma	06[10.53%]
3	National Certificate of Education	04[7.02%]
4	Higher National Diploma	14[24.56%]
5	B. Science Laboratory Technology	02[3.51%]
6	Bachelor of Medical Laboratory Science	04[7.02%]
7	B. Sc Anatomy	03[5.26%]
	Total	57[100%]

3.2 Gender Distribution

Obviously, an overwhelming proportion of Gross Anatomy laboratory workers being studied are males. This may not be unconnected with the fact that Gross Anatomy laboratory job descriptions might be tasking, and require rigorous activities that the male employees might be better suited for. In addition to the possible link of this observation to the nature of the job; it is also important to observe possible links with the proportions of suitable candidates that are males and females.

3.3 Staff Qualifications and Skill Sophistication

Observations show that less than 20% of the workers that are employed in the Gross Anatomy laboratories could have attended a University or earn a bachelors degree. Yet, they are employed to work in the Universities' Anatomy laboratories. Among these, only about 5% could have obtained basic anatomical education. This reflects a systemic problem in staffing. It is unrealistic to expect effective service from staff

that largely had not attended college or worst still, did not receive Anatomical education. Those who had the Bachelors degree from fields other than Anatomy- Medical Laboratory Science and Technology are obviously not typically trained for the peculiar service of the typical gross Anatomy laboratory except they receive advance education and skill acquisition process to work in the gross Anatomy laboratories. It is obvious that these mentioned courses are typically structured to train service providers in conventional health service laboratories and conventional educational laboratories not specifically similar to the demands of the gross anatomy laboratory; these abnormities in training-versus-job demand would obviously compromise the help that teachers and students of Anatomy could receive from such employees. This, again, could have been a major reason why teachers and students have peculiar challenges with working with laboratory technologists in the areas of teaching and research in particular. This area should be checked and corrected appropriately. Shortage or lack of skilled staff may hinder effective teaching of Anatomy considering the advancement of modern Anatomy [13,14].

3.4 Staff Backgrounds and Skill Relevance

It is an anomaly that quite a low percentage of Gross anatomy laboratory workers has background knowledge and training in Anatomy as a subject. More so, the other employees that work in the laboratory, evidently do not have advanced qualifications or skill specialisations that could have equipped them to adapt their original trainings to the demands of the Anatomy laboratory. This practice endangers the potential quality of service delivery in the gross laboratory. It also shows misappropriation of human resources. Another implication is that anatomists who are obviously most suitable for the job might be prevented from such job opportunities, hence creating unemployment problem. While it might also be that some Anatomists might not want to work in the Gross laboratories; it may be important to encourage them through incentives and intentional design of job placements to help than have proper sense of belonging. In addition, students and graduates of the programme may also be educated about the availability of such job offers. It is important to pay attention to the skills and knowledge potentials of the potential employees of Gross Anatomy laboratories; noting the evolutions and innovations currently taking place in modern Anatomy and its teaching [15,16].

Another major challenge that is worth attention is the non-availability of highly skilled staff members working in the Gross laboratory. No doctorate degree (PhD) holder was observed to be working in the laboratory. This is not unexpected, since most people with such qualification would prefer to be university or college teachers. However, it also points to limitations in teaching, learning and research activities that could take place in the laboratories. It is therefore recommended that employers should consider employing skilled Anatomists, especially in the position of headship. They may have research and teaching incorporated into their routine laboratory duties and may collaborate with the teaching staff in such areas. It is also important to add that Gross Anatomy laboratory should be well managed and made attractive to potential employees, for instance with respect to the use of formaldehyde [17] for preservation. Proper attention should also be paid to relevant safety concerns and ethical issues [12].

It is also worth paying attention to emphasis on the Gross Anatomy Laboratory because a large proportion of the Basic Medical Science Anatomy curriculum content is Gross Anatomy and it is the aspect of Anatomy given the highest credit unit and lecture hours [18]. It has been suggested that methods of teaching should be dynamic and result-oriented [19,20]. This does not exclude the teaching of Anatomy through gross dissections [21].

4. SUMMARY

The current investigation points to a number of staffing anomalies in the typical gross anatomy laboratory. It is important to state that it is the first effort to examine this aspect of anatomical education in this part of the world. Observations show that the staffing patterns in the laboratories require improvement in terms of the qualifications of employees, number of employees per laboratory. It is however important to state that all the studied institutions strongly believed in setting up functional and well equipped gross lab and they see it as a fundamental requirement for anatomical and medical education.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX

RESULTS

Staff Background Information

i.	Total number of staff	57 [100.00%]
ii.	Number of male staff	49 [85.96%]
iii.	Number of female staff	08 [14.04%]

Staff Raking Information

i.	Number of junior staff	34 [59.65%]
ii.	Number of senior staff	23 [40.35%]

Staff Qualifications Information

a.	O' level/Senior School Certificate	24 [42.11%]
b.	Ordinary National Diploma	06 [10.53%]
c.	National Certificate of Education	04 [7.02%]
a.	Higher National Diploma	14[24.56%]
b.	B. Science Laboratory Technology	02[3.51%]
c.	Bachelor of Medical Laboratory Science	04[7.02%]
d.	B. Sc Anatomy	03[5.26%]

Additional Professional Qualifications

Number of staff with additional professional qualifications	11[19.30%]
Number of staff without additional professional qualifications	46[80.70%]

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