

Perception of Medical Microbiology by Fifth Year Medical Students of the University of Calabar, Nigeria

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Abstract: Medical microbiology is a foundation discipline in the training of physicians. Investigating the perception of medical students to this subject will help lecturers provide better guidance on the subject. This survey assessed the perception of fifth year medical students of the value of medical microbiology to their training as physicians. A 3-point Likert-type scale structured questionnaire was administered to fifth year medical students at the University of Calabar and their responses were evaluated. A total of seventy-nine students took part in the study. Ninety-two percent of the students disagreed that a physician can effectively treat most medical patients with infection without knowledge of medical microbiology. Also 96 % agreed that the knowledge they have gained in medical microbiology is fundamental to their future roles as physicians. Thirty four percent of the respondents said the lecturers did not make the course interesting. Although the students recognized the importance of the discipline in their future role as physicians, there is a need for the teachers to present the subject in an interesting manner to the students.

Keywords: Medical, microbiology, students.

INTRODUCTION

Medical microbiology is a branch of medicine that is primarily concerned with the prevention, diagnosis and treatment of the infections of man. It is the study of microbes that cause disease in humans [1]. The subject is taught to medical students all over the world between the second and fifth year of study depending on the institution and type of programme.

In the University of Calabar, it is taught to fourth year medical students who are in their first clinical year as part of their training in laboratory medicine (also referred to as pathology) [2]. The other sub specialties of laboratory medicine are: Anatomic Pathology, Chemical Pathology and Haematology. The fourth-year students also receive training in Community Medicine, Family Medicine, Medicine, Surgery and Pharmacology [2]. During this year, they undertake clinical postings in Family Medicine, Community Medicine, Surgery, and Internal Medicine as well as block postings in Laboratory Medicine. Students who pass their fourth-year exams proceed to the fifth year of study and receive training in Psychiatry, Chest Medicine/Infectious Diseases, Dermatology, Ophthalmology, Otorhinolaryngology, Anaesthesiology, Orthopaedics/ Trauma, Radiology, Obstetrics/Gynaecology and Paediatrics [2].

Training in undergraduate medical microbiology aims to help the student see how the most frequent agents cause infections in different body sites and how an understanding of pathogenesis impacts sample choice and test interpretations. It also helps the student understand how preanalytical variables determine the quality and yield of microbiologic testing, the use and limitations of different diagnostic tools and how knowledge of antimicrobial action, antimicrobial resistance and of the antibiogram is applied in patient care [3]. This is with the overall objective of helping the student appreciate the relevance of the subject to their training and subsequent practice as physicians. Little is known about the perception of medical students in Calabar toward medical microbiology. Investigating the perception of medical students to this subject may help lectures provide better guidance on the subject. We thus carried out this survey to investigate the perception of

fifth year medical students on the value of medical microbiology to their training as physicians.

MATERIALS AND METHODS

Study Area

The study was carried out in the Faculty of Medicine, College of Medical Sciences, and University of Calabar.

Study Population

This was made up of all male and female undergraduates undergoing 5th year medical training during the 2014/2015 session.

Study Design

This was a descriptive cross-sectional study.

Sample Size and Sampling Method

The total population of 5th year medical students during the 2014/2015 session was used.

Data Collection

A structured questionnaire which was a modification of the questionnaire designed by West *et al.* [4] and presented in English by Shankar *et al.* [5] was used. The demographic and personal characteristics including age, sex, nationality and occupation of parents were noted. The questionnaire used is shown in the Appendix. The students were asked to denote their degree of agreement with the individual statements using a 3-point Likert type scale. The questionnaire was administered by the authors.

Data Analysis

The data was analysed using Statistical Package for Social Sciences (SPSS) student version 16.0. Descriptive data were given as frequencies and percentages. Tables and charts were used to present results, where necessary. The strength of association was analysed using *Chi square* test. The level of significance was set at $p \leq 0.05$.

Ethical Considerations

Ethical clearance was obtained from the Health Research Ethics Committee (HREC) of the University of Calabar Teaching Hospital and verbal consent was obtained from the respondents.

RESULTS

Out of the 85 students in the class, 79 (92.9%) took part in the study. Their ages ranged from 19 years to 34 years with a mean of 27 years. There were 54 (68.4%) males, with a male to female ratio of approximately 2:1. All the students were Nigerians. The age and sex distribution of the respondents is shown in table 1. The responses of the students on which of their parents were physicians is shown in figure1. The students' responses to the statements in the questionnaire are presented in table 2. Table 3 shows the association between age and sex and response to the statement 'Medical Microbiology is so far removed from clinical medicine that its usefulness to the practicing doctor is slight'. The association was not significant.

Table-1: Age and sex distribution of the respondents

| Age range (years) | Males (%) | Females (%) | Total |
|-------------------|------------|-------------|-------|
| 15-19 | 2 | 5 | 7 |
| 20-24 | 19 | 11 | 30 |
| 25-29 | 22 | 8 | 30 |
| 30-34 | 11 | 1 | 12 |
| Total | 54 (68.4%) | 25 (31.6%) | 79 |

Table-2: Students Responses to Statements in the Questionnaire

| A physician can effectively treat most medical patients with infection without knowledge of medical microbiology | | Medical Microbiology is so far removed from clinical medicine that its usefulness to the practicing doctor is slight | | The lecturers made medical microbiology an interesting subject. | | The information and knowledge I have gained to date in medical microbiology is fundamental to my future role as a physician. | |
|--|-----------|--|-----------|---|-----------|--|-----------|
| Variable | No (%) | Variable | No (%) | Variable | No (%) | variable | No (%) |
| Agree | 4 (5.1) | Agree | 9 (11.4) | Agree | 34 (43.0) | Agree | 76 (96.2) |
| Disagree | 73 (92.4) | Disagree | 61 (77.2) | Disagree | 27 (34.2) | Disagree | 0 (0.0) |
| Neutral | 2 (2.5) | Neutral | 9 (11.4) | Neutral | 18 (22.8) | Neutral | 3 (3.8) |

Table-3: Association of age and sex with the statement that medical microbiology is not useful to The practicing doctor

| Factors | ‘Medical Microbiology is so far removed from clinical medicine that its usefulness to the practicing doctor is slight’ | | | | Statistical Analysis |
|------------|--|---------------|-------------|------------|------------------------------------|
| | Agreed (%) | Disagreed (%) | Neutral (%) | Total (%) | |
| Age (N=79) | | | | | |
| 15-19 | 1 (14.3) | 5 (71.4) | 1 (14.3) | 7 (100.0) | $P = 0.899$ $CI = 0.985 - 1.00$ |
| 20-24 | 2 (6.7) | 25 (83.3) | 3 (10.0) | 30 (100.0) | |
| 25-29 | 5 (16.7) | 21 (70.0) | 4 (13.3) | 30 (100.0) | |
| 30-34 | 1 (8.3) | 10 (83.3) | 1 (8.3) | 12 (100.0) | |
| Sex (N=79) | | | | | |
| Males | 4 (7.7) | 41 (78.8) | 7 (13.5) | 52 (100.0) | $P = 0.293$ $CI = 0.0693-0.366$ |
| Females | 5 (18.5) | 20 (74.1) | 2 (7.4) | 27 (100.0) | |

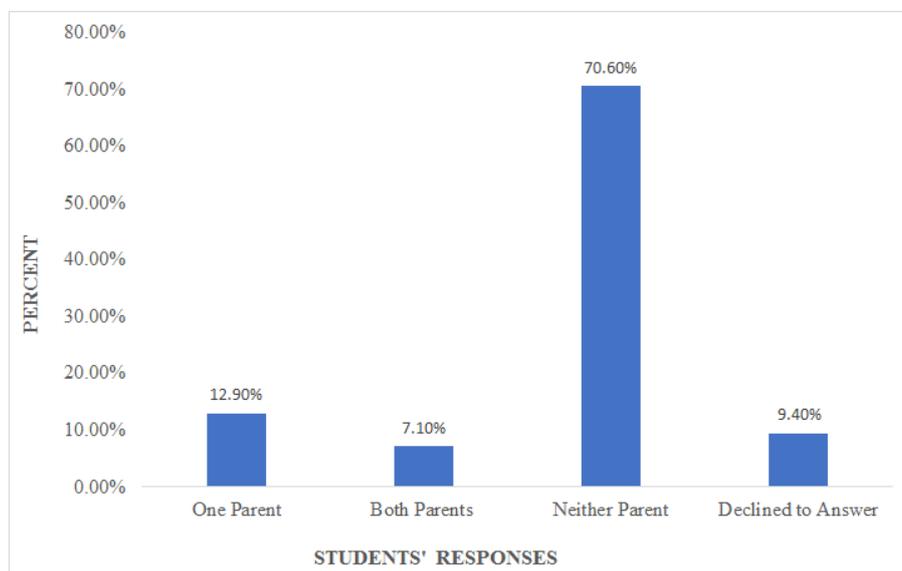


Fig-1: Parents of the respondents who were physicians

DISCUSSION

Medical microbiology’s contribution to medicine has been greatly felt in the areas of understanding how pathogens interact with humans to cause infections, how the offending pathogens can be identified and in biopharmaceuticals. Also, the concept of modern hygiene in clinical medicine as well as the development of immunization and vaccination was devised through an understanding of infectious diseases and the immune response to infection [6].

The majority of the students agreed that medical microbiology is valuable to their training and practice as physicians. One reason for this may be the fact that the students were taught the course in a hospital setting. This is in agreement with a study by Singh *et al.* [3] who found out that teaching medical microbiology in a hospital setting made it easier for students to understand the link between the theory and practice of medical microbiology. Another reason may

also be that since members of the faculty who teach the subject are physicians, the students have ample opportunities to see how the lessons apply to real life clinical situations.

Almost half of the respondents said the lecturers did not make the course interesting. Students may get uninterested in a subject if their creativity is not stimulated as often happens when there are too many details to learn by rote, especially if they consider the excess detail “irrelevant” [7,8]. It is also possible that advancements in technology with smart devices and applications which the students are familiar with may make the traditional methods of teaching currently being employed uninteresting for some [9]. While what may be interesting to one person may not be interesting to another, there is a need for the lecturers to make the subject appealing. To begin with, lecturers may provide evaluation forms to students for the students to help the lecturers know how they are doing and how to improve.

Then, teachers may just provide content that is relevant to medical practice that can be memorized by the students and applied in clinic, as this has been found to be effective. Also, incorporating clinical case presentation into the lectures has been shown to improve the enthusiasm of students for the course [7-9]. Mohammed *at al* reported that only 4% of final year medical students in the University of Maiduguri were interested in studying medical microbiology at graduate level [10]. Other studies have also shown that most medical students do not consider taking up a career in medical microbiology [11,12]. This trend can be checked by making the subject interesting at undergraduate level. In this era of information technology, the possibility of providing part of the training using mobile technology-based platforms should also be looked into [13].

CONCLUSION

This study shows that the students recognize the importance of medical microbiology in their future role as physicians. However, there is a need for the lecturers to present the subject in an interesting manner to the students.

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