

Preference of preclinical medical students for medical specialties and the basic medical sciences

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Summary

A structured questionnaire was administered to 346 medical and dental students who were about to take the Part I MBBS/BDS degree examination. Apart from personal data of each student, the questionnaire sought information on their post-graduation career preferences in ten medical specialties, lectureship in anatomy, physiology or biochemistry, career in the armed forces, politics or business. They were required to give reasons for their choices. The results showed that 89.6% of the students were aged 19 to 24 years and 94.8% were admitted via concessional entry. Forty-one percent of the students preferred surgery, while 15%, 11% and 7.8% chose careers in obstetrics and gynaecology, paediatrics and internal medicine respectively. The specialties of radiology, anaesthesia, psychiatry, pathology, community medicine and general practice were unattractive to most students. Only 1.5% of the students wanted to become lecturers in anatomy and physiology while none wanted to lecture in biochemistry. Choice of career in the armed forces, politics and business was low. Nine students (2.6%) wanted to be pastors/missionary doctors. The main reasons for the choices are personal interest (73.7) and better financial reward 11.8%. Sex had a significant effect on choices. The results were discussed and their implications were highlighted. Suggestions on how to solve the problems identified were made.

Keywords

Preclinical, medical students, medical specialties, anatomy, physiology, biochemistry

Résumé

Un questionnaire structuré a été administré à 346 étudiants medecins et dentistes qui etaient près de passer la première partie del'examen final en medecine (MBBS/BDS). A l'expection des informations personnelle sur chaque étudiant, le questionnaire a été constitué de manière à revellr des informations sur la preference de leur carriere après leur études dans 10 specialites medicales differentes enseignant en anatomie, physiologie ou Biochimie, carriere dans les forces armées, en politique ou en affaires. Les étudiants, avaient été demandé de donner les raisons de leurs choix.

Les resultats ont montrés que 89.6% des étudiants étaient ages de 19 à 24 ans et 94.8% d'entre eux avaient été admis par consensus. Quarante-un pourcent des étudiants ont préféré la chirurgie, lorsque 15%, 11% et 7.8% ont préféré pour futur carriere obstetrie et gynecologie, pediatrie, et medecineInterhe respectivement. Les specialites telsque: la radiologie, l'anesthésie, la psychiatrie, pathologie et medecine communautaire ont été les specialities les moins attractives parmi les étudiants. Un virgule cinq pourcent des étudiants seulement ont sonhaité enseignant en anatomie, et physiologie, lorsque aucun n'a souhaite devenir enseignant en Biochimie. Les choix de carrière dans les forces armées ou dans les affaires a été faible. Neut étudiants (soit 2.6%) ont souhaite devenir pasteurs/missionnaire et medecin à la fois. Les raisons principlaes des choix ont été des raisons personnelles (73.37), et un meilleur revenue financier (11.8%). Le sexe a eu un effet significatif sur le choix. Les resultats ont été discuté et leur implications mis en exergue. Les suggestions sur comment resoudre les problemes identifiées ont été faites.

Introduction

Much has been published on medical students' beliefs about, knowledge of, and choices concerning the various specialties in Medicine in Australia [1], Canada [2], England [3,4], Northern Ireland [5,6], the United States [7-11] and more recently, in Nigeria [12-14]. Most of these studies established that the specialties favoured most by medical students are surgery, obstetrics and gynaecology, paediatrics and internal medicine, while specialties like psychiatry, radiology, pathology, anaesthesia and community medicine were found to be far less attractive. Despite considerable research, there is no agreement on why medical students prefer to choose one specialty over another.

Unfortunately, none of the earlier studies investigated the interest of medical students in choosing an academic career in the basic medical science subjects of anatomy, biochemistry, and physiology. This is in spite of the fact that preclinical students were involved in many of the studies and these three subjects constitute the foundation of medical training. It is also known that a few doctors abandon medical practice altogether after graduation from medical school and take up other careers. The present study was therefore carried out to investigate the career preferences of pre-clinical medical students (including preclinical dentistry students) not only into clinical specialties, but also into the basic medical sciences and some non-medical vocations. This study is particularly keen on finding out the interest of

medical and dental students, before they are exposed to the clinical disciplines in an academic career in the basic medical sciences.

Materials and methods

Three hundred and forty-six medical and dental students (298 medical and 48 dental) in their third year of the medical programme who were about to sit for the Part I MBBS/BDS examination took part in the study. The students had been admitted into the medical school in the 1993/94 session via concessional entry and the 1994/95 session via direct entry. All the students volunteered to participate in the study after the purpose of the study had been explained to them.

The study was by means of a structured questionnaire administered to the students immediately after a class test. The questionnaire, which was completed anonymously, sought information on age, sex, mode of entry into the university and the ranking of the students' likeness and preference for the basic medical science subjects of anatomy, biochemistry and physiology. The questionnaire also required the students to rank (three choices in order of preference) the career they would like to pursue after graduation from medical school out of the ten areas of medical specialty, lecturing and any of the three preclinical basic medical science subjects, business, politics, a career in the Armed Forces or any other vocation. They were required to specify the latter. The scope of the career options offered in the questionnaire is shown under results. They were also required to give reason(s) for their choices. Finally, the students were asked whether, if given the opportunity, they would like to spend an extra year for an intercalated Bachelor of Science degree in anatomy or physiology before proceeding to the University College Teaching Hospital for their clinical training. The responses to the questionnaire were analysed. Some of the variables were cross-tabulated and a chi-square test was carried out to assess what variables significantly influenced the choice of future career. *P* values of 0.05 or less were taken as statistically significant.

Results

All the student who took part in the study filled and submitted their questionnaire. Their responses were used in the analysis of results. The Tables 1 to 5, the results are expressed as a percentage of the total respondents (346) so as to allow for easy appreciation of the frequency distribution of the response pattern. The 346 respondents consist of 229 males, 111 females and 6 persons who did not indicate their sex. Their age distribution is shown in Table. In all, 89.6% of the students are between 19 and 24 years old. Three hundred and twenty-eight (94.8%) of the students were admitted via concessional entry, 12 (3.4%) by direct entry and 6 (1.7%) did not indicate their mode of admission. Of the 12 direct entry students, 7 had A/Levels and 5 were graduates (holders of first degrees).

Table 1: Age distribution of the students (n = 345)

Age (yrs)	Number	Percent
17 – 18	1	0.3
19 – 20	69	19.9
21 – 22	167	48.3
23 – 24	65	18.8
25 – 26	19	5.5
27 – 28	6	1.7
29 – 30	5	1.4
31 and above	4	1.2
No response	10	2.9
Total	346	100.0

The students' likeness/preferences for anatomy, biochemistry and physiology are shown in Table 2. The table shows that physiology is the subject liked most on the first and second choice of the students, with anatomy placed second while biochemistry is the least liked.

Table 2: Likeness/preference of students (as percentage of total) for the basic medical science subjects (n = 346)

Subject	First Choice	Second Choice	Third Choice
Anatomy	337.8	34.7	23.4
Biochemistry	14.7	21.1	59.0
Physiology	44.2	38.7	12.1
No response	4.3	5.5	5.5
Total (%)	100.0	100.0	100.0

Table 3 shows the choice of medical specialties and other vocations chosen by the student. It will be noted that surgery is the first choice of the highest number of students (142 students or 41%) followed by obstetrics and gynaecology (O&G, 15.0%) and paediatrics (11.0%) which were second and third respectively on the first choice list. Internal medicine is fourth (7.8%). Only 3 students (0.9%) chose to lecture anatomy. 2 students (0.6%) chose to lecture in physiology and no student wanted to lecture biochemistry.

Table 3: Choice of specialization (as percentage of total) of 346 medical students

Specialty	First Choice	Second Choice	Third Choice
Internal medicine	7.8	11.6	9.5
Paediatrics	11.0	9.0	7.5
Surgery	41.0	11.6	9.2
Obstetrics & Gynaecology	15.0	15.0	7.5
Radiology	0.3	1.7	0.6
Psychiatry	3.5	3.2	2.9
Pathology	1.4	4.0	3.5
Anaesthesia	0.3	1.2	1.7
Community Medicine	0.6	2.3	3.5
General Practice	2.9	7.2	7.8
Lecturer in Anatomy	0.9	1.7	1.7
Lecturer in Biochemistry	-	0.9	0.3
Lecturer in Physiology	0.6	1.7	2.0
Businessman/woman	1.2	5.5	6.9
Politician	-	0.3	1.7
Career in the armed forces	0.9	2.0	4.9
Others	6.1	2.9	6.1
Not indicated	6.6	18.2	22.2
Total (%)	100.0	100.0	100.0

Of the "others" group, 9 students (2.6%), 8 males and 1 female, chose pastors/missionary doctors as their first choice. Also, 2 students (0.6%), both females, chose ophthalmology as first choice. Three students (0.9%), all males, chose computer scientist as first choice, one male student (0.3%) would like to be a fine artist or a graphic designer, while one female student would "like to study pharmacy" as first choice. Twenty-three students (6.6%) did not indicate a first choice.

The second and third choices are more widely spread, but surgery, O&G, paediatrics and internal medicine are still the most preferred specialties. While some students are undecided on both choices (18.2 and 22.22%, respectively), interest in lecturing in the preclinical basic medical science subjects is still very low. As a first choice, no medical student wanted to be a politician and only three students (0.9%) chose career in the armed forces.

Table 4 shows the reasons for the choices shown in Table 3. Most of the students (73.7%) based their choices on personal interest while 11.8% based theirs on better financial reward. Under "others"; "so that I can be my own boss"; "I like little children" and "I'll have more time for my family" were given.

Table 4: Reasons for the choices shown in Table 3. (as percentage of total, n = 346)

Reasons	Percent
Better financial reward	11.8
Higher social status	3.5
This is my area of interest	73.7
My parents/relations advised me	0.6
My friends advised me	1.2
Others	2.3
No response	6.9
Total (%)	100.0

The responses to the question of whether or not the student would be prepared to spend an extra year to do a bachelor's degree in anatomy or physiology are shown in Table 5. The table shows that most of the students are either not interested or are not decided about doing a B.Sc course. The statistical analysis showed that age, mode of entry and reasons for choice had no significant effect on the choices made. However, sex had a significant effect on the first choice of the students. No male students chose radiology, anaesthesia and community medicine while no female student chose physiology, business or politics. Also, far more male students than can be accounted for by the 2:1 male/female ratio among the respondents chose internal medicine (20:7), surgery (118:24) and pathology (4:1). The figures in parenthesis refer to the number of males and females, respectively, making each choice. Conversely, far more females chose paediatrics (12 males; 26 females). These sex differences were highly significant ($P = 0.0001$).

Table 5: Willingness to do a B.Sc. degree if allowed (as percentage of total, n=346)

	Percent
Yes, B.Sc. Physiology	20.8
Yes, B.Sc. Anatomy	5.8
No, I'm not interested	46.0
I don't know	20.2
No response	7.2
Total (%)	100.0

Discussion

This study was conducted after a class test, hence, almost all members of the class, except a few who were ill, took part. The age distribution in the present study is similar to that reported in an earlier study [15]. The high number of students admitted via concessional entry (94.8%) is a reflection of the current admission policy into medical schools in Nigeria whereby the A/Levels has been discontinued in all secondary schools and most of the admissions are now through the Joint Admission and Matriculation Board (JAMB) examination. The response to the "likeness" question which showed that the highest likeness is for physiology is similar to that reported in an earlier study [15]. As noted in that study, the fact that this study was conducted in the Physiology Department might have biased the response of the students to the "likeness" question in favour of physiology.

Students wishing to specialize in surgery constitute 41% of the present cohort. It is probable that most of the 48 dental surgery students who participated in this study opted for specialization in surgery. No attempt was made in the study to separate the dental students from the medical students. These 48 students comprise 13.9% of all the students studied. If all the dental surgery students are assumed to have opted for surgery and their number is deducted from the surgery group, this still leaves 27.1% wishing to specialize in surgery. This is far in excess of the second highest group of 15% who chose to specialize in obstetrics and gynaecology. Thus, the placing of surgery, O&G, paediatrics and internal medicine as the first, second, third and fourth in the order of specialty choices in the present study is consistent with the findings in studies done in North America (8, 16, 17) Britain (4) and Nigeria (12 - 14). Two main reasons emerged from the present study for the pattern of choices; these are personal interest in the specialty chosen (73.7%) and better financial reward (11.8%). Since 6.9% of the respondents gave no reason, the other reasons shown in Table 4 besides personal interest and better financial reward account for just 7.6% of the reasons given and are therefore far less important in determining career preferences. The very high percentage (73.7%) of the students who gave personal interest as the reason for their choice of specialty buttresses the point made by Asuzu (12) that the desire for specialization was already present in the students even before clinical exposures. This finding also concurs with those of Ohaeri and his colleagues (14) who reported that 62.8% among the first year pre-clinical students they studied had decided to specialise. All these findings point to "personal interest" as a major determinant of the choice of specialty. In an earlier study, Ohaeri and his colleagues (14) reported that the decision to specialise was taken before entry into the university by 44.6% of first-year preclinical students and 41.3% of final year clinical students. The latter and the results of the present study suggest that interest in a particular specialty was most probably developed during the secondary school career of the students. The exact stage at which this interest developed is unknown. Further studies will be required to clarify this. Following closely on personal interest is better financial reward and this is similar to what has been reported by other workers (8, 13). The present study, like some of the earlier studies (4, 8, 12-14) showed that the specialties of radiology,

pathology, psychiatry, anaesthesia and community medicine were rather low in the choices of the students.

A point that was clear in the present results (Table 3) is the very negative attitude of the students to an academic career in the basic medical sciences even before they were exposed to clinical medicine. Only 1.5% of the entire cohort studied chose a career as lecturer in Anatomy and Physiology as their first choice, while none chose to be a lecturer in Biochemistry. When this is viewed alongside the finding that only 5.8% and 20.8% indicated interest in a B.Sc. degree in anatomy and physiology, respectively while the majority are not interested or do not know (Table 5), it portends a bleak future for finding medically qualified lecturers to work in the preclinical departments. It is pertinent to mention that a B.Sc in Biochemistry (intercalated) was not included in the questionnaire because it requires a longer time than a B.Sc in the other two preclinical subjects and in the past, students of the Ibadan medical school have not shown interest in it. There is an urgent need in Nigeria to find ways and means of redressing this poor interest in a career in the preclinical basic science subjects. We suggest that opportunities for post-graduate training in well-equipped laboratories within or outside Nigeria should be provided to attract doctors into the basic medical sciences after graduation. Facilities for teaching and research in these departments should also be improved to make the working environment more attractive. In addition, special financial incentives, better than those given in clinical departments, should be offered to those who chose to work in these obvious hardship areas. The present practice in many Nigerian medical schools whereby pre-clinical lecturers are paid far less than their colleagues in the clinical departments can only make it more difficult to get medical doctors to take up lectureship in preclinical departments. A similar suggestion of special economic incentives to attract doctors into the not-so-popular clinical specialties was made recently. (13)

The low interest of medical students in a career in the armed forces (from where most of rulers at Federal and State levels have been selected for almost three decades now) and the absence of any first choice in becoming a politician strongly suggests that medical students are not interested in wielding political power. The rather high number of students who are interested in pastoral work came as a surprise. The reason for this is obscure. Also, the reasons for the highly significant effect of sex on the choice of career in the present study are unknown. Further studies will be required to elucidate these.

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