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The Academic Profile of Students Failing in the First Two Years of Medical School

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Abstract: The study was carried out to identify the characteristics of Medical Students who failed at 100 and 200 levels. The age, sex, 'O' level grades, University Matriculation Examination (UME) scores, Pre-Degree Science (PDS) scores, 100 level cumulative grade points average (CGPA), 200 level Physiology scores and Comprehensive Examination results of students admitted in 1999/2000 session were recorded. The results of those who passed the 100 level University Examination and the 200 level Comprehensive Examinations were compared with the results of the students that failed the examination. The results showed significantly poorer aggregate 'O' level grades, Pre-Degree scores and 100 level CGPA scores among students who failed in either 100 level or 200 level. However, the mean UME scores of students who failed were not significantly different from that of those who passed. On the basis of these findings, it is suggested that students 'O' level aggregates PDS scores and 100 level CGPA be considered in determining students eligible to proceed to the Medical programme proper in medical School.

Key words: Academic profile · 'O' level aggregate · Direct · Transfer · CGPA · UME score

INTRODUCTION

In the face of mounting cost of University Education [1], increasing number of applicants to Universities [2] and large numbers of students wanting to study Medicine in particular, there is need for the formation of a set of selection criteria for efficient admission into Medical School. In the past five years, approximately 25% of students undergoing the Pre-Degree Science Programme of Ladoke Akintola University of Technology (LAUTECH) chose Medicine as their preferred course of study. The failure rate and repeat rate is very high in the Medical programme, not only in State Universities but also in Federal Universities [3]. It costs an estimated N300, 000 per annum to train an undergraduate in the average state or Federal University [4]. Quite a large number of students spend three or more extra years on the Medical programme. Many spend up to five years (instead of three) in the Preclinical part of the Medical programme and are eventually withdrawn [5] and have to start other courses at 200 level. These extra years represent a financial burden on both the government and the parents or sponsors of these students. Apart from these draw backs, quite a few students find it, difficult to readjust to the psychological trauma of being "advised to withdraw".

Many reasons have been adduced as to the cause of failure amongst Medical students. The factors identified include socioeconomic, demographic and academic factors. A number of studies have shown high failure rates in male students [6], older students [7] and students who are children of medical doctors [8, 9]. However, the most widely acceptable factor identified has been the quality or (lack of it) of the preadmission academic performance [10, 11]. Currently the sole criterion used for admission into the Medical programme of LAUTECH College of Health sciences is the academic performance at Pre-Degree Science Examinations and Universities Matriculation Examinations [2]. The failure rate in the College of Health Sciences at 100 and 200 level has steadily decreased as better academically qualified students have been admitted [2]. However, the failure and withdrawal rate still remains much higher than in the Western Countries of the world [12].

The aim of the present study is to determine the distinguishing academic characteristics of students failing at 100 or 200 level of the course. This study, it is hoped will lead to the determination of the academic profile of students who are likely to fail in the first two years of Medical School.

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MATERIALS AND METHODS

The files of 367 students admitted into the Medical programme in 1999/2000 session were used for this study. The following data were extracted from the files. The Age, Sex, 'O' level results in English, Mathematics, Physics, Chemistry and Biology. The UME score, whether admitted directly or by transfer, PDS score, the 100 level CGPA and 200 level Physiology Comprehensive Examination score. The grades of each of the students in the five relevant 'O' level subjects were summed up to provide an aggregate score for each student as previously described by Bamgboye *et al* [3]. The cohort of students were divided into two broad groups of those admitted via Pre-Degree Science programme of the University and those admitted through the Joint Admissions and Matriculation Board (JAMB). Each of these groups were then further divided into those who passed and those who failed – Among those who failed, those who failed and were withdrawn at 100 level were separated from the students who failed at 200 level.

The summary indices (mean ± SD) of the age, 'O' level aggregates, UME or PDS score, 100 level CGPA and Physiology scores were calculated for each group and the summary indices of the students who passed were compared with the summary indices of the students who failed by the student t – test. P value of less than 0.05 was taken to be statistically significant. A chi-square (x^2) test was also performed to determine the association if any between sex and pass or fail grade.

RESULTS

Table 1 shows a comparison of the students admitted into the Medical School through the University's Pre-Degree Science programme in 1999/2000 session who passed the 200 level Comprehensive Examinations with those who failed. The mean age of students who passed was not significantly lower than that of those who failed. However, the mean 'O' level aggregates of students who passed was significantly lower ($P < 0.002$) indicating better performance at School certificate level. The Pre-Degree score was also significantly higher ($P < 0.00005$) among the students who passed when compared with that of the students who failed at the 200 level Examinations. Similarly, the mean 100 level CGPA was significantly ($P < 0000005$) higher among the students who passed than amongst those who failed.

Table 1: Results Comparison of summary statistics of demographic and academic characteristics of students admitted into Medical School through the Pre- Degree Science Programme in 1999/2000 Session who passed or failed at the 200 level Comprehensive Examination

	PASS AT 200 L N = 75	FAIL AT 200 L N = 147	P Value
AGE	19.63±1.84	19.67±1.42	0.43 (NS)
'O Level Aggregate	21.11±5.08	23.13±4.35	0.00194 (HS)
Pre-degree Score	359.37±31.69	342.27±26.68	5.21×10^{-5} (HS)
100 Level CGPA	3.66±0.37	3.37±0.42	4.8×10^{-7} (HS)
200 Level Physiology Score	53.75±3.69	46.12±5.20	8.38×10^{-24} (HS)
Male/Female ratio	55/20	75/72	

Table 2: Summary statistics of demographic and academic characteristics of students admitted already (100 L) into Medical School through the Joint Admission and Matriculation board (JAMB) – comparison of students who passed with those who failed

	PASS AT 200 L N = 54	FAIL AT 200 L N = 60	P Value
AGE	19.35±1.64	19.07±1.67	0.258 (NS)
'O Level Aggregate	18.33±5.77	20.98±5.09	0.0052 (HS)
UME	220.66±12.49	215±20.63	0.52 (NS)
100 Level CGPA	3.66±0.46	3.25±0.46	2.77×10^{-6} (HS)
200 Level Physiology Score	56.81±4.23	46.20±4.53	3.73×10^{-24} (HS)
Male/Female ratio	55/20	75/72	

Table 2 shows a comparison of the summary statistics (Mean±SD) of students admitted into the Medical School through Joint Admission and Matriculation Board (JAMB) in 1999/2000 session who passed the 200 level Comprehensive Examination with those who failed. There was no significant difference in the ages of the students admitted through Joint Admission and Matriculation Board (JAMB) who passed and those who failed. There was also no significant difference in the UME scores of both sets of students. The students who passed had significantly better 'O' level aggregates ($P < 0.01$) 100 level CGPA ($P < 0.000003$) and Physiology scores ($P < 3.8 \times 10^{-24}$).

Table 3 shows a comparison of the summary statistics of the demographic and academic characteristics of Joint Admission and Matriculation Board admitted students who passed with that of those who failed the 200level comprehensive exam after transferring into the Medical programme from other departments at 200 level. The UME scores and CGPA of students who passed the

Table 3: Comparison of the summary statistics of the demographic and academic characteristics of Joint Admission and Matriculation Board (JAMB) admitted students transferring into the Medical programme of 200 level. Comparison of students who passed with those who failed the 200 level examination

	PASS AT 200 L N = 21	FAIL AT 200 L N = 10	P Value
AGE	19.29±1.68	19.20±1.84	0.448875 (NS)
'O Level Aggregate	18.38±3.85	18.70±6.41	0.0328711 (S)
UME Scores	207.24± 13.22	204.4±12.66	0.287812 (NS)
100 Level CGPA	3.73±0.32	3.53±0.29	0.05076 (NS)
200 Level			
Physiology Score	55.39±3.30	47.30±4.71	2.7740^{-6} (HS)
Male/Female ratio	16/5	6/4	

Table 4: A Comparison of the summary statistics of students admitted through Joint Admission and Matriculation Board (JAMB) who failed at 100 level with those who failed at 200 level

	PASS AT 100 L N = 29	FAIL AT 200 L N = 60	P Value
AGE	19.48±2.54	19.07 1.67	0.1790 (NS)
'O Level Aggregate	21.55±4.58	20.98±5.09	0.3057 (NS)
UME Scores	2011.38	215.37±20.63	0.064 (NS)
100 Level CGPA	2.41±0.34	3.25±0.46	0.000112 (HS)
200 Level			
Physiology Score	55.39±3.30	47.30±4.71	2.7740^{-6} (HS)
Male/Female ratio	16/13	32/28	

200 level Comprehensive Examination were not significantly better than those of the students who failed even though the "O" level aggregates (P<0.033) and the physiology scores were significantly better (P < 0.000003).

Table 4 shows a comparison of the summary statistics of students admitted directly through the Joint Admission and Matriculation Board who failed at 100 level with those who failed at 200 level.

The students who failed at 200 level had slightly but not significantly better 'O' level aggregate that hose of the students who failed at 100 level. They were also younger though not significantly than those who failed at 100 level. The students who failed at 200 level had significantly better CGPA, (P<0.000112) than the students who failed at 100 level even though the UME score of the students who failedleelat100l was better (though not significantly so) than that of the 200 level students.

Table 5 shows a comparison of the summary statistics of the students admitted directly (at 100 level) through JAMB who passed and those admitted to the

Table 5: A comparison of the summary statistics of the demographic and academic characteristics of Joint Admission and Matriculation Board (JAMB) admitted students admitted already (at 100 L) through JAMB who passed and those admitted to the Medical programme by transfer from other departments who also passed the Comprehensive Examinations

	Direct (PASS AT 200 L) N = 54	Transfer (PASS AT 200 L) N = 21	P Value
AGE	19.35±1.64	19.29±1.68	0.439123234 (NS)
'O Level Aggregate	18.33±5.77	18.38±3.85	0.483562276 (NS)
UME Scores	220..66±12.49	207.24±13.22	0.000152605(HS)
100 Level CGPA	3.66±0.46	3.73±0.32	0.235718246 (NS)
200 Level			
Physiology Score	56.81±4.23	55.39±3.30	0.64184628 (NS)

Table 6: A comparison of the summary demographic and academic statistics of Transfer students who passed the 200 level examination with Direct students who failed the 200 level examinations

	Transfer(PASS) (200 L) N = 21	FAIL AT 200 L (200 L) N = 60	P Value
AGE	19.29±1.68	19.07±1.67	0.448875 (NS)
'O Level Aggregate	18.38±3.85	20.98±5.09	0.009319057 (HS)
UME Scores	207.24±13.22	215.00±20.63	0.021560685 (S)
100 Level CGPA	3.73±0.32	3.25±0.46	$1.51323x10^{-6}$076(HS)
200 Level			
Physiology Score	55.39±3.30	46.20±4.53	1.77047×10^{-13} (HS)

Medical programme by transfer (at 200 Level) from other departments who also passed the Comprehensive Examinations.

Although the UME scores of the direct group of JAMB admitted students was significantly (P <0.000153) higher than that of the transfer students, these was no significant difference in their ages, 'O' level aggregates, 100 level CGPA and Physiology scores.

Table 6 shows a comparison of the summary statistics of transfer students who passed with those of direct students who failed. The transfer students though having significantly lower UME scores (P < 0.022) had significantly better 'O' level aggregates (P < 0.00932), 100 level CGPA ($P < 1.51 \times 10^{-6}$) and Physiology scores ($P < 1.77 \times 10^{-13}$). There was however no significant difference in the ages of the two groups.

DISCUSSION

Generally, the results showed a statistically significant difference in the 'O' level aggregate, 100 level CGPA and 200 level Physiology scores of students who

passed compared with the students who failed. The difference was consistent in both broad groups of Pre-Degree admitted and JAMB admitted students (Tables 1 and 2). The ages of the students showed no statistically significant difference in all the groups. These findings are similar to findings in other studies which identified weak preadmission academic attainment as a predictive factor in failure in first two years of Medical School [13-15]. However, though the Pre-Degree scores of the students who passed was significantly higher than that of the students who failed, the UME scores of the students who passed was not significantly different from the scores of those who failed. This finding further highlights the lack of predictive value of UME scores in selecting Medical students likely to succeed, as previously reported by other investigators [2, 14, 16, 17]. Further study and analysis of the JAMB admitted group of students particularly those who transferred from other departments with lower preadmission UME scores further, buttress the unreliability of UME scores. When the JAMB (direct admitted students who passed the 200 level Comprehensive Examinations were compared with JAMB (transfer) admitted students who also passed, we found no significant differences in all indices of academic performance 'O' level aggregates, CGPA and Physiology score even though the Direct group had a significantly higher UME score on admission.

Furthermore, when the JAMB (transfer) students who passed were compared with the JAMB (direct) students who failed, the JAMB transfer students had significantly better 'O' level aggregates, 100 level CGPA and Physiology scores despite having significantly lower UME scores. This same situation where students with low UME scores perform better than those with higher UME scores have been reported by other investigators [18, 19].

The findings of this study tend to suggest that the preadmission academic profile is highly predictive of success in the pre-clinical year. However the finding of no significant difference in the 'O' level aggregate UME scores and 100 level CGPA of JAMB transfer students who passed from that of those who failed the 200 level Comprehensive Examinations will tend to highlight the limitation of Preadmission academic performance predicting success in the Preclinical year. It is possible that other extraneous, non-cognitive factors such as financial capability, psychological stability and maturity may account for the difference in 200 level performance. Such non cognitive factors have been cited in many similar studies [13, 20, 21].

In conclusion, the 'O' level aggregates and 100 level CGPA was the universal distinguishing feature between students who passed or failed the 200 level Comprehensive Examinations. In view of these findings we therefore suggest that all admission into the Medical programme should be provisional, with progression to the preclinical year (200 level) being dependent on achieving a prescribed minimum level of 100 level CGPA. It should be possible to formulate an algorithm consisting of 'O' level aggregates and 100 level CGPA which will be predictive of success in the Medical programme proper.

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