

## Effect of Socio-demographic Profile on the Academic Performance of First Year Medical Students in Anatomy

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**Abstract:** The aim of this study was to find the effect of socio-demographic profile on the academic performance of first year medical students in anatomy. Poor academic achievement could be the result of interplay between student's factors and their environmental milieu. 361 first year MBBS students of 2009 (175) and 2010 (186) batches were included in the study. A proforma consisting of information about age, sex, place of residence (strata), medium of instruction during schooling and the board of 12<sup>th</sup> standard was filled by the students. Performance of these students in the terminal examination was recorded and correlated statistically with their socio-demographic profile. Best performance was reported in the age group of 17-20 years. Females performed better in both theory and practical exams as compared to males. Students from urban background performed better than of rural areas. Students with English medium background performed better than that of Hindi medium. Students of ISC board performed best in terminal exams as compared to those of CBSE followed by UP and other provincial examination boards.

**Keywords:** Students, Academic, Examination, Performance, Socio-demographic profile.

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### I. Introduction

Medical education is considered to be costly education imparted by any government. The factors responsible for students' performance need to be understood otherwise it could result into wastage of resources. If the factors influencing the performance adversely could be identified then this baseline data could be of immense help for the policy makers in modifying or improving the existing system. Poor academic achievement could be the result of interplay between student's factors and their environmental milieu. Capacity to respond to and benefit from education depends upon the level of student's intellect, language and emotional maturity [1].

Student characteristics, their lifestyle, learning environments, and instruction activities contribute to their achievement [2]. Credé and Kuncel (2008) also found that study skills, study habits, study attitudes, and motivation for study exhibit relationships with academic performance [3]. Ferguson et al (2002) stressed the importance of how students learn, and this concept seems to be a useful strategy for students who wish to succeed [4]. Rhoads et al (1974) and Rippey et al (1981) reported that motivation appears to be an influencing factor in performance [5,6]. Another simple indicator of study habits must surely be based on the estimates of the number of hours worked by a student in a typical week. It was reported that there is a fairly clear relationship between examination results and the amount of work done by students [7].

### II. Material And Methods

361 first year MBBS students of 2009 (175) and 2010 (186) batches were included in the study. The study was approved by the institutional ethical review committee. After explaining the purpose of study to the students, consent was taken before distribution of questionnaire. A proforma consisting of information about age, sex, place of residence (strata), medium of instruction during schooling and the board of 12<sup>th</sup> standard was filled by the students. Performance of these students in the terminal examination was recorded and correlated statistically with their socio-demographic profile. The students were divided into 3 groups according to age i.e. 17-20 years (n=162), 21-24 years (n=162) and  $\geq 25$  years (n=37). Out of 361 students, number of females were 92 while males were 269. Number of students belonging to rural background were 142 while that of urban area 219. According to medium of instruction in 12<sup>th</sup> standard, students were divided into two groups i.e. English medium (n=149) and Hindi medium (n=212). Considering the examination board in 12<sup>th</sup> standard, maximum number of students were of UP board (n=212), followed by CBSE (n=103), ISC (n=36) and others (n=10).

### III. Results

Age of the students was correlated with their marks obtained in both theory and practical exam. Statistical analysis (Kruskal-Wallis test) showed that the performance of students in theory, practical and overall was best in age group 17-20 years followed by 21-24 years and  $\geq 25$  years (Table 1).

**Table 1: Correlation of age of study population with their mean scores in theory & practical exam**

Age group	Theory	Practical	Overall
17-20 (n=162)	21.82±7.7	27.96±4.7	49.78±11.6
21-24 (n=162)	14.95±6.7	24.63±4.7	39.57±10.7
$\geq 25$ (n=37)	12.88±6.2	21.73±4.7	34.61±10.5

Kruskal-Wallis test;  $p=0.0000$

Performance of female students in theory, practical and overall was better statistically (Mann-Whitney test) as compared to male students (Table 2).

**Table 2: Correlation of sex of study population with their mean scores in theory & practical exam**

Sex	Theory	Practical	Overall
Female (n=92)	22.42±7.3	28.56±3.7	50.98±10.2
Male (n=269)	16.24±7.6	24.89±5.2	41.13±12.2

Mann-Whitney test;  $p=0.0000$

Marks obtained in theory, practical and overall was better statistically (Mann-Whitney test) in students of urban background than that of rural background (Table 3).

**Table 3: Correlation of strata of study population with their mean scores in theory & practical exam**

Strata	Theory	Practical	Overall
Rural (n=142)	15.18±7.6	23.98±5.3	39.16±12.3
Urban (n= 219)	19.53±7.8	27.02±4.7	46.55±11.7

Mann-Whitney test;  $p=0.0000$

Medium of instruction in 12<sup>th</sup> standard was also correlated with the obtained marks in theory, practical and overall performance. Statistical analysis (Mann-Whitney test) revealed that students of English medium performed better than that of Hindi medium (Table 4).

**Table 4: Correlation of medium of instruction of study population with their mean scores in theory & practical exam**

Medium of Instruction	Theory	Practical	Overall
English (n=149)	20.54±8.4	27.43±4.6	47.97±12.2
Hindi (n= 212)	15.90±7.1	24.70±5.2	40.60±11.7

Mann-Whitney test;  $p=0.0000$

Effect of Examination board in 12<sup>th</sup> standard also had an effect on the theory, practical and overall marks of the students. The students of ISC board showed best performance followed by students of CBSE, UP and others as analyzed statistically by Kruskal-Wallis test (Table 5).

**Table 5: Correlation of examination board of study population with their mean scores in theory & practical exam**

Examination Board	Theory	Practical	Overall
CBSE (n=103)	20.08±8.7	27.22±4.9	47.31±12.9
ISC (n=36)	23.06±7.2	28.67±3.6	51.73±10.1

<b>Others (n=10)</b>	<b>15.68±6.9</b>	<b>24.75±4.5</b>	<b>40.42±10.0</b>
<b>UP (n=212)</b>	<b>15.93±7.1</b>	<b>24.71±5.2</b>	<b>40.64±11.7</b>

Kruskal-Wallis; p= 0.0000

Regression analysis exhibited that after adjusting for the other variables only age and male sex were found to be negatively correlated with theory, practical & overall performance (p<0.001) (Table 6).

**Table 6: Regression analysis of various parameters**

<b>Parameters</b>	<b>Theory</b>	<b>Practical</b>	<b>Overall</b>
<b>Performance Predictors</b>	<b>B coefficient (95 % CI)</b>	<b>B coefficient (95 % CI)</b>	<b>B coefficient (95 % CI)</b>
Age	-1.04 (-1.3, -0.7)	-.67 (-.86, -.47)	-1.71(-2.17,-1.25)
Sex (F=1, M=2)	-4.23 (-6.0, -2.5)	-2.39 (-3.54,-1.25)	-6.63(-9.33,-3.92)
Strata (R=1, U=2)	0.68 (1.0, 2.4)	.98 (-.13, 2.09)	1.66(-.96, 4.3)
<b>Board (Indicator)</b>			
CBSE (Ref)	1	1	1
ISC	1.79 (-0.9, 4.4)	.68 (-1.04, 2.40)	2.47(-1.59, 6.53)
Others	-4.13 (-8.8, 0.5)	-2.39 (-5.41, .615)	-6.53(-13.63, .58)
UP	-2.03 (-7.9, 3.8)	-1.06 (-4.86, 2.74)	-3.08(-12.05, 5.88)
<b>Medium of Instruction</b> (English=1, Hindi=2)	1.02 (-4.8, 6.8)	.73 (-3.04, 4.5)	1.75(-7.16, 10.66)

CI: Confidence Interval

#### IV. Discussion

In the present study a negative correlation was found between age and performance of the students. Tyrer et al (2002) also reported similar finding in his study [8]. On the contrary Haist et al (2000), observed that students of older age performed better than younger students [9]. Olaleye and Salami (1997) found that students below 20 years and above 24 years performed better than those between 20 and 24 years age [10]. In present study, best performance was of 17-20 year age group followed by that of 21-24 year group. Students of above 24 year age performed worst.

We found that females performed significantly better in internal assessment than males. Several authors also accept that females are better performers in medical exams [11-14]. But some studies admit that males are better performers than females [10].

Niraula et al (2006) and Jaykaran et al (2011) found no statistical significant difference between male and female students' academic performance [15, 16]. The reason for the gender difference is not entirely clear. It has been suggested that women may be more diligent in their studies [13]. According to Ong et al (2010), boys display a higher level of activity as well as different approach to academic achievement [17]. They are least concerned about pleasing teachers and parents.

The present study revealed that students from urban background performed better than that of rural strata. Polasek and Kolcic (2006) also found that students of urban background exhibited better performance than that of rural strata [18]. The reason for this difference in preclinical years may be that rural students fail to adapt to a new lifestyle. Although without supporting data this assumption remains hypothetical. Some studies even suggest that rural students exhibited better performance in clinical skills than their urban colleagues [19].

In the present study, we found that students with English medium background performed better than that of Hindi medium. Hansen et al (1997), was of opinion that poor knowledge of English language was associated with poor performance in medical examinations [20].

Hossain et al (2010) are in a view that the abrupt change of medium of language becomes a potential barrier to academic success [21]. Lack of a minimum level of competence in English seriously jeopardizes the ability of students to listen to, participate in and understand classes [22].

Board of examination in 12<sup>th</sup> standard also affected the performance of students in terminal examination. We found that students of ISC board performed best in terminal exams as compared to those of CBSE followed by UP and other provincial examination boards. As the studies relating with examination board and performance of students are lacking, so we could not compare our findings.

In view of the interrelationship of the variables concerned, regression analysis was performed which revealed that the strongest factors predicting successful results in the terminal examination were age and gender.

#### V. Conclusion

From the present study we can conclude that factors like age, gender, strata, medium of instruction and examination board in 12<sup>th</sup> standard, influence students' academic performance. These findings may have implications on admission decisions.

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**Conflict of interest:** None to declare.

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