

## High school achievement as a predictor for university performance

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### ABSTRACT

**Background:** The high-school grade point average (GPA-H) and university entrance examination can predict the university achievement and

**Purpose.** To examine the predictive value of GPA-H for GPA-U

**Methods:** In this cross sectional study, the subjects were 240 medical students at basic science phase of their medical education. Data were collected by a questionnaire, consisting of questions measuring factual background variable and 10 Likert-type questions measuring attitude. The multiple regression analysis was used.

**Results:** The analysis showed that student GPA were a better predictor for educational achievement of medical students than rank on university entrance exam and students with high GPA have not been on probation at all. Also parent's education and occupation influence the students' attitudes toward their medical study.

**Conclusion:** High-school GPA is a predictor for university GPA. This may warrant further investigation into criteria of medical university entrance exam.

**Keywords:** UNIVERSITY ACHIEVEMENT, HIGH-SCHOOL GPA, UNIVERSITY SUCCESS, PREDICTOR

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### Introduction

Good high-school grades do not necessarily translated into high grade in college. There are many factors influencing students' performance such as cognitive factors like IQ, non-cognitive factors like participation in class activities and completion of assignments, education of students' parents, their occupation, the extent to which they encourage the students, motivate them and enhance their expectations for continuing education.

Atkinson quoted from Karen who after studying and reviewing the trends of freshman for seven years claimed that no factor has predicted college achievement of students more accurately than high school grade point average (1).

Other studies also support the effect of high-school GPA and score of college entrance exam on students college performance (2,3,4).

Considering the fact that students admitted to our medical schools are the cream of the top, it is imperative to identify factors affecting their success. This may help in devising a more effective student selection procedure which hopefully results in better graduates.

In this study the goal was to examine the effect of some specific factors on medical student scholastic achievement and to investigate if high-school GPA is a good predictor for later achievement in

medical school. The suggested factors were high-school GPA, parent's education and occupation, quota status for entering medical school, students' attitude toward studying medicine.

### Materials & methods

The subjects were 244 students randomly selected from 540 medical students at the basic science phase of their education. Data were collected by a questionnaire, consisting of a number of questions measuring basic variable and 10 Likert-type questions assessing their viewpoint on their future career, and motivation for selecting medicine.

Students' GPA at university (GPA-U) is used as the measure of student's achievement.

The multiple regression analysis was used. The statistical model was obtained after a few trials without deleting any main outcome measures.

### Results

Mean GPA-U is 16.9 ( $\pm 2.21$ ) out of 20. Of all subjects, 14.8% once (ACH-1), 3.3% twice (ACH-2), and 16% three times (ACH-3) had a GPA-U less than 12 (i.e. were on probation). The rest was never on probation (ACH-0). (More than 4 semesters on probation leads to expulsion from medical school).

Levels of education of the student's mother (MED) are as follows:

15.6% had a Master Degree (MS) or a higher degree, 27% had a BS, and 57.4 % had high school diploma or a lower degree.

Levels of students' fathers education (MED) are as follows:

27% had a Master Degree (MSc) or higher degrees, 43.4% had a BS and 29.5% had a high school diploma or a lower degree.

Of all parents, 20% (16% of fathers and 4% of mothers) were practising as physicians or university faculty members.

Based on students claim 31% were encouraged by either family or friends to go to medical school while 68.9% personally chose medicine.

78.8% of students have positive attitude toward their medical studies comparing to 21.2% with negative attitude.

Through a multiple regression analysis the following equation revealed:

$$GPA-U = 2.42 + 0.78GPA-H - 0.41MED - 0.38FEDI + 0.55 ACH - 0$$

For this model the adjusted R square was 0.86. Table 1 shows the ANOVA proposed for model.

**TABLE1.** Analysis of Variance for the proposed model

Model	Sums of Squares	DF	Mean Square	F	Significance
Regression	441.26	4	110.32	64.51	0.000
Residual	199.82	117	1.71		
Total	641.08	121			

Based on this equation the residuals are spread from -3.05 to 1.95, with a mean 7.177E-16 and a Standard Deviation of 0.8514. Thus they are as expected and normal p-p plot verifies normality.

The result of the study also showed that there is a significant relation between parents being a faculty member and students attitude toward their future career; the students whose parents were a faculty member has a more positive attitude (P=0.009).

### Discussion

As is evident from equation, students who had higher high school GPA, and better educated parents have not been on probation at all. It should be noted that high-school GPA has a greater correlation with students' performance which is in line with Karen's conclusion. However, being on probation has a negative effect in that it discourages and causes harm. College educated parents have positive effect on their children's academic achievement. It is likely that they share a common language with their children (5). This helps them in developing good study habits and faring well. Although a higher GPA in high-school dose not necessarily means a better actual learning in college, it is in fact a good predictor of success in terms of GPA-U at university. Students from highly educated families have a better change well

in college (6). This finding supports the Smiths' and Howard's opinion on differences in parental influences on achievements. (7,8).

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