



Association between Pre-Admission Scores and Student's Performance among Students of Saudi Applied Health Sciences College

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Abstract

Objectives: To assess if pre- admission scores are predicted to the final students GPA.

Methods: Cross-sectional study conducted in the College of Applied Health Sciences in Arrass in Qassim University between January and March 202. The overall graduated students were 279. Graduated students from Clinical Nutrition program were 229 and 50 from Dental Hygiene program. The pre-admission scores and the Final GPA were collected from student's record. Pearson correlation coefficient was carried out to illustrate the correlation between admission criteria and final GPA (p-value was considered statistically significant at $p < 0.01$).

Results: there is only positive correlation between (HSGA) and the final GPA ($r=0.208$, $p=0.000$, $p < 0.01$) whereas there is no significant correlation between (APTT), (ACHT) score and Balanced score respectively ($r=-0.018$, $p=0.768$; $r=0.080$, $p=0.121$; $r=0.093$, $p=0.121$).

Conclusion: The findings illustrates that the (HSGA) is the only predictive score to the final students GPA in this study which conducted Applied Health College in Arrass, Qassim University. Comparing the results of this results of this study with previous studies, it could be concluded that (HSGA) is the most predictive score to the final GPA. Teaching and assessment methods in medical and health sciences colleges might be similar to those methods in the High school. Further studies are needed with larger sample.

Keywords: Saudi Arabia; Health Science College; Medical College; Aptitudes Tests; Achievement Tests; High School Grade; Pre-admission Tests

Abbreviations: MCAT: Medical College Admission Test; APTT: Aptitude Test; ACHT: Achievement Test; HSGA: High School Grade.

Introduction

Providing high level of quality of care to the public depend mainly in qualified and competent health and

medical professionals. All the governments therefore pay primary attention to provide very knowledgeable and skillful medical and health workers. The institutions of health education and training are in competition to prepare competent health practitioners service the public. One of the strategy for achieving the objective is to induct only those candidates into the medical and health college who have demonstrated sufficient knowledge and ability through their secondary education. Consequently, some selection criteria have been made to ensure that the prospective students of the medical and health colleges possess the necessary intellectual and personal qualities to become a dependable professional. For instance, Medical College Admission Test (MCAT) is entrance test for medical schools in United States, Canada and Australia [1].

In Saudi Arabia, until 2005, the admission to all colleges was based on final year high school grade average. In mid of 2000s, Ministry of Higher Education established standards which consist of Aptitude test (APTT) and Achievement test (ACHT) including the High School Grade average (HSGA) [2,3]. The admissions into medical and health science colleges is now based on the cumulative average of these tests. The APTT consists of two sections: linguistics and mathematics [4]. It is held once a year, following the final high school exams and consists of questions from subject areas like English language, biology, chemistry, physics and mathematics as they are specifically required for medical, nursing and health science colleges [5]. The final decision on admission to the colleges includes cumulative average formula that consists of three scores: the (HSGA) is (30%), (APTT) is (30%), and (ACHT) is (40%) [5]. Although this accumulative average is one of the effective way of induction into medical and health colleges there is, however, a little agreement on which score is predictive of the graduate's performance.

There are some Saudi studies conducted in the medical and health sciences field which examined the relationship between pre admission scores and the students' performance or GPA. Alrukban, et al. found that ACHT was statistically predictive to student GPA, unlike HSGA and APTT. Similarly, Garaya, et al. [6] (HSGA) is statistically predictive to academic performance of the medical students. Alawan, et al. [7] advocated that the (ACHT), (HSGA) and (APTT) were statistically predictive to academic performance for both medical and health sciences students. The study of Salem,

et al. [8] shows that the pre-admission criteria of medical students are weakly correlated to student's performance in clinical practice. Dabaliz, et al. [9] concluded that the (APTT) are the only positive predictors of performance in the pre-clinical among the three pre-admission scores. (HSGA) was the most significant predictor for college grade average in Murshid study [10]. Therefore, more evidence is needed to be added to the previous studies.

The aim of this study is to evaluate whether pre-admission scores are predicted to the final students GPA. It will include the descriptive statistics for admission scores and final GPA of the graduates. Then, correlation between admission variables and final GPA will be provided.

Methods

Cross-sectional study conducted in the College of Applied Health Sciences in Arrass in Qassim University between January and March 2022. The college has only male section. The data collection includes all the students graduated from the 5 years bachelor in Clinical Nutrition and Dental Hygiene programs since they established. The overall graduated students were 279. Graduated students from Clinical Nutrition program were 229 and 50 from Dental Hygiene program. The pre-admission scores and the Final GPA were collected from student's record from department of registration. The independent variables were (HSGA), (ACHT) score, (APTT) score and balanced score whereas the dependent variable was the final GPA. Balanced score is the accumulative average which includes the (HSGA) is (30%), (APTT) is (30%), and (ACHT) is (40%) is used in Qassim University. The data was analyzed by statistical Package for Social Sciences (SPSS version 20). The data analysis included descriptive statistics for all variables for each group. Specifically, mean and standard deviation for all variables. Pearson correlation coefficient was carried out to illustrate the correlation between admission criteria and final GPA (p-value was considered statistically significant at $p < 0.01$).

Results

The sample characteristics of students among the two groups in the College of Health Science, Arrass. The sample includes 229 (82 %) from Clinical Nutrition and 50 (18 %) from Dental Hygiene course as shown in Table 1.

Factor	Clinical Nutrition	Dental Hygiene	Total
Number of students	229	50	279
Percentage	82%	18%	100%

Table 1: Sample characteristics of students.

Table 2 shows the descriptive statistics which includes the mean and standard deviation for clinical nutrition

students and dental hygiene students with the total mean and standard deviation for both group.

Admission Criteria and GPA	Clinical Nutrition Mean±SD	Dental Hygiene Mean±SD	Total Mean±SD
High School Grade(HSGA)	93.32±4.99	95.04±4.36	93.63±4.92
Aptitudes scores(APTT)	71.57±7.40	76.80±6.47	72±7.50
Achievement scores (ACHT)	65.6±5.87	70.14±6.49	66.45±6.2
Balanced scores	75.71±4.97	79.64±4.12	76.41±5.06
Final GPA	3.60±0.62	3.93±0.14	3.66±0.60

Table 2: Descriptive statistics of admission criteria and GPA.

Table 3 illustrates there is only positive correlation between (HSGA) and the Final GPA ($r=208$, $p=000$, $p<0.01$) whereas there is no significant correlation between (APTT), (ACHT) score and Balanced score respectively ($r=-.018$, $p=.768$; $r=.080$, $p=.121$; $r=.093$, $p=.121$).

Admission Criteria and GPA	Total r	Sig. (2-tailed)
High School Grade(HSGA)	208**	0
Aptitudes score(APTT)	-0.018	0.768
Achievement score(ACHT)	0.08	0.185
Balanced score	0.093	0.121

(Pearson correlation coefficient) Correlation is statistically significant at $p<0.01$

Table 3: Admission Criteria and GPA for all students.

Table 4 illustrates the relationship between the admission criteria and final GPA. Pearson correlation

Admission Criteria and GPA	Clinical Nutrition r	Sig. (2-tailed)	Dental Hygiene r	Sig. (2-tailed)
High School Grade(HSGA)	164*	0.013	360*	0.01
Aptitudes scores(APTT)	-0.11	0.098	0.166	0.249
Achievement scores (ACHT)	-0.001	0.984	0.177	0.219
Balanced scores	0.001	0.984	.294*	0.039

(Pearson correlation coefficient) Correlation is statistically significant at $p<0.05$.

Table 4: Correlation between admission criteria for each specialist and final GPA.

Discussion

It is claimed that improving the quality of graduates require the suitability of admission criteria. The (HSGA), (APTT) score, and (ACHT) score are the admission criteria to the medical and health sciences colleges in Saudi Arabia. The aim of this study was to assess the relationship between the pre-admission scores and the final GPA. The main finding of this study is that Pearson correlation revealed positive significant relationship between (HSGA) average and the final GPA in the total students scores. Moreover, this

coefficient shows that there is significant positive correlation between the (HSGA) and final GPA ($r=164$, $p=.013$, $p<0.05$) in the Clinical nutrition group. Moreover, a stronger positive correlation is identified between the (HSGA) and final GPA ($r=360$, $p=.010$, $p<0.05$) in the Dental Hygiene group. No significant correlation between Aptitudes score and final GPA ($r=-.110$, $p=.098$) in the Clinical nutrition group was revealed. Additionally, no significant correlation is found between (APTT) score and final GPA ($r=-.166$, $p=.294$) in the Dental Hygiene group. There is no significant correlation between (ACHT) score and the final GPA ($r=-.001$, $p=.984$) in the Clinical nutrition group. Similarly, there is no significant correlation between (ACHT) score and the final GPA ($r=-.177$, $p=.219$) in the Dental Hygiene group. The results also show that there is no correlation between Balanced scores and final GPA among the Clinical nutrition group ($r=-.001$, $p=.984$) whereas in the Dental Hygiene group, there is a significant positive correlation between Balanced score and final GPA ($r=.294$, $p=.039$, $p<0.05$).

positive relationship is also found when different group are considered. The other pre-admission scores didn't show any positive or negative relationship with the final GPA. The finding of this study is supportive of the hypothesis of Murshid study which advocate that (HSGA) is the most significant to the students GPA. The findings also support the results of Garaya, et al. which states that the (HSGA) is statistically predictive to academic performance of the medical students. The outcome of our study is also in agreement with Al-Awan, et al. findings although the results show that the (HSGA), (ACHT) and (APTT) scores were significantly predictive

for the in course performance. This is possibly because Al-Awan, et al. conducted their study in college that adopted problem based learning strategy. This could in somewhat focus on the analytic and cognitive skills. The (ACHT) and (APTT) tests imply cognition abilities. This could contribute the relationships between the academic performance and (ACHT) and (APTT) scores. The balanced score is used in Qassim University as the standard for students admission in medical and health sciences colleges. The finding revealed that the balanced score is not predictive for the final GPA of the Applied Health Sciences College in Arrass.

Limitation

There are some limitations of this study. Firstly, the study is conducted in one college which consist of two programs only, clinical nutrition and dental hygiene. Secondly, the total sample size used in this study is low and the descriptive analysis of the sample shows unequal group of students when two group are compared.

Conclusion

The findings illustrates that the (HSGA) is the only predictive score to the final students GPA in this study which conducted Applied Health College in Arrass, Qassim University. Comparing the results of this results of this study with previous studies, it could be concluded that (HSGA) is the most predictive score to the final GPA. Teaching and assessment methods in medical and health sciences colleges might be similar to those methods in the High school. Further studies are needed with larger samples particularly testing the relationship between pre-admission scores and balanced scores.

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