Study Habits of Health Science Students at King Saud bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia

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Abstract
This study was conducted to determine the preferences of medical and health science students about various study habits and to evaluate the effect of study habits on academic performance. This cross-sectional survey conducted in the college of medicine and the college of health science of King Saud bin Abdulaziz University of Health Sciences (KSAU-HS) from academic year 2014-2015. A total of 150 undergraduate, medical and health science, male students were selected randomly. Data collected through the validated questionnaire consisted of two parts including demographic questions and 67 items specific to study habits. The total completed questionnaires were 121 (response 80%). Their age ranged from 18 to 23 years with a mean age of 20.2 ± 1.73. Cronbach’s α reliability test of the questionnaire was .90. The average grade point average (GPA) of students was 4.62 ± 0.39. The higher mean scores of students for different components of study habits were metacognition out of five 4 ± 0.7 (median = 3.9) and concentration 4 ± 0.6 (median = 3.75). The least mean scores of students for different components of study habits were information discrimination 3 ± 0.6 (median = 3.0) and time management 3 ± 0.6 (median = 3.2). Only “information discrimination” (p = < .01, r = .311) and “motivation” (p = < .05, r = .201) and to lesser extent “metacognition” were associated significantly with GPA. A significant correlation between time management and age was found (p < .04). Positive study habits have an impact on the academic achievement of medical students. Information discrimination, motivation and metacognition were associated significantly with GPA, while a significant correlation was also found between time management and age.

Keywords
study habits, metacognition, concentration, time management, information discrimination

Introduction
There is a wide variation in students’ performance and the outcome of their studies. Ineffective study habits are very common among professional students and have potential impact on performance (Hendricson & Keffler, 2002). Multiple factors play an important role in academic success and one of them is how student learn and retain facts in their memory. It is found that students who follow the adult learning principles perform better in their academic work (Slater, Lujan, & DiCarlo, 2007). This requires a reform from the stakeholders who are required to develop curriculum that involve better learning strategies. In current situation, the focus is mainly on developing a curriculum that is based on contents and its assessment. The attention is minimal on the aspects of learner’s perspective of learning and its approach to learning. Although, it is believed that knowledge of study habits of the students improve teaching and learning strategies and learning outcomes (Slater et al., 2007). Furthermore, incorporation of learner’s study habits in teaching and learning strategies may improve the curriculum and student’s academic achievements. In this regard, range of tools has been designed to guide students on how they can enhance their study habits (Boehler et al., 2001).

Habits are defined as any reproducible action with the emergence of knowledge, skill, and attitude (Beech, 2011), and styles are defined as a condition where a learner most effectively and efficiently follows the model of process information for learning (Slater et al., 2007).

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Study habits and attitude for learning develop at an early age, well before students enter medical colleges. The way they have learnt to acquire knowledge in the early days of schooling is carried forward. However, it is a dynamic process and with time may improve through guidance and support from the teachers. Hendricson and Kleffner identified ineffective study habits as one of the six potential causes of inadequate student’s performance. They further reported that ineffective study habits are found more common among professional students than realized by faculty. Such students have no motivation, do not consider appropriate time management, often are late in their academic activities, defensive, disorganized, and their performance is mostly difficult to change (Hendricson & Kleffner, 2002).

Kaufman and Mann (1997) compared the attitudes toward basic sciences of students in preclinical problem based learning (PBL) and conventional curriculum. Only 5% mentioned the regular use of Internet to study. Most students prefer PBL approach of learning than a conventional lecture-based approach where students had a chance to meet and discuss (Kaufman & Mann, 1997). Another study from Queensland, Australia, found that the first-year medical students in a problem-based learning curriculum were better able to accurately judge the performance of their peers compared with their own performance (Papinczak, Young, Groves, & Haynes, 2007). Credé and Kuncel (2008) and Nix (1963) emphasized on the predictive value of traditional study scores and attitude inventories on academic performance. They regarded study habits as the third pillar of academic success specifically, the role of metacognition and self-regulating ability in learning habits. In a study from Iran concluded that medical students have better eminence in study habits, comprehension, and note taking compared with other discipline, and interns had better grades in time management. However, some students had problems with concentration, time management, and reading speed (Nourian, Mousavinasab, Fehri, Mohammadzadeh, & Mohammad, 2008). Rab, Din, Islam, and Alrefaa (2013), in a survey on 440 students in King Khalid University (KKU), reported that majority of the students had a disorganized and superficial manner of study habits. The problems with study habits can be improved through well-designed courses on reading skills, time management, study styles and performing better academically (Credé & Kuncel, 2008).

Very few researchers in Saudi Arabia have ventured into the area of study habits and performance of undergraduate medical education. The paucity of literature about medical students’ study habit has influenced on the curriculum. This study was undertaken to explore students’ interest about different study habits and learning modalities preferences. The second part analyzed its effect on their performance. This study will provide practical suggestions to the curriculum planner not only in the development and alignment but also in planning teaching sessions and sessions for student’s guidance and support.

Method
A cross-sectional survey was conducted in the college of medicine and the college of health sciences of King Saud bin Abdulaziz University for Health Sciences (KSAU-HS) in the academic year 2014-2015. A total of 121 undergraduate male students from medical and health sciences were randomly selected. Data were collected using the modified Arnold, Blank, Race, and Cipparrone’s (1998) questionnaire consisted of two parts. In Part 1 demographic information were taken. Part 2 of the questionnaire consisted of 67 items specific to study habits on 5-point Likert-type scale like 1 for strongly disagree, 2 for disagree, 3 for don’t know, 4 for agree, and 5 for strongly agree. The 67 items were further divided into seven domains such as time management (11 questions), concentration (eight questions), study, motivation (12 questions), test-taking anxiety (10 questions), metacognition and self-regulation (11 questions), information processing (nine questions), and discrimination (six questions). The higher scores indicated the good habits of study.

Grade point average (GPA) was collected from the assessment unit of each college. The Cronbach’s α was done to see the reliability of questionnaire in the current study, which was .90. The questionnaires were distributed to all students in lecture halls and research club area. The duration of administration was 10 min to 15 min. The data analyzed with SPSS software version 20. Mean and median scores were calculated to compare the domains of study habits and GPA. For non-parametric data, Kruskal–Wallis test was utilized to see the correlation between educational levels and study habits. The $p$ value < .05 was considered statistically significant.

Conceptual Definitions of Selected Important Variables

1. Time Management: It is the assessment of the student’s application of time management principles to academic situations.
2. Concentration: It is the assessment of the student’s ability to direct and maintain attention on academic tasks.
3. Information processing: It is the assessment of how well the student can use imagery, verbal elaboration, organization strategies, and reasoning skills as learning strategies to help build bridges between what they already know and what they are trying to learn, remember, and link.
4. Information discrimination: It is the assessment of the student’s skill at identifying important information for further study from less important information and supporting details (often when studying I seem to get lost in details and can’t see the forest for the trees).
5. Motivation: It is the assessment of the student’s diligence, self-discipline, and willingness to exert the
effort necessary to successfully complete academic requirements.

6. Test taking anxiety: It is the assessment of the degree to which the student worries about their academic performance during test preparation and test-taking strategies.

7. Metacognition and self-regulation: It is the awareness of studying process, monitoring of studying effectiveness, ability to adapt studying technique to suit situational demands and stressful conditions.

Results

A total of 150 questionnaires were distributed and collected from the students, out of these only 121 were completely filled. 29 questionnaires were excluded on the basis of incomplete data/information. Thirty-three (27%) from “Preprofessional program” students, 61 (50%) “Basic Medical Science” students, and 27 (22%) “Clinical Science” students. All were male students, their age ranged from 18 to 23 years with a mean age of 20.2 ± 1.7. Cronbach’s α reliability test was .90. The average GPA of students was 4.62 ± 0.39. The major mean scores of students for different components of study habits were: metacognition out of five, 4 ± 0.7 (median = 3.9) and concentration 4 ± 0.6 (median = 3.75). The least mean scores of students for different components of study habits were information discrimination 3 ± 0.6 (median = 3.0) and time management 3 ± 0.6 (median = 3.2). Only “information discrimination” (p = < .01, r = .311; Figure 1) and “motivation” (p = < .05, r = .201; Figure 2) and to lesser extent “metacognition” were associated significantly with GPA (Table 1). With regard to “time management,” our findings indicate that majority of students (85%) agreed to arrive in the meetings and classes on time indicating the punctuality and participation. Half of medical students agreed to set up a regular time for studying every day.

More than half of the students agreed to use the best prime time of the day for studying. Twenty-seven percent agreed to prepare for the exam at the last moment. In terms of “concentration,” the majority (87%) of medical students agreed to seek calm and quite places for study. Almost 80% of them, agreed to highlight important points on book. Half of medical students agreed they prefer library or any specific assigned places for study. With regard “information processing,” the majority (80%) of medical students agreed to try to link what they have read or learned indicating a strategic study approach ability.

Seventy-seven percent agreed to listen carefully to any explanations in class. One third agreed to review yesterday’s lecture notes before next class. A quarter of medical students agreed to have difficulty determining important points in lectures. The majority (72%) of medical students agreed to gather the facts before they make a decision reflecting evaluation and “information discrimination” ability. Although 45% agreed to critically evaluate new ideas. A third of medical students agreed to check their lecture notes soon after the lecture. Only 12% agreed to read the questions at the end of the chapter before they begin reading the chapter. In terms of “motivation,” the majority (72%) of medical students agreed to that they felt good grades are important for them indicating that the most important factor for external motivation is the grade acquisition. Although 77% agreed to take their studies as an opportunity to learn, the same agreed to seek help from colleagues.

More than half of medical students agreed for activity participation in learning process. More than half of students agreed that usually lose points in their exams because of careless mistakes, which may indicate the importance of review at end of exam. More than half of students agreed that they enjoy their study. Only 12% of students agreed to give up if an assignment is difficult. With regard the “pretest anxiety” the majority (81%) of medical students agreed to check over tests to avoid errors, showing a sense of evaluation and

Figure 1. Correlation between information discrimination and GPA. Note. GPA = grade point average.
assessment ability. More than half of students agreed to study until last minute of the test to review their lecture notes. Majority of medical students agreed that they feel prior to exams so nervous that they cannot do the best. Only 12% of students have trouble finishing tests on time. For the “meta-cognition and self-regulation,” the majority (84%) of students agreed to recognize importance of electronic communication in future. Seventy-nine percent agreed to plan their own learning. Three quarters of students agreed to set their own learning goals. Our results also showed that only time management ($p < .04$) was significantly correlated with rising age. There was an inverse correlation between the student average GPA and their age, as older age leads to less average GPA ($p = < .01$, $r = -.439$). Using Kruskal–Wallis Test, there was no significant correlation between various educational levels and study habits. In addition to there was no correlation between GPA, age, and parental education.

**Discussion**

Our results showed that there was a positive weak correlation between two variables of study habits and academic achievement, namely the information discrimination ($p = < .01$, $r = .311$) and motivation ($p = < .05$, $r = .201$) and GPA, especially among the “clinical” and “basic medical science” students. Boehler et al. (2001) reported an encouraging and significant correlation between the study habits and the educational success. He reported that the students who note the important information in their own words and sentences had better performance than those just mark the important subjects. Fereidouni Moghadam and Cheraghian (2009) also reported a positive weak correlation between the study habits and academic achievements. In a study by Zarshenas, Danaei, Mazarei, Najafi, and Shakour (2014), dental students who have earlier participated the study skills training courses had better skills in comparison with the students who had not joined such workshops especially in motivation ($p = .0001$), information processing ($p = .03$) and time management ($p = .04$), and they had high academic performance. In our study, time management ($3.27 ± 0.58$; $p = .04$) was the least scored domain, a focus with other important domains for more counseling and guidance. Moreover, time management was more by rising age as was shown by our findings ($3.27 ± 0.58$; $p = .04$). It seems that the students with more time of studying would gain a good experience to manage their time. Abbasali and his colleagues reported that medical interns had better time management questionnaire scores in comparison with others. The majority (72%) of medical students agreed to that they felt, good grades are important for them indicating that the most important factor for external motivation is the grade acquisition. More than half

| GPA | Time management | Information processing | Concentration | Information discrimination | Motivation | Test taking anxiety | Metacognition |
|-----|----------------|------------------------|--------------|----------------------------|------------|--------------------|--------------|
|     | -.07           | .16                    | -.05         | .311**                     | .201*      | -.04               | .17          |

*Note. GPA = grade point average.

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).
of students agreed that they usually lose points in their exams because of careless mistakes, which may indicate the importance of review at end of exam. The majority (72%) of our students agreed to gather the facts before they make a decision reflecting evaluation ability.

Whyte (1980) reported that student who identify and believe as self-internal control and desire that their hard work may lead to more successful academic achievements, instead of depending on luck, persist and achieve academically at a higher level. Our results also indicated that the highest score in study habit questionnaire was metacognition and self-regulation (mean of 4 ± 0.7 and median of 3.9) and slightly but not significantly correlated with higher GPA. As was reported students who obtain more marks in metacognition and self-regulation are more likely to be analytically thinkers and also likely to achieve desirable outcome (Black, 2005; Magno, 2010). Students who received as little as half an hour of training on the process of learning self-regulation were better than students who did not participate in the training courses (Azevedo & Cromley, 2004). Students can be educated regarding the setting-objectives, study planning, and development’s assessment as part of self-regulation and metacognition courses.

Our finding revealed that there was no statistical significant association between the study habits and different educational level groups, inconsistent with other studies (Nourian et al., 2008; Zarshenas et al., 2014). There was an inverse correlation between the student average GPA and their age, as older age leads to less average GPA ($p = <.01$, $r = -.439$), in accordance to Mashayekhi et al. (2014), a study of 220 students. Durak, Törün, Sayiner, and Kandiloglu (2006) reported a better positive study habits effects on learning and accomplishing student’s tasks with high scores, after attending an informative educational course of study habits and skills. Finally, based on increasing evidence of important of study skills and habits many international universities, including Dartmouth, York, Ferrum College, Berkley, and Coke have integrated courses to advance study skills and habits in their educational programs (Jansi & Lakshmi, 2014).

Conclusion/Recommendations

From the above study, it can be concluded that learning habits of motivation, test-taking anxiety, metacognitions and self-regulations in medical students influences their academic performance. Information discrimination, motivation, and metacognition were associated significantly with GPA, while a significant correlation was also found between time management and age. Higher mean score were found for metacognition and concentration out the different components of study habits. It is important to provide education and guidance to promote effective tools for study habits and skills. Designing workshop or related courses for student in the beginning of their career would be beneficial for both student and the program. This may further help students who are facing repeated failures.

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