Learning Habits of Undergraduate Medical Students in Pharmacology

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ABSTRACT

Background: Learning pharmacology may be challenging to medical students as drug information is expanding and students are required to adopt suitable study habits to remember pharmacological aspects to develop higher cognitive skills for better academic performance. **Objective**: To compare the learning habits of students of various levels of academic performances in pharmacology. **Methods and Material:** Study was cross sectional in which students' learning habits and examination scores in pharmacology were collected in a questionnaire. The questionnaire had Likert type items (1: never–5: every time) related to learning habits of students that could influence academic performance in pharmacology. It was distributed to 2nd year MBBS students (n = 243) after the two assessments in pharmacology. Based on the % of marks obtained in previous assessments, students were categoriesed into 5 groups (1 = <50, 2 = 50-59, 3 = 60-69, 4 = 70-79, 5 = 80-100). **Statistical analysis used:** The categorical variables were described as median and interquartile range. Learning habits of students of various level of academic performances were compared using non parametric tests. A p value of <0.05 was considered as significant. **Results:** Group 1 less frequently revised the topics more than two times compared to the group 2 (p = 0.015) and 5 (p = 0.002). Compared to groups 1, 2 and 3, group 5 had started the preparation >3 days before the scheduled pharmacology class test (p < 0.05). Compared to failed students, students who passed had revised topics more than 2 times and had set the target score of >60% and did not momorise the topics by mere byhearting. **Conclusion:** Reinforcement in the form of revisions, goal setting and developing deeper understanding of concepts have emerged as major determinants of students' performance in examination in pharmacology. Hence, students should be made aware of these aspects to improve the quality of studies.

Key words: Learning habits, Students, Academic performance, Medical, Pharmacology.

INTRODUCTION

Along with cognitive factors, many non-cognitive factors like study habits and skills, motivation and attitude contribute to students' academic achievement, most often in combination.[1,2] Researchers have suggested positive relationship between students' study skills and habits and academic performance.[3-7] Study habits used previously during high school may not be effective during medical school.[4] The study aids like, concept maps, study notes prepared by self and peers were more often used by high school students.[4] However, a study conducted in 2nd year medical students showed association between use of peers' study aids and lower academic performance.[5] Students who studied collaboratively performed better in clinical examination.[8] Use of practice exam questions book helped students to perform better, whereas, students who relied on pre-recorded lectures did not do well in pathology exams.[7] In a recent study, it was found that the relationship between

time spent on self-study and quantity of instruction by the college was below the expected value of 1.0 and the ratio was positively related to test frequency.[9] Hence, such studies may help administrators and medical teachers to develop better curriculum to achieve course objectives and mentor students for better academic achievements.

In India, medical undergraduate students study pharmacology subject in the second year of MBBS course. At Melaka Manipal Medical College, India, which is accredited by Malaysian Medical council, pharmacology is taught to students with the aim of developing competency for the clinical years in terms of knowledge, skill and attitude required for prescribing drugs rationally in primary health care settings. Learning pharmacology may be challenging for students as drug information is ever expanding and students are required to remember pharmacological aspects of many drugs to develop higher cognitive skills like analysis, interpretation, problem solving and application. Moreover, pharmacology curriculum in a medical school need to be kept in pace with the changes in the health care needs.[10,11] Hence, the students, the main stake holders may be required to adopt suitable study habits and skills to achieve the expected outcome. Therefore, the information on students learning habits may help teachers to guide students in adopting required study skills and habits. The results may also be used while training faculty on teaching-learning activities.

Hence the objective of the study was to compare the learning habits of students of various level of academic performances in Pharmacology.

MATERIALS AND METHODS

Study design

The study design was cross sectional and conducted in December 2013 after obtaining Institutional Ethics Committee clearance. A newly developed questionnaires was distributed among second year MBBS students (n=243) after obtaining written informed consent. Participants responded anonymously in the questionnaire.

In the 2nd year of MBBS course, Pharmacology is taught in four blocks, each approximately of 10 weeks duration and at end the each block, students appear for summative examinations and the average marks obtained in four block examinations contributes to 30% of the end of the year university examination. This study was conducted after the completion of first two blocks.

Development of questionnaire

To collect data, a questionnaire consisting of 34 questions was designed after a literature review.[1,5-8] It had closed [Liker type, 1 (never)-5 (every time)] and open ended questions. The questionnaire covered various study habits, including use of intended learning outcomes for learning and self-assessment, frequency of use of text books, videos, internet, study aids prepared by self and senior students or peers, time management skills, attentiveness and note taking skill in the class room, learning styles like goal setting, method used for revising, prioritizing, reading speed, reflection, self-assessment and collaborative learning. The questionnaire was worded in such a way that students were directed to respond regarding the use of study habits and skills related to pharmacology only. In addition, students' interest in pharmacology subject and their perceived difficulty in studying pharmacology were collected in a similar Likert scale along with gender and marks obtained in block examination. The content validity of the questionnaire was checked by two faculty members of the Institution with Foundation for Advancement of International Medical Education and Research (FAIMER) fellowship degree. The questionnaire was further refined through pilot testing on a small group of students (n=10) and the Cronbach's Alpha value for reliability of the questionnaire was found to be 0.807.

Statistical analysis: Data was analyzed using SPSS statistical analysis program (SPSS, Inc., Chicago, IL, USA), version 16. The categorical variables were described as median and interquartile range. Learning habits of students of various level of academic performances, based on the total marks (%) obtained in block 2 examination (Group 1-5; <50, 50-59, 60-69,70-79,80-100) in Pharmacology, were compared using Kruskal Wallies test followed by Mann-whitney test. A p value of <0.05 was considered as statistically significant.

RESULT

The response obtained was 143/243 (59%). From the total respondents, 54/120 (45%) of were males and 66/120 (54%) were females. Table 1 depicts certain study habits commonly used by students to learn pharmacology. Marks scored in the second block examination were used to divide students into 5 groups. There were no statistically significant differences in study habits among students' groups of various levels of academic performances in pharmacology for most of the items.

Table 1: Learning habits and skills frequently (I median and inter-quartile range) used by students in Pharmacology

I referred the learning objectives when I studied a topic [4 (4,5)].

I read the lecturer's note, compared it with the textbook (for completeness and accuracy) and added some missing points in the lecturer's note [4 (3,4)].

I highlighted the important points on my reading materials [4 (3,5)].

I priotized the important topics as stated by the lecturers while revising [4 (3,4)].

I tried to get the meaning of new words as I saw them for the first time [4 (3,4)].

I wrote down notes during the class [4.5 (4,5)].

I revised the past year question papers before examination [4 (3,5)].
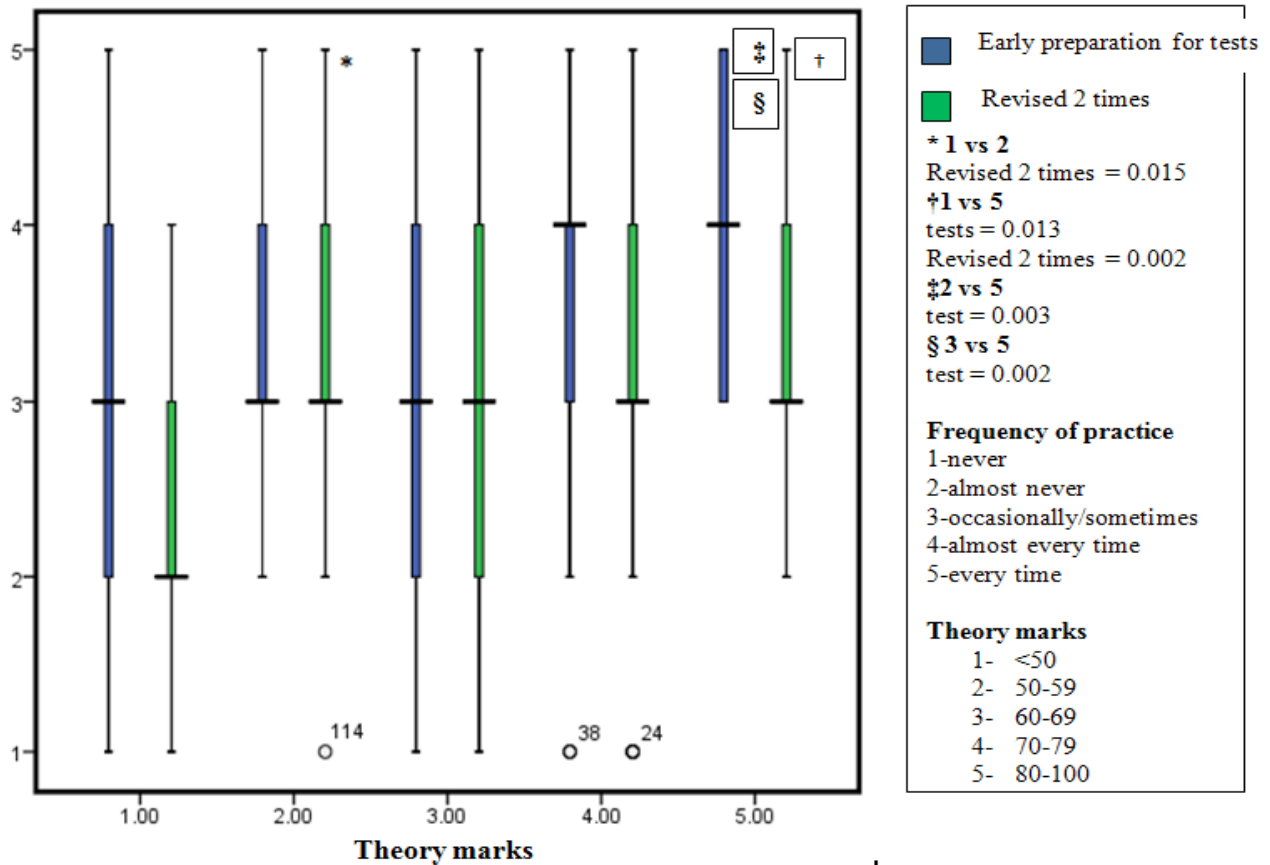
I was able to take down class notes completely in lecture class [4 (3,4)].

My note taking skill was good [4 (3,4)].

I read recommended textbook for the topics covered [4 (3,5)].

I spent more time on topics that I found difficult to understand/remember [4 (3,4)].

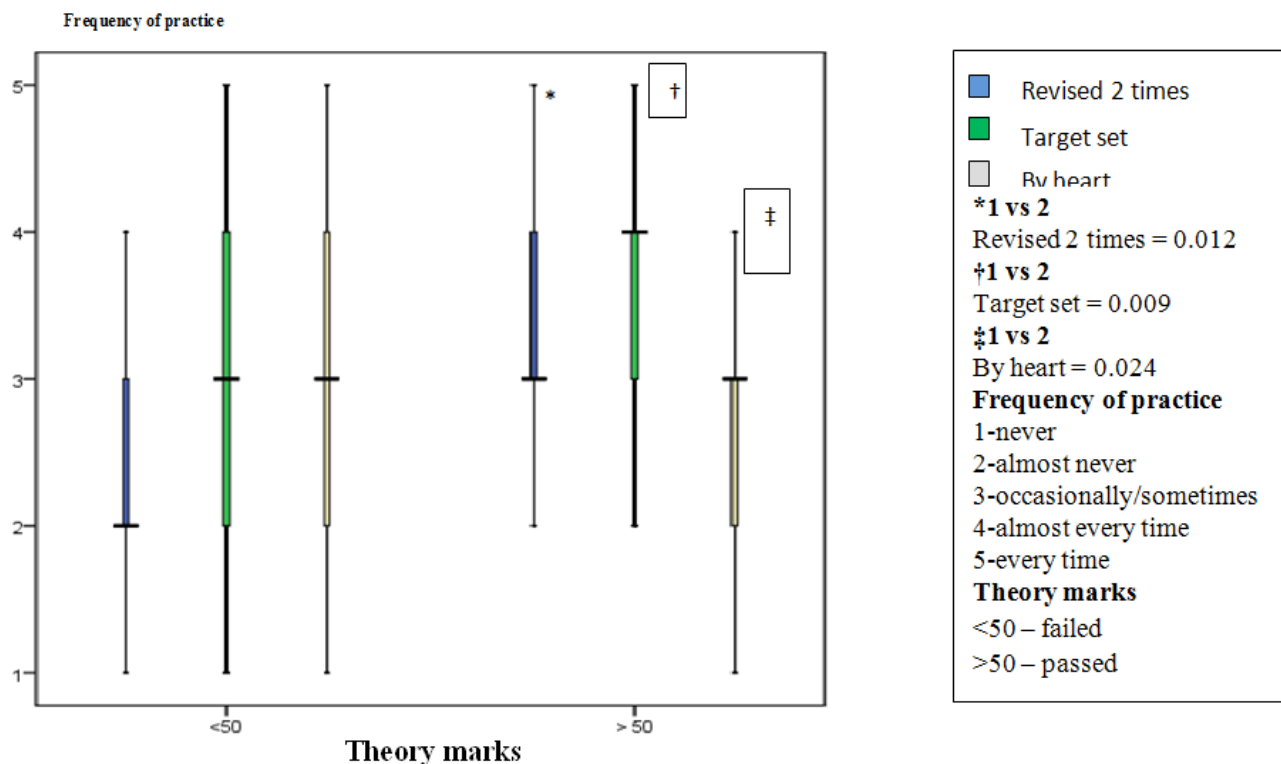Figure 1: Study habits among students with different level of performances

Figure 2: Study habits among student who passed and failed in examination

The study habits which differed significantly among different levels of academic performances have been shown in Figure 1 and 2. Figure 1 shows study habits of various groups of students with respect to preparation for class tests and number of revisions they did before the pharmacology examination. Group 2 more frequently revised the topics more than two times compared to group 1 (p=0.015). Similar difference was observed between groups 1 and 5, where group 5 more frequently revised >2 times (p=0.002). Compared to groups 1, 2 and 3, group 5 had started the preparation for class test >3 days before the scheduled class test.

When comparing the result of students who scored <50 marks (failed) and >50 marks (passed) in Pharmacology, significant difference (p<0.05) was found in the frequency of habits related to three aspects; tried to memorize the topics by-hearting rather than understanding, always had set the target score of more than 60% in examination and revised topics more than 2 times before examination (Figure 2).

Majority of the students (84%) not used mnemonics to remember pharmacology while just 16% of them used them. Most of the students (80%) who used mnemonics

felt that the mnemonic will be useful during the clinical years of MBBS course and clinical practice.

DISCUSSION

The study revealed the learning habits of the students in pharmacology. Based on the results, it can be said that the repeated reinforcement in the form of revisions, learning by understanding than by-hearting and setting the target of scoring >60% had significantly affected students' academic performance in Pharmacology examination.

In our study, students who revised a topic >2 times performed better in Pharmacology than students who revised <2 times. A study conducted by Ansari M *et al.*, showed decline in pharmacology knowledge with passage of time.[12] With the rapid information explosion in pharmacology with added factual information, students have to memorize drug names and many pharmacological concepts to achieve higher cognitive domains like analysis and problem solving skills that are expected from students at the level of 2nd year of MBBS course. Moreover, at MMMC, students are assessed periodically during the course using various methods which includes

essay component with short essay type questions with case scenarios and multiple true false (MTF) questions. Practical examination is conducted as objective structured practical examination with questions related to rational prescribing. Around 40% of essay questions and almost all of practical questions require higher order thinking skills like analysis and problem solving. Around 60% of theory questions and all MTF questions are recall and comprehension type. Hence repeated revision of topics is essential to memorize factual information and develop deeper understanding of the concepts. Literature shows that time spent for study had a direct influence on students' academic performance.[13] However our study did not show any significant relationship between these two factors.

Medium and higher achievers had target setting for their academic performance where as low achiever did not. Earlier studies had demonstrated that goal setting intervention improved students' academic performance. [14,15] Hence target setting in Pharmacology might have helped students to optimize their studies for better academic performance.

This study had a limitation. The responses were obtained only from one batch of students. To generalize the findings, the study should be carried out with more number of students and also in other institutions.

The results of this study emphasize the need for creating awareness among students about repeated revision, setting targets and developing deeper understanding of the topics learnt for better academic achievements in pharmacology. The teacher may use study findings while mentoring low achievers for better academic performance.

ACKNOWLEDGEMENT

REFERENCES

1. Nagaraju MT. Study Habits of Secondary School Students. New Delhi. Discovery Publishing House. 2004.
2. Crede M, Kuncel NR. Study habits, skills, and attitudes: The third pillar supporting collegiate academic performance. Perspectives on Psychological Science. 2008;3(6):425-54.
3. McManus I, Richards P, Winder B, Sproston K. Clinical experience, performance in final examinations, and learning style in medical students: prospective study. BMJ. 1998;316(7128):345-50.
4. Yip M, Chung O. Relationship of study strategies and academic performance in different learning phases of higher education in Hong Kong. Educational Research and Evaluation. 2005;11(1):61-70.
5. Sleight DA, Mavis BE. Study skills and academic performance among second-year medical students in problem-based learning. Med Educ Online. 2006;11:23.
6. Nouhi E, Shakoori A, Nakhei N. Study habits and skills, and academic achievement of students in Kerman University of medical sciences. J Med Educ. 2008;12:77-80.
7. Wenger SL, Hobbs GR, Williams HJ, Hays MA, Ducatman BS. Medical Student Study Habits: Practice Questions Help Exam Scores. IAMSE. 2009;19(4):170-2.
8. Boehler ML, Schwind CJ, Folse R, Dunnington G, Markwell S, Dutta S. An evaluation of study habits of third-year medical students in a surgical clerkship. The American Journal of Surgery. 2001;181(3):268-71.
9. Mueller MS, Weichert N, Stoecklein V, Hammitzsch A, Pascuito G, Krug C. Evaluation of effectiveness of instruction and study habits in two consecutive clinical semesters of the medical curriculum Munich (MeCuM) reveals the need for more time for self study and higher frequency of assessment. BMC Medical Education. 2011;11(1):62.
10. Desai M. Changing face of pharmacology practicals for medical undergraduates. Indian J Pharmacol. 2009;41(4):151-2.
11. Khilnani G. Need for restructuring practical pharmacology undergraduate curriculum. Natl J Physiol Pharm Pharmacol. 2014;4(1):1-3.
12. Ansari M, Jaiswal S, Goshwami D. Comparative survey on retention of clinical pharmacology knowledge among students who have completed the second year at a medical college of central Nepal. American Journal of Health Research. 2015;3(3):1-5.
13. Bugge LS, Wıkan G. Student level factors influencing performance and study progress. The Online Journal of New Horizons in Education. 2012;3(2):30-8.
14. Idowu AI, Chibuzoh IG, Louisa MI. Effects of goal-setting skills on students' academic performance in English language in Enugu Nigeria. New Approaches in Educational Research. 2014;3(2):93-9.
15. Morisano D, Hirsh JB, Peterson JB, Pihl RO, Shore BM. Setting, elaborating, and reflecting on personal goals improves academic performance. Journal of Applied Psychology. 2010;95(2):255-64.