Qualitative Assessment of Learning Strategies among Medical Students Using Focus Group Discussions and In-depth Interviews

Abstract
Background: Globally, students with top academic performance and high intellectual capacity usually opt to study medicine. However, once they get enrolled, their academic performance varies widely. Such variations appear to be determined by various factors, one of them being types of learning strategies adopted by students. The learning strategies utilized by the students with better academic performance are likely to be more effective learning strategies.

Aims and Objectives: The objective is to identify effective learning strategies used by medical students.

Methodology: This study was carried out among the MBBS students of Final Professional Part I. Students were categorized into three groups namely: high, average, and low rankers based on overall academic performance in second Professional University examination. First, a questionnaire consisting of closed- and open-ended questions was administered to students, to find their learning strategies. Subsequently, focus group discussion and in-depth interviews were conducted for high- and low-rankers. Discussions were audio-recorded, transcribed, and analyzed. Key statements were highlighted, collated, and categorized into general themes and sub-themes.

Results: Evident themes which emerged as effective strategies were hard work in the form of regularity of studies, meticulous preparation of notes, constructive use of time, utilization of e-learning, learning styles and deep learning approach and regular ward visits. Intrinsic motivation, family support, balancing physical activities and studies, guidance by seniors, teachers, dealing with nonacademic issues such as language barriers and stress were also identified as important strategies.

Conclusions: Disseminating effective learning strategies in a systematic manner may be helpful to students in achieving better academic outcomes. Furthermore, educationists need to modulate their teaching strategies based on students’ feedback.

Keywords: Academic performance, high achievers, learning strategies, low achievers

Introduction
Globally, students with top academic performance and high intellectual capacity usually opt to study medicine. However, once they get enrolled in medical schools, their academic performance varies widely.[1] Such variations appear to be determined by multiple factors, one of them being learning strategies adopted by them. The strategies utilized by the students who have a better academic performance are likely to be the more effective learning strategies. Gaining insight into students’ perceptions as to the reasons for a better academic performance can lead to a better understanding of these strategies.

Students are positively affected by good examination results while they are negatively affected by anxiety, boredom, homesickness, and poor academic performance.[2] Literature suggests that academic achievement of students is affected by factors, such as motivational beliefs, examination results, physical, and emotional well-being.[3,4] This study is an endeavor to identify learning strategies among high achievers. The same can be conveyed to medium and low achievers so that they can improve their academic performance.

Methodology
This study was carried out among the MBBS students of Final Professional Part I (4th year of medical school) in a medical college in a rural area of the western region of India. Students were categorized into three groups according to their academic performance in second Professional final University examination marks. Of these, first 30 students categorized were students who scored 4
high ranks and last 30 students with lowest ranks were categorized in another group. Students were explained properly about the research study, and informed consent was obtained before participation. Initially, a questionnaire consisting of closed- and open-ended questions was administered to all students to find out the various learning strategies being used by them. Subsequently, postcontent analysis, focus group discussions and in-depth interviews (FGD and IDIs) were conducted according to time, convenience, and suitability.

Conducting focus group discussions and in-depth interviews

FGD and IDI were conducted using principles of grounded theory. Before actual conduction of interview, the investigators held meetings, planned, rehearsed the entire sequencing of the FGD as well as the IDI. Focus group discussion interview guide was prepared for a structured interview process. Each FGD consisted of 8 students (i.e., both from high performer group and the low performer groups) and a total of 10 IDI were conducted (5 students from high performer group and 5 from low performer group, respectively. Before taking informed consent, the participants were briefed regarding rules, aims, and objectives of the study, and were also conveyed that FGD’s and the IDI’s will be audio recorded. Two facilitators facilitated discussion in two FGD’s, whereas one facilitator facilitated discussion in 10 in-depth interviews, respectively. Participants were encouraged to speak up freely during discussion and interviews. In addition, during the discussion the facilitators also took written notes. Each focus group discussion was conducted for a time span of 45 min to 1 h 15 min. Each in-depth interview was conducted for about 15-20 min.

Data collection and analysis

Discussions were audio-recorded with prior consent of participants. All audio recordings were transcribed verbatim by each investigator. Handwritten documents containing thick descriptions of FGD and IDI were prepared and compiled (20–25 page papers, single sided, and ruled pages were used for writing descriptions of the discussions). Before this, any personal or identifiable information was removed to maintain confidentiality. Key statements were highlighted, collated, and categorized into general themes and subthemes. Based on findings, a consolidated report of learning strategies used by high rankers was identified and compiled.

Results

A total of 84 students participated in the study of which 39 were female (47.1%). Their age range was 19–22 years. A majority of students (67/84) had passed Class XII examination through the State board, whereas 11 students and 4 students had passed through CBSE and International board, respectively. Eighty students (96.47%) were aware of their learning styles and learning approaches [Figure 1]. On analysis of their learning styles using VARK questionnaire: 16.47% of the students were visual learners, 35.29% were auditory, 51.76% were read and write, whereas 11.76% were Kinesthetic learners [Figure 2].

Enabling factors as perceived by the students that helped the perform well were as follows: inner motivation (56.47%), good family support (48.23%), constructive time management (29.41%), and motivation by teachers (14.11%) In addition to this, 32.94% students believed in regular revision of topics, 21.17% learnt mainly from communicating with patients, and as an adjuvant approach 14.11% also consulted seniors from guidance [Figure 3]. The disabling factors identified were as follows: stress (61.1%) students, insomnia (27.05%), language barrier (22.35%), poor time management (16.47%), homesickness (12.94%), peer pressure (5.88%), poor family support (2.35%), and absenteeism (2.35%) [Figure 4].

Themes which emerged as effective strategies influencing high academic achievement were hard work in the form of regularity in studies, meticulous preparation of notes, regular revisions, constructive use of time, active utilization of various learning styles and learning

![Figure 1: Frequency of different types of learning approaches adopted by students](image1)

![Figure 2: Frequency of different learning styles and strategies used by students](image2)

![Figure 3: Frequency of various enabling factors affecting students' performance during examinations](image3)
approaches, guidance by seniors and regular visit to hospital wards [Table 1]. Other factors identified as important for academic success were intrinsic motivation, family support, guidance by seniors and teachers and dealing with nonacademic issues such as language barriers and stress. Both high and low performers opined that glossy art papers and fancy computer photographs should not be used in textbooks as it hinders highlighting of text and reproducing diagram [Table 2].

**Discussion**

Learning strategies are behaviors or thoughts that facilitate knowledge, experiences, attitudes, beliefs, and values.[9] The current study helped us to identify learning strategies adopted by high rankers. Significant themes influencing high academic achievements comprised hard work in the form of regularity in studies, meticulous preparation of notes, constructive use of time, active utilization of e-learning, regular visit to clinical wards, and incorporating individual learning styles, strategic and deep learning approaches while studying. Other factors such as intrinsic motivation, family support, balancing physical activities and studies, guidance by seniors and teachers, dealing with nonacademic issues like language barriers and stress were also identified as important factors for academic success. Coincidentally, these findings reverberate well with existing researches on effective learning strategies.

According to one of the studies, high achievers have better study habits and attitude as compared to low achievers, as the former believe in daily recall and revision. Furthermore success at examination was related to regular attendance to lectures and early revision.

We found that active use of learning styles, strategic, and deep approaches basically predict success in exams, whereas surface learning predicts failure. These findings are in line with a study conducted in dental school which stresses that combination of students’ motivation, interaction and learning approach determines the quality of learning outcome. A thorough understanding of these concepts has important implications for curriculum designing, teaching and assessment. Although in some studies, learning “styles” do not correlate with exam performance, learning “approaches” does correlate with the latter. Students who adopt “strategic” and “deep” approaches perform consistently better in medical examinations.

High achievers believe that small group learning with peers enhances their academic performance as it helps them to ponder and consider alternatives to learning a topic. Furthermore, the literature states that small group discussion facilitated better understanding and retention of materials.

The current study showed a positive association between physical activity and high academic achievement. This is on similar lines with a study conducted at one of the medical schools, showing that a fine balance of physical activity and academics fosters stress control and academic achievement. Therefore, there is need to establish physical activity education programs. Academic success is also significantly associated with time management. Time management skills include advance planning, prioritizing work, and following schedules.

According to Oskar Frischenschlagerd, intrinsic motivation had a significant influence on academic performance. There is evidence that maturity and intrinsic motivation is linked to superior academic performance.

Majority of students who did their schooling in vernacular language schools found medical instructions in English a formidable task. While the impact of English language proficiency was not a focus of the current study, it has been observed to be an important correlate in various studies like the one conducted by Kaliyadan et al. for academic performance.

The present study reports, the high prevalence of stress among medical students. Same has been documented in other studies stating stress as one of the disabling factors, which hinders the academic growth of students. Low performers were reported to be affected more by stress, insomnia, homesickness, poor study habits, and lack of ability to cope up with ever demanding pressures of academic routine. Literature suggests that students having low psychological well-being are less likely to utilize positive coping strategies such as positive reappraisal, support-seeking, and planning resulting in a myriad of physical and mental repercussion. Sleep disturbances, stress, anxiety, and depression often coexist and lack of ability to cope up with ever demanding pressures of academic routine. Literature suggests that students having low psychological well-being are less likely to utilize positive coping strategies such as positive reappraisal, support-seeking, and planning, resulting in a myriad of physical and mental repercussion. Sleep disturbances, stress, anxiety, and depression often coexist and lack of ability to cope up with ever demanding pressures of academic routine. Literature suggests that students having low psychological well-being are less likely to utilize positive coping strategies such as positive reappraisal, support-seeking, and planning, resulting in a myriad of physical and mental repercussion. Sleep disturbances, stress, anxiety, and depression often coexist and lack of ability to cope up with ever demanding pressures of academic routine. Literature suggests that students having low psychological well-being are less likely to utilize positive coping strategies such as positive reappraisal, support-seeking, and planning, resulting in a myriad of physical and mental repercussion. Sleep disturbances, stress, anxiety, and depression often coexist and lack of ability to cope up with ever demanding pressures of academic routine. Literature suggests that students having low psychological well-being are less likely to utilize positive coping strategies such as positive reappraisal, support-seeking, and planning, resulting in a myriad of physical and mental repercussion. Sleep disturbances, stress, anxiety, and depression often coexist and lack of ability to cope up with ever demanding pressures of academic routine. Literature suggests that students having low psychological well-being are less likely to utilize positive coping strategies such as positive reappraisal, support-seeking, and planning, resulting in a myriad of physical and mental repercussion. Sleep disturbances, stress, anxiety, and depression often coexist and lack of ability to cope up with ever demanding pressures of academic routine. Literature suggests that students having low psychological well-being are less likely to utilize positive coping strategies such as positive reappraisal, support-seeking, and planning, resulting in a myriad of physical and mental repercussion. Sleep disturbances, stress, anxiety, and depression often coexist and lack of ability to cope up with ever demanding pressures of academic routine. Literature suggests that students having low psychological well-being are less likely to utilize positive coping strategies such as positive reappraisal, support-seeking, and planning, resulting in a myriad of physical and mental repercussion. Sleep disturbances, stress, anxiety, and depression often coexist and lack of ability to cope up with ever demanding pressures of academic routine. Literature suggests that students having low psychological well-being are less likely to utilize positive coping strategies such as positive reappraisal, support-seeking, and planning, resulting in a myriad of physical and mental repercussion. Sleep disturbances, stress, anxiety, and depression often coexist and lack of ability to cope up with ever demanding pressures of academic routine. Literature suggests that students having low psychological well-being are less likely to utilize positive coping strategies such as positive reappraisal, support-seeking, and planning, resulting in a myriad of physical and mental repercussions.
Table 1: Major themes and subthemes identified in high performers

| Themes                                      | Subthemes                                      | Representative quotes by students                                                                 |
|---------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------|
| 1. Regular Reading                         | Daily revision of topics                      | “It is important for me to be regular with topics that are being conducted during lectures”       |
|                                             | Regular recalling                              | “Regular recall of lecture notes is important”                                                    |
|                                             | Regular and attentive during ward posting      | I use lot of active learning strategies while studying, e.g., flow charts, visuals, videos, diagrams, etc. |
|                                             | Use of flow charts/diagrams, pictorials, tables, concept maps, mnemonics, sticky notes, highlighters, videos | “I also like to remember important points with help of mnemonics”                               |
|                                             | Read through first then make notes            | “I use sticky notes in my textbook for important concepts”                                       |
|                                             | SGD, Patients are the best books              | “I prefer to read vertically rather than memorize by reading horizontal text, so I prepare notes accordingly” |
|                                             | Involve in bedside teaching and tutorials     | “I usually study difficult topics in groups”                                                     |
|                                             |                                               | “I especially choose to have a group of 3 students whose learning style matches with that of mine” |
| 2. Use of mixed learning styles and strategies while studying | Understand concept first, later exam oriented preparation | “Deep learning is useful to me”                                                                   |
|                                             | Prioritize their approaches deep learning for must know areas and core topics then nice to know areas | “Initially during start of study, I usually refer standard text books”                           |
|                                             | SGD, Strategize in making groups              | “I spend more time in wards”                                                                     |
|                                             |                                               | “I like to take detailed history of patients from files”                                         |
|                                             |                                               | “I usually make groups of 3 people from different postings, so that I can learn something new from each” |
|                                              |                                               | “I do a lot of research and analysis in decoding examiners mindset, by referring to previous years’ papers” |
|                                              |                                               | “I believe that exam preparation has to be started early”                                        |
|                                              |                                               | “I start giving more time to prepare for exams usually 4 months prior to exams”                 |
|                                              |                                               | “I prioritize my learning into core, nice to know and not so important areas”                    |
|                                              |                                               | “I usually try my best to revise three times before finals”                                     |
|                                              |                                               | “When it comes to clearing any concept, I do not hesitate asking roommates or teacher or colleagues posted in that department” |
|                                              |                                               | “Poor results pushes me to work harder”                                                         |
|                                              |                                               | “More than outer motivation it is inner motivation which keeps me going and helps me succeed in examinations” |
|                                              |                                               | “Regular playing for an h/Indulging in any physical activity everyday in evenings helps in de-stressing and builds my stamina ” |
|                                              |                                               | “I keep a balanced approach when it comes to playing and studying”                              |
|                                              |                                               | “I first segregate topics into boring and interesting then first finish interesting topics ”     |
|                                              |                                               | “Language is a major barrier especially English language used in community medicine text book (park), it appears tough to me” |
|                                              |                                               | “I often write in local language i.e., Gujarati or Hindi meaning of tough words adjacent to the text, as it helps me understand better” |
|                                              |                                               | “This is too time consuming, I wish that there was an alternative to park in community medicine” |
|                                              |                                               | “The community medicine textbook is highly voluminous Teachers should think about these problems and provide us some rapid reviews so that it can help in quick revision” |

SGD: Small group discussions
Table 2: Themes and subthemes identified in low performers

| Themes                                             | Subthemes                                                                 |
|----------------------------------------------------|---------------------------------------------------------------------------|
| 1. Unstructured time table                         | Start reading 1 month before exams                                      |
|                                                    | Lack of planning                                                          |
|                                                    | No time for revisions                                                     |
| 2. Minimal use of mix of learning styles while     | Partial knowledge of learning styles                                     |
| studying                                           | Mainly read book, underline important points but do not write notes,    |
|                                                    | preferably use only auditory approach                                    |
|                                                    | Do not believe in small group discussions                                |
|                                                    | Believe more in single handed preparation                                |
| 3. Practicing mainly superficial (surface)         | Refer only question bank                                                  |
| Learning approaches                                |                                                                           |
| 4. Active involvement in extracurricular activities | Give more time to sports                                                 |
| 5. Other problems                                  | Stress, anxiety                                                           |
|                                                    | Language barrier                                                          |
|                                                    | Find community medicine toughest subject                                  |

Conclusions

Since academic performance is a highly prized parameter for academic excellence, we need focused efforts in understanding effective learning strategies that would help in enhancing it. Dissemination of effective learning strategies will in turn benefit average and low performers, while in the long term, this will help in building their self-confidence. At the same time, educationists also need to modulate their teaching strategies based on students’ feedbacks.

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Conflicts of interest

There are no conflicts of interest.

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