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Study of mindset among learners and educators in an Indian medical school—A questionnaire-based survey

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Abstract:

BACKGROUND: Mindset varies along a spectrum of two extremes- fixed and growth. Individuals with growth mindset embrace new challenges readily and believe that intelligence is malleable. Mindset theory has gained focus as a principal underpinning value of health professions education, as it is aligned with the goals of competency-based education. The study aims to assess the mindset of health professional educators and learners.

MATERIALS AND METHODS: A cross-sectional questionnaire-based survey was conducted in a private medical college in South India. A pre-validated modified version of Dweck's (2000) Implicit Theories of Intelligence Questionnaire was administered to the study participants. Participants responded to 10 items using a four-point Likert scale, rating the degree to which they agreed or disagreed with each statement. The quantitative data were expressed in means and percentages.

RESULTS: A total of192 students and 25 faculty participated in the study. Among students, 45.8% (n = 88) had strong growth mindset, 42.1% (n = 81) had growth mindset with some fixed ideas, 10.9% (n = 21) had fixed mindset with some growth ideas, and 1% (n = 2) had strong fixed mindset. Among faculty 4% (n = 1) had fixed mindset with growth ideas, 44% (n = 11) had growth mindset with fixed ideas, and 52% (n = 13) had strong growth mindset.

DISCUSSION: In this study, educators and learners of a medical school were found to have predominantly growth mindset. Fostering growth mindset among stakeholders of health professions education is essential for effective teaching and learning in competency-based education.

Keywords:

Competency-based education, deliberate practice, feedback, mastery learning

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Introduction

Several non-scholastic factors are known to affect learning. One such factor that has captured the attention of academicians is the "Implicit theory of Intelligence" also known as mindset theory proposed by Carol Dweck.[1] Mindset is defined as "a mental framework that guides how people think, feel, and act in challenging situations."[2] The core of the mindset is one's beliefs. Behaviors are observable and measurable actions that reflect beliefs. Studying the beliefs will provide a clear understanding of the cognitive processes linked to them which affect behaviors. Dweck describes two main frames of mind, namely, the growth mindset and the fixed mindset.[1] Individuals with fixed mindset believe that intelligence is immutable, whereas growth mindset individuals believe that intelligence and abilities are changeable. Recently, the mindset theory has gained focus as a principal underpinning value of health professions education.[3]

In competency-based medical education (CBME), excellence is seen as a dynamic set of traits and behaviors cultivated through lifelong learning and deliberate

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practice with the support of an educator.[3] The emphasis is on improvement rather than flawless performance in contrary to the traditional curriculum. CBME is more learner-centered and the learner's approach towards learning is the cornerstone in determining his/her success. In contrast to the traditional curriculum, the educator has to relinquish his/her control over the classroom and acquire the role of a coach, who de-emphasizes grades and focuses on improvement.[4,5]

Growth mindset aligns with the goals of CBME, since it is pivotal to facilitate learning by mastery approach and embrace challenges. Students with growth mindset are intrepid of failures and believe that any skill can be learned through effort and practice. On the other hand, when students with fixed mindset face setbacks, they experience negative emotions and self-doubt, lack resilience, and therefore, avoid new challenges. Equally important for the success of competency-based education is the educator's mindset. Teachers with growth mindset are open to change. They favor a more resilient response to errors and failures, encouraging learners to evolve at their own pace confidently. They are able to create a better and safe learning environment for learners when compared to those with fixed mindset. Moreover, educators must first adopt and model growth mindset for learners to take on the same.[3] A recent scoping review of health professional articles concludes that the growth mindset model shows promise for academic success in health professions education, but more studies are warranted.[6]

Until recently, Indian medical education was immersed in a traditional curriculum, which emphasized on norm-referenced summative assessments expecting flawless performance from learners forcing them to hide their weaknesses. Many critical components of CBME such as feedback culture, valuing growth over excellence, and learner-centeredness are closely related to growth mindset.[3] The recent shift to CBME from traditional curriculum necessitates the study of mindset among stakeholders.This study aims to assess the mindset of learners and educators from an Indian medical school using a questionnaire.

Materials and Methods

Study design and setting

A cross-sectional questionnaire-based study was conducted in a private medical college in South India.

Study participants and sampling

The study population included faculty and first-year MBBS students, who were willing to participate in the study.

Data collection tool and technique

The study tool used was a pre-validated modified version of Dweck's (2000) Implicit Theories of Intelligence Questionnaire. It was freely available online at the following link -https://advising.unc.edu/wp-content/uploads/sites/341/2020/07/MINDSET-Quiz.pdf. It was validated, and items 6 and 10 were modified for our setting. A pilot study was done to assess the reliability of the modified questionnaire and Cronbach's alpha of 0.8 was obtained.

The Google form was designed to have three sections: (i) Introduction and consent form, (ii) Demographic details, and (iii) Ten items of mindset questionnaire. Participants responded to the items using a four-point Likert scale, rating the degree to which they agreed or disagreed with each statement. Items of the questionnaire are listed in Table 1.

The response options were "Strongly agree," "Agree," "Disagree,"and "Strongly disagree."Items 1,3,5,7, and 9 were negatively worded and hence reverse-scored. The scoring for these items was as follows: Strongly agree—0, Agree—1, Disagree—2, Strongly disagree—3. For items 2,4,6,8, and 10, the scoring was as follows: Strongly agree—3, Agree—2, Disagree—1, Strongly disagree—0.The final score was the sum of all the items. The total score was interpreted as follows: 22–30 = Strong growth mindset; 17–21 = Growth with some fixed ideas; 11–16 = Fixed with some growth ideas; 0–10 = Strong fixed mindset. Higher scores reflect the belief that intelligence is malleable and lower scores reveal the belief that intelligence is stable.

The survey was launched through Google forms and made available to students and faculty via WhatsApp/email.

Table 1: Items of the questionnaire

Item number	Item
1	Your intelligence is something very basic about you that you can't change very much
2	No matter how much intelligence you have, you can always change it quite a bit
3	Only a few people will be truly good at sports, you have to be born with the ability
4	The harder you work at something, the better you will be
5	I often get angry when I get feedback about my performance
6	I appreciate it when people give me feedback about my performance
7	Truly smart people do not need to try hard
8	You can always change how intelligent you are
9	You are a certain kind of person and there is not much that can be done to really change that
10	An important reason why I do my work is that I enjoy learning new things

Ethical considerations

Institutional Human ethics committee clearance was obtained (Project No: 22/205). Participation in the study was voluntary and there was no consequence for either participation or withdrawal. Informed consent was obtained from those willing to participate and all participants were assured confidentiality of the data.

Statistical analysis

The quantitative data were expressed in means and percentages. Student'sttest was used to compare means between two groups and the Chi-square test was used to compare differences in frequency across groups. A *p* value of < 0.05 was considered significant.

Results

A total of 192 students and 25 faculty participated in the survey. The age group of the student participants ranged from 17–24 years (19.21 ± 1.08 years). Among students, 55.2% (*n* = 106) were females and 44.79% (*n* = 86) were males. The mean age group did not differ significantly among males and females among students' participants (19.40 ± 1.30 versus 19.06 ± 0.85, *P* = 0.24)

Among the students, 45.8% (*n* = 88) of them had strong growth mindset, 42.1% (*n* = 81) had growth mindset with some fixed ideas, 10.9% (*n* = 21) had fixed mindset with some growth ideas, and 1% (*n* = 2) had strong fixed mindset. Distribution of mindset among student participants based on gender is given in Table 2.

Chi-square test was done to assess the significant difference in mindset among male and female students. Strong fixed mindset and fixed mindset with some growth ideas were grouped as"predominantly fixed mindset." Growth mindset with some fixed ideas and a strong growth mindset were grouped as "predominantly growth Mindset" for this purpose. The Chi-square statistic was 6.49 with a *p*value of 0.011. This suggests that female students had predominantly growth mindset when compared to male students.

Among the faculty participants, 76% (*n* = 19) were females and 24% (*n* = 6) were males. The mean age group was 41.96 ± 11.08 years. There were nine Professors, six Associate Professors, nine Assistant Professors, and one Senior Resident. Four percent (*n* = 1) had fixed mindset with growth ideas, 44% (*n* = 11) had growth mindset with fixed ideas, and 52% (*n* = 13) had strong growth mindset.

The distribution of the mindset among faculty and students is represented in Figure 1.

Table 2: Distribution of mindset among student participants based on gender

Mindset	Males	Females
Strong fixed mindset	2 (2.32%)	0
Fixed mindset with some growth ideas	14 (16.27%)	7 (6.6%)
Growth mindset with some fixed ideas	32 (37.2%)	49 (46.2%)
Strong growth mindset	38 (44.18%)	50 (47.1%)

Discussion

The goal of training in a medical school is not to produce perfect physicians but to produce learners who are proficient at reflective and continuous learning. Recognizing this goal depends on the mindset of health professional educators as well as the learners. This study aims to assess the mindset among educators and learners in an Indian medical school.

Mindset can be viewed as highly relevant in the Indian setup as Graduate Medical Education is witnessing a radical change in curriculum delivery in the form of competency-based medical education (CBME) after a long period.[7] Our study revealed that both faculty and students had a predominant growth mindset. This probably contributed to a conducive milieu to embrace CBME in our institution with minimal hurdles. Mindsets guide how people frame, approach, and react to change. Growth mindset facilitates dialogic leadership engagement with adaptive learning and behaviors such as opennessand stakeholder engagement by stimulating thought and discussion. Priming growth mindset results in leadership effectiveness.[8]

CBME is itself very closely linked with growth mindset. Bloom's Mastery learning theory, the forerunner of CBME, proposes that all or almost all students can master what they are taught if they are provided with optimal learning instructions and time. This is in agreement with the growth mindset which believes that intelligence is malleable and all learners are capable of learning a new skill.[9]

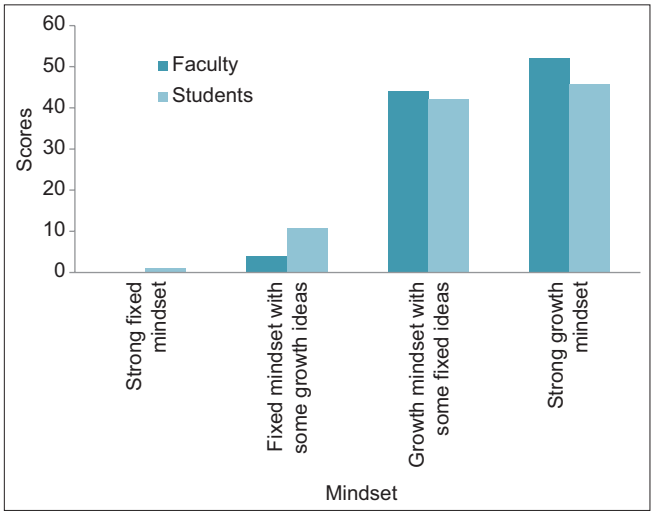

Figure 1: Graph showing the distribution of mindset among faculty and students

An individual's approach to learning will affect his/her success in a CBME curriculum. The components of CBME that are directly dependent on growth mindset are mastery learning and deliberate practice. Mastery learning requires the learner to identify areas for improvement through meticulous reflection, based on his/her performance guided by an educator. This is fundamental for lifelong learning, an essential component for the practice of medicine in the rapidly evolving era. "Deliberate practice" aims at improving performance in a particular domain by repeated practice under observation followed by specific informative feedback.[3] The art of giving and receiving feedback is closely intertwined with the growth mindset of educators and learners.

Neuro-scientific studies have shown that individuals with a growth mindset are receptive to corrective feedback, have increased awareness of errors, and performed tasks with higher accuracy after mistakes.[10] A common response among learners with fixed mindset to medical errors involves defense mechanisms such as justifying errors, labeling them as non-mistakes, or blaming colleagues, patients, or circumstances for errors. Despite the natural negative emotions, growth mindset can inculcate a positive response in the event of an error.[11]

In an educational system, where each and every learner is expected to achieve mastery, viewing the glass as half-empty is also vital. Our study shows that few educators and learners exist with a predominantly fixed mindset as well, in our system. They may find it difficult to get adapted to CBME in its true spirits. The effect of a predominantly fixed mindset on the understanding, acceptance, and implementation of the new curriculum among educators, and the ability of learners to cope with the curricular requirements needs to be explored further.

However, mindset is not a fixed trait and can be changed.[10] Strategies to inculcate growth mindset in learners and educators are the need of the hour. This is possible by adopting techniques such as peer-to-peer observations, role-modeling continuous learning, and having explicit conversations about a growth-mindset approach to errors and academic failures. The institution bears the responsibility to consciously build growth mindset both among learners and educators for ensuring the success of every single learner in the system. Educational systems with growth mindset are more likely to produce progressive and competent healthcare professionals.

Limitations and recommendations

The study has the limitation of any questionnaire-based survey such as the inability to probe and non-representativeness. A better understanding of the mindset of participants can be assessed through in-depth interviews.

Conclusion

To achieve mastery of learning by deliberate practice, all learners and educators need to have a growth mindset. Our study is a rudimentary attempt to understand the mindset of health profession educators and learners in the Indian scenario. In this study, we conclude that educators and learners in our medical school were found to have predominantly growth mindset. Growth mindset is a crucial attribute for effective teaching and learning in competency-based education. Further studies on the effect of mindset in the implementation of competency-based curriculum and the role of strategies to inculcate growth mindset in health professions education will pave way for effective curricular delivery.

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Conflicts of interest

There are no conflicts of interest.

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