

To Analyze Year One Medical Students Towards Critical Thinking at Subbaiah Institute of Medical Sciences

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Abstract

Introduction: It is imperative that medical graduates develop critical thinking abilities in light of the recent implementation of a new competency-based medical school curriculum that centers on the expected and observable capacity of Indian medical graduates in practical settings. One of the most crucial abilities that any medical student must have in order to provide high-quality care is critical thinking. More attention needs to be paid to this higher-order thinking ability, which might be a crucial quality of any medical practitioner given the evolving societal expectations of doctors.

Objectives: The purpose of this study was to assess first-year medical students' perceptions of their critical thinking abilities.

Methods: This descriptive and analytical cross-sectional study was conducted on 156 year one medical students at Subbaiah Institute of Medical Sciences, Shivamogga, Karnataka, who were selected by a convenient sampling method. The data were collected by demographic characteristics and modified California Critical Thinking Skills Test (CCTST). For the regularly distributed variables, parametric tests (Student's t-test and ANOVA) were employed, while non-parametric tests (Mann-Whitney's test & Kruskal-Wallis) were utilized for the other parameters by using SPSS V 20.

Results: A total of 156 students participated in the study; 45 (28.87%) were male, and 111 (71.13%) are female. 93 (59.6%) were government funded and 63 (40.4%) were self-funded. There was no significant difference between the average critical thinking skills score regarding age, gender, parents' profession, residence, and medium of instruction. The median positive attitude score was 30±4.8. The mean negative attitude scale score was 30±5.5. A highly significant association was noted with attitude towards communication skills ($p < 0.000$).

Conclusions: Based on the results, medical students' critical thinking skills are weak and lower than the exam average. The educational system should be reviewed in designing a curriculum to foster critical thinking.

Keywords: Critical Thinking; Knowledge; Attitude; Behavior.

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INTRODUCTION

Given the recent implementation of a new competency-based medical school curriculum focused on the expected and observable capacity of Indian medical graduates in practical settings by National Medical Council (NMC), it is vital that medical graduates acquire critical thinking skills. One of the most crucial abilities that any medical student must have in order to provide high-quality care is critical thinking. The basis of educational programs must be the critical thinking model in order to prepare students to be critical thinkers, readers, and writers for the twenty-first century.¹ A crucial aspect of human nature is the capacity for thought and self-awareness. Stated differently, an individual possesses the ability to recognize his own actions and apply reason to a variety of problems and situations.² The art of critical thinking is thinking better so that you can communicate your ideas more convincingly, accurately, and rationally. A person can use critical thinking to analyze situations and decide what steps to take next. To get such belief and performance, the interventional role of cognitively required thinking skills is enforced.³⁻⁵ In today's fast changing and demanding world, experts in higher education believe that teaching facts that soon become dated is no longer necessary.⁶ Instead, they believe that sharpening critical thinking is essential at all educational levels. Critical thinking is necessary to apply knowledge and psychomotor abilities learned in the classroom to the clinical setting.⁷ Even though critical thinking is a crucial learning technique, pupils often have limited proficiency.⁸ Given the significance of the subject, medical students must think critically to make wise decisions and act responsibly under a range of circumstances. We found that first-year medical students' viewpoints on critical thinking abilities are lacking. This study was conducted to evaluate first-year medical students' perception on critical thinking skills.

OBJECTIVES

Ascertain the respondents' positive and negative attitudes on critical thinking skills by using modified critical thinking skills attitude scale.

To find out if there is any relationship between the respondents' demographic and educational

traits and their positive and negative attitude scores on critical thinking.

MATERIALS AND METHODS

The study was carried out among year one medical students at the Subbaiah Institute of Medical Sciences & Research Center, Shivamogga, Karnataka. These students are in the preclinical part of their course and learn the basic science subjects through an integrated, competency based curriculum. Gender, age, of the respondents, occupation of parents, medium of instruction at school, whether the student was government selected or self-financing, attitude towards critical thinking skills, and self-rating of critical thinking abilities were collected through questionnaire. We sought to determine whether opinions on critical thinking abilities and socioeconomic status were connected in any manner.

Associations of the positive and negative attitudes with demographic and educational characteristics of respondents were collected and these variables were analyzed by using descriptive statistics to assess the positive and negative attitudes in relation to the respondents' demographic and educational qualities. It was established how the independent variables demographic and educational traits—and dependent variables—PAS and NAS scores—correlated. For the regularly distributed variables, parametric tests (Student's t-test and ANOVA) were employed, while non-parametric tests (Mann-Whitney's test & Kruskal-Wallis) were utilized for the other parameters by using SPSS V 20.

RESULTS

A total of 156 students, ages ranging from 18 to 21, completed the modified critical thinking skills attitude scale. Information about the students' attitudes toward critical thinking skills training was gathered using features related to education and demographics. There were 45 (28.8%) males and 111 (71.2%) females in the ratio. 149 (95.5%) of the respondents had attended schools where English was the primary language of instruction; 7 (4.5%) had studied in another vernacular. Of them, 93 (59.6%) were chosen by government, while 63 (40.4%) were self-financing. Table 1 displays the respondents' demographic and education-related details.

Table 1: Demographic and educational traits of Year 1 Medical Students involved in studies

Characteristics	N=156 (%)
Age	
>21	5(3.2)
20-21	34(21.8)
19-20	64(41.0)
18-19	53(34.0)
Gender	
Male	45(28.8)
Female	111(71.2)
Parent's Profession	
Doctor	20(12.8)
Others	136(87.2)
Medium of instruction in school	
English	149(95.5)
Vernacular Language	7(4.5)
Residence	
City	70(44.9)
Metropolitan	24(15.4)
Town	39(25.0)
Village	23(14.7)
Admission Criteria	
Govt. Selection	93(59.6)
Self-Funding	63(40.4)
As a student, how would you rank yourself	
Average	47(30.1)
Excellent	12(7.7)
Good	96(61.5)
Poor	1(0.6)
How important do you think critical thinking skills are in today's life	
Important	56(35.9)
Very important	100(64.1)
Which of the following do you think it helps to improve critical thinking skills?	
Identification	16(10.3)
Problem Solving	67(42.9)
Reading Books	12(7.7)
Taking Discussions	61(39.1)

Students' Perceptions of critical thinking skills 30±4.8 was the median PAS score. Using univariate statistics, the connection between the independent variables and the dependent variable (PAS score) was investigated. It was discovered that there was a substantial correlation between the subjects' attitudes regarding critical thinking skills and their educational background as well as their self-rating of such capabilities. It was discovered that

there was a substantial correlation between the PAS scores and the characteristics related to critical thinking skills in the first year: knowledge, attitude, and behavior. All things considered, the admission criteria's attitude toward critical thinking abilities was the strongest predictor of positive sentiments (Table 2).

Table 2: The relationship between Positive Attitude Scale (PAS) score with demographic and educational characteristics

Characteristics	N=156 (%)	Mean PAS Score (SD)	P Value
Age			
>21	5 (3.2)	31 (1.9)	0.934
20-21	34 (21.8)	30 (4.7)	
19-20	64 (41.0)	29 (4.7)	
18-19	53 (34.0)	30 (5.2)	
Gender			
Male	45 (28.8)	30 (5.3)	0.891
Female	111(71.2)	30 (4.6)	
Parent's Profession			
Doctor	20 (12.8)	29 (4.5)	0.710
Others	136 (87.2)	30 (4.8)	
Medium of instruction in School			
English	149 (95.5)	30 (4.8)	0.055
Vernacular Language	7 (4.5)	26 (2.3)	
Residence			
City	70 (44.9)	30 (5.0)	0.883
Metropolitan	24 (15.4)	29 (3.8)	
Town	39 (25.0)	30 (4.8)	
Village	23 (14.7)	29 (5.1)	
Admission Criteria			
Govt. Selection	93 (59.6)	29 (4.8)	0.463
Self-Funding	63 (40.4)	30 (4.9)	
As a student, how would you rank yourself			
Average	47 (30.1)	30 (4.3)	0.741
Excellent	12 (7.7)	29 (3.8)	
Good	96 (61.5)	30 (5.1)	
Poor	1 (0.6)	33	
How important do you think critical thinking skills are in today's life			
Important	56 (35.9)	30 (4.4)	0.695
Very important	100 (64.1)	30 (5.0)	

table cont....

Which of the following do you think it helps to improve critical thinking skills?

Identification	16 (10.3)	30 (4.4)	0.695
Problem Solving	67 (42.9)	30 (4.7)	
Reading Books	12 (7.7)	31 (5.3)	
Taking Discussions	61 (39.1)	29 (4.9)	

The distribution of the NAS scores was 35 ± 5.1 was the mean \pm SD score. The investigation link between the independent variables and the dependent variable (NAS score Table 3) shows that there was no statistically significant correlation with any of the selected traits. When NAS and PAS attitudes toward critical thinking abilities were evaluated showed a highly significant ($p < 0.001$) difference of NAS when compared with PAS attitude of critical thinking skills (Table 4).

Table 3: The relationship between Negative Attitude Scale (NAS) score with demographic and educational characteristics

Characteristics	N=156 (%)	Mean NAS Score (SD)	P Value
Age			
>21	5 (3.2)	37 (5.0)	0.307
20-21	34 (21.8)	34 (4.3)	
19-20	64 (41.0)	35 (5.4)	
18-19	53 (34.0)	36 (5.2)	
Gender			
Male	45 (28.8)	35 (5.0)	0.065
Female	111 (71.2)	35 (5.0)	
Parent's Profession			
Doctor	20 (12.8)	33 (5.1)	0.116
Others	136 (87.2)	35 (5.1)	
Medium of instruction in school			
English	149 (95.5)	35 (5.2)	0.418
Vernacular Language	7 (4.5)	37 (3.9)	
Residence			
City	70 (44.9)	35 (4.9)	0.417
Metropolitan	24 (15.4)	34 (4.6)	
Town	39 (25.0)	36 (5.3)	
Village	23 (14.7)	35 (6.0)	
Admission Criteria			
Govt. Selection	93 (59.6)	35 (5.4)	
Self-Funding	63 (40.4)	35 (4.7)	
As a student, how would you rank yourself			
Average	47 (30.1)	36 (5.3)	0.217
Excellent	12 (7.7)	37 (5.3)	
Good	96 (61.5)	35 (5.0)	
Poor	1 (0.6)	29	

How important do you think critical thinking skills are in today's life

Important	56 (35.9)	35 (5.5)	0.741
Very important	100 (64.1)	35 (4.9)	

Which of the following do you think it helps to improve critical thinking skills?

Identification	16 (10.3)	36 (6.0)	0.741
Problem Solving	67 (42.9)	36 (4.9)	
Reading Books	12 (7.7)	33 (6.1)	
Taking Discussions	61 (39.1)	34 (4.8)	

Table 4: Comparison of PAS & NAS of critical thinking score by using paired sample t-test

	N	Mean \pm SD	Correlation	P-value
PAS	156	30 \pm 4.8	0.048	0.0001
NAS	156	35 \pm 5.1		

DISCUSSION

Critical thinking is described as the capacity to recognize, assess, and evaluate issues in addition to looking for and analyzing pertinent data in order to draw the proper conclusion.⁹ Students can employ critical thinking, a high-level thinking technique, to learn concepts conceptually.¹⁰ There was no significant relationship between the critical thinking score and the place of living the age, gender, medium of instruction of the students, which is consistent with the findings of similar studies that did not report a significant relationship.^{11,12} There is no discernible difference in the critical thinking abilities of male and female students, despite the fact that female students possess a higher degree of critical thinking than male students. These findings align with those of Amini and Fazlinejad¹³, Shafiei et al.¹⁴ and Sabzi et al.¹⁵ The current study's findings conflicted with those of Rezaeian et al.¹⁶ and Taghavi Larijani et al.¹⁷ who found a substantial correlation between students' critical thinking abilities and gender. The lack of regular critical thinking skills training sessions for first-year medical students may be the reason for the study's observed median NAS score of 35 ± 5.1 , which is significantly higher than the PAS score.

The current study's findings imply that students' poor application of critical thinking techniques was caused by their disinterest in the topic. Specialized training is necessary to handle these issues critically and thoughtfully; this kind of training has been lacking in the existing educational system. Critical thinking appears to have been neglected in university curricula, which calls for revision.

Critical thinking cognitive functions like reasoning, analysis, and question answering call for educational interventions so that students can practice making judgment calls, analyzing arguments, defending opinions, reorganizing their mental models, and criticizing the opinions of others. The intended mental changes come about not by accident but rather under the guidance of proactive educational initiatives. Lee demonstrated how giving students' liberty to think critically has a big impact on how well they develop critical thinking abilities in the classroom. In order to foster an atmosphere where students feel comfortable expressing their beliefs and viewpoints, the professor plays a crucial role¹⁸ The conventional educational system, in which lectures predominate, is thought to be the primary barrier to the development and promotion of critical thinking in medical schools. One limitation of this study is the possibility of information bias resulting from the survey's self-report element.

CONCLUSIONS

The findings suggest that year one medical students possess a lower level of critical thinking. It is necessary to develop a curriculum that fosters critical thinking, needs to be evaluated. This review may look at how students think critically, how to learn and teach, and how to choose instructional strategies and course material.

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