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ORIGINAL ARTICLE

Are we Training Future Physicians with Critical Thinking? A Cross-sectional Study Measuring Disposition Towards Critical Thinking among Medical Students

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ABSTRACT

Background: To be a lifelong learner, critical thinking is an essential skill for medical students. Measuring disposition towards critical thinking is needed to evaluate the effectiveness of the ongoing changes in curriculum and syllabus of medical colleges.
Objective: To determine the disposition towards critical thinking among medical students at a public sector College in Pakistan.
Methodology: This cross-sectional study was carried out at Gujranwala Medical College Gujranwala from 1st April 2023 to 30th September 2023 and 197 medical undergraduate students were enrolled. The disposition towards critical thinking was measured in two dimensions i.e. critical openness and reflective skepticism using a prevalidated, open source, self-administered critical thinking disposition scale (CTDS) short form. This tool contains eleven statements to be answered on a scale of one to five ranging from strongly disagreement to strongly agree with neutral in between. A score greater than 44 was labelled as high, between 35 to 44 as moderate and less than 35 as low score measuring disposition towards critical thinking.
Results: 26.7% percent had high disposition towards critical thinking while 62% had moderate and 11.2 percent had very low score on critical thinking disposition inventory. Among the sampled population three fourth students were living in hostel, while one fourth were daily commuting to college. Academic performance was measured using marks in last high-stake exam. Ember lost high stake exams 30% students have more than 70% marks There was no significant association between academic performance in lost high stake exam and score in this position towards critical thinking (p=0.225).
Conclusion: The disposition towards critical thinking among medical students is acceptable and current academic performance measures are not found associated with degree of disposition towards critical thinking.
Keywords: Critical openness, Reflective skepticism, Disposition towards critical thinking

INTRODUCTION

Critical thinking has been acknowledged as core element of professional competency among medical practitioners. This helps medical students in critical Healthcare circumstances to analyze, evaluate and draw sound judgments.[1,2] But what is above this is the propensity to think like that, an impulsive desire to look forward to if someone is employing it in academic and real-world situations.[3,4]

Instead of believing in past and passively given data critical thinkers are more likely to ask questions, to contemplate and rationally give reason to them. As indicated in literature, critical thinking disposition encircles traits like open-mindedness, seeking truth, analytical-ness, self-confidence and maturity while making judgements.[5,6] The most important factors for medical education and patient care are critical openness and reflective skepticism. Critical openness means individuals' willingness to tolerate different points of view, embrace uncertainty and critically evaluate the data. Reflective skepticism, on other hand denoted inclination of individual to not only following the given instructions from the authoritative while asking the reason and making sure that judgements are evidence based.[7,8]

In modern medical curriculum greater importance is being given to development of critical thinking by embracing problem-based and hybrid learning strategies.[9] The development of higher order thinking is being encouraged by these approaches which revolve around critical and reflective engagement in whole process. Yet in most of the developing countries like Pakistan, conventional education systems are still dominating, which eventually hinder the development of this skill among medical undergrads.[10]

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Previous studies have demonstrated that there is a greater difference in CT's disposition among students from different regions round the globe. As in western side there is higher scores in disposition especially in open-mindedness and eagerness while in Asian side moderate to low scores are reported.[11] These variations are influenced by differences in culture, educational strategies, institutional environment and assessment systems.[12] Keeping in view the higher needs of reflective, analytical and evidence-based practice, the assessment of disposition of CT is very crucial. Educators can develop such learning strategies that would promote these skills just by assessing and understanding the attitudes of students towards critical thinking.

Therefore, the purpose of this research is to assess medical student's critical thinking disposition and to check how it relates with other educational factors in education system of Pakistan. The findings of this study will help in development of an updated curriculum and strategies revolving around enhancement future practitioner's contemplation and evaluation.

MATERIALS AND METHODS

This cross-sectional study was conducted to evaluate the disposition of critical thinking among medical undergraduates. The study was carried out in Gujranwala medical college, Gujranwala, Pakistan. The targeted population was all medical students from 2nd year to final year currently studying at the college. After approval from local ethical review committee, the students were invited to participate. The students who had previously been exposed to critical thinking workshops or courses were excluded. After being informed, the students filled in a self-administered data collection tool. This tool contained current living status and percentage marks in last profession exam along with critical thinking disposition scale (CTDS) short form.[13] This tool contains eleven statements to be answered on a scale of one to five ranging

from strongly disagreement to strongly agree with neutral in between. Seven statements measured critical openness while four statements were related to reflective skepticism. A score greater than 44 was labeled as high, between 35 to 44 as moderate and less than 35 as low score measuring disposition towards critical thinking. There was no reverse coding in the analysis of CTDS. Data was analyzed using SPSS 23.0. Difference in disposition was assessed by applying Pearson chi square test. The significant value that has been considered was p<0.05.

RESULTS

74.1% (146) of the participants were hostel resident while 25.9% (51) were day-scholars. For assess academic performance, marks of high stake exam was evaluated, 29.4% achieved <70%, 67.5% chalk up 71-89% and a very few of about 3% recorded over >90% (Table 1). Only 11.2% of the whole participants rutted to low disposition level <35 while most of the participants 61.9% demonstrated moderate level of disposition between 35-44, however26.9% showed higher disposition score >45. The mean of CTD score is 41± 6, devoting to 27±4 for critical openness and 15± 3 for reflective scepticism (Tables 2-3).

Chi-square was applied in order to check the correlation between CTDS with academic performance and living status. Both of the variables showed no significant correlation (p=0.225 and p=0.241) respectively.

Table1: Demographic data of participants (n=197)

Variable	No.	%
Current Living Status		
Hostelite	146	74.1
Day scholar	51	25.9
Percentage in last professional exam		
70% and below	58	29.4
71 to 89%	133	67.5
90% and above	6	3.0

Table 2: Descriptive statistics of critical thinking disposition scale score

Variables	Mean±SD	Median±IQR
Critical openness	27±4	27±4
Reflective scepticism	15±3	15±2
Total critical thinking score	41±6	42±7

Table 3: Distribution categories of critical thinking disposition scale (CTDS)

Categories	No.	%
Low	22	11.2
Moderate	122	61.9
High	53	26.9

Table 4: Association of critical thinking disposition with living status and academic performance

Variable	X^2	Df	p-value	Interpretation
Living status	2.846	2	0.241	Not significant
Percentage in last professional exam	5.674	4	0.225	Not significant

DISCUSSION

In this study, 61.9% showed moderate level of disposition and 26.7% showed high disposition. Also, 74.1% were staying in hostels and 25.9% day scholar, but while assessing its influence over CT's outcome, we got no association, similar in academic performance. Our findings remained consistent with the past literature which reported that most of the medical students from Asian countries showed moderate level of disposition towards critical thinking. Also, it is not being influenced by academic year, GPA or other achievements.[14,15]

The category of disposition scale-critical openness and reflective skepticism indicated the in-depth information about the mindset of students and their average interest in such skills.[11,16] In Asian countries, curriculum having heavier content discourages the culture of critical questioning, so students prioritize success in exams over them. Therefore, the educators should incorporate questioning and discussion sessions in curriculum. Over time these approaches would strengthen evaluation and contemplation skills for evidence based clinical practice.[17,18]

The absence of association among academic performance and disposition, suggested that it is not necessary for students with higher grades to have high reflective thinking and decision-making skills.[19,20] Medical education system mainly focuses on knowledge acquisition but is lacking in promotion of reflective skepticism among students. Our findings also illustrate the need to collaborate the active learning strategy with reflective thinking exercises, case-based discussions and problem-based learning.

The major strength of this study is that it provides an empirical data about disposition of critical thinking among medical students in Pakistan which have limited prior research. The study was done only in single institute which limits its generalizability. Future research should incorporate multiple institutes and explore how learning strategies would influence the development of critical thinking skills among medical students.

CONCLUSION

Most of the medical students demonstrated moderate scores of dispositions towards critical thinking with average but improvable scores of critical openness and reflective skepticism. A student's willingness to critically think is not influenced by their academic performance and living situations as supported by our results. Yet, it is being considered that institutional culture can promote it. Our findings also highlighted the urgent need to draw reforms in educational strategies adjoining real-world situations and case discussion sessions, eventually encouraging students to think critically and make evidence-based judgments.

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