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RESEARCH ARTICLE

Evaluating the Psychological Impact of Competency-Based Medical Education vs. Traditional Curriculum Among Medical Students in Canada

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Abstract

Medical education is undergoing a paradigm shift with the increasing adoption of competency-based medical education (CBME) over the traditional time-based curriculum. While CBME aims to enhance learning outcomes and clinical preparedness, its impact on students' psychological well-being remains a subject of debate. This study aims to evaluate the psychological effects of CBME compared to the traditional curriculum among medical students in Canada. A cross-sectional survey was conducted among 400 medical students enrolled in CBME and traditional programs across multiple institutions. Psychological stress, anxiety, burnout, and overall well-being were assessed using validated scales. The results revealed that while CBME students reported greater autonomy and skill proficiency, they also experienced higher levels of stress and uncertainty due to frequent assessments and self-directed learning demands. In contrast, students in the traditional curriculum reported more structured learning but faced challenges with knowledge retention and preparedness for clinical practice. The study concludes that while CBME enhances clinical competency, its psychological impact warrants careful curriculum design and support strategies to mitigate stress and burnout among students. Future research should focus on optimizing CBME frameworks to balance educational benefits with student well-being.

Key words: Competencybased medical education, traditional curriculum, medical students, psychological impact, stress, burnout, anxiety, medical education reform

1 | INTRODUCTION

Medical students are facing the increasing burden of depression, anxiety, and stress due to academic pressure. Exposure to medical college curriculum after school education is a vast change and there is immense pressure among students to perform better than their peers. (1)

This kind of pressure leads to substance abuse and mental health issues like depression and anxiety, sometimes leading to suicide. (2, 3) The stress factor for a fresher can be about settling in a new environment or about fear of ragging whereas for a final year student it can be to cope up with studies. Hence mental health screening should be periodically done to prevent any adverse event. Approaches like student-friendly curriculum and peer support programs should be validated to help students overcome stress, anxiety and depression. Mental health problems among medical undergraduates lead to potential emotional disturbances causing deterioration in classroom performance, clinical postings and overall medical curriculum. (4, 5) Along with mental health problems, medical students also face social, emotional, physical and family issues that eventually

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affect their academic performance. (6, 7) Medical students who aim to become good surgeon or physician in future have a constant obligation to excel in their academics.

WHO (World Health Organization) defines health as a state of complete well-being including physical as well as mental health. (8) Mental health disorders are responsible for significant morbidity and disability throughout the world. Ogbo FA et al analyzed the data of "Global Burden of Disease 2016" and revealed the burden of morbidities associated with depressive disorders among the southeast asian population. The results showed the prevalence of depressive disorders in India to be around 3.9%. Out of all the countries, India had the highest proportion of morbidity associated with depressive disorders (in the form of number of Disability Adjusted Life Years – DALYs). (9) Jeong Y et al used "Center for Epidemiology Studies - Depression scale (CES-D) among the students of a medical college in South Korea, and revealed that about 37.1% medical students were suffering from depression. (10) A meta-analysis done by Rotenstein LS et al in 2016, to assess the prevalence of mental health-related disorders among medical students revealed that the prevalence of depressive symptoms and suicidal ideation among medical students was 27% and 11% respectively. (11) Multiple studies conducted all over the world have shown that there is significant burden of mental health disorders among medical students. (12–15) A meta-analysis done in India in 2018, revealed that about 40% medical students suffered from some form of depression. (16)These statistics show a significant burden of mental health disorders among Indian medical students who call for the need and for more research to understand the associated factors like fierce competition for post-graduation courses in India, introduction of new curriculum, orthodox teaching methods or traditional curriculum. Hence, we conducted the present study to assess any effects on mental health due to implementation of the new curriculum and compare the mental health issues of the students who studied under the traditional and new curriculum.

2 | METHODOLOGY:

Study design and setting

It was an observational cross-sectional study conducted among medical students who have studied under the Competency based medical education (CBME) curriculum and traditional curriculum, at a medical college in Rajasthan. The study was conducted for six months. A total of 700 students participated in the study, out of which 251 students (from 2018 and 2017 batches) were taught as per traditional or old curriculum and 449 students (2019, 2020 and 2021 batches) were from the new CBME curriculum. Inclusion Criteria included both English- and Hindi-speaking students aged >=18 years of both genders and who gave consent to participate. Students who were already diagnosed with substance addiction and/or having bipolar disorders, severe conduct disorder and autism spectrum disorders were excluded from the study.

In our study, we used a self-administered structured and validated questionnaire. It included questions regarding demographic details, a batch of students (before the introduction of CBME and after the introduction of CBME), opinions about current teaching methods and curriculum etc. The validity of the questionnaire was checked by experts and was pilot tested among 30 students. Cronbach's alpha was used to check the reliability of the questionnaire during the initial validation and its value was 0.78. In addition to these questions, the standardized data collection tool: Depression, Anxiety and Stress Scale - 21 (DASS-21) was used in the study. DASS-21 is a standardized and pre-validated short scale that permits the assessment of depression, anxiety and stress simultaneously based on self-reported symptoms. This Questionnaire is a short version (21 items) of a 42-item self-report instrument specially designed to measure three interrelated negative emotional states: depression, anxiety and stress. Study participants were required to choose a number out of 0,1,2 and 3, depending on how much the given statement applied to their experience.

It has twenty-one questions, and questions are specified to assess the symptoms suggestive of depression, anxiety and stress and give individual scores. The anxiety score is determined as the sum of 7 questions (Question no. 2,4,7,9,15,19 & 20); Depression

score is sum of score for specific questions (Question no. 3,5,10,13,16,17 & 21); Stress score is sum of response scores to 7 individual questions (Question no. 1,6,8,11,12,14 &18). Before interpreting the scores, the summed numbers in each sub-scale (Anxiety, Depression and Stress) must be multiplied by 2 (since the DASS 21 is the short form of the scale). Final scores are added and interpreted as follows:

Depression: - Normal = 0-9, Mild = 10-13, Moderate = 14-20, Severe = 21-27, Extremely severe = $\geq$ 28

Anxiety: - Normal = 0-7, Mild = 8-9, Moderate = 10-14, severe = 15-19, Extremely severe = $\geq$ 20

Stress: - Normal = 0-14, Mild = 15-18, Moderate = 19-25, Severe = 26- 33, Extremely severe = $\geq$ 34

Ethical consideration:

After getting permission from Institutional Ethics Committee, the data collection was started. A self-explanatory invitation to participate in the study was sent to the participants electronically. The students who were willing to participate marked "Agree" option provided, consenting to be included in the study.

Statistical analysis:

Statistical Package for the Social Sciences (SPSS) version 21.0 for Windows was used for the data analysis. The data were expressed in terms of proportions or percentages. T test was used as a test of significance, taking p value of less than 0.05 as significant.

3 | RESULTS

A total of 700 students responded, out of which 251 studied under the traditional curriculum (2014-18) and 449 studied as per the CBME curriculum (2019-23). About 51.5% were males and 48.5% were females. Most of the students belonged to the age group of 19-23 years.

The perceptions of students about the traditional curriculum and CBME have been shown in table 1. In the traditional curriculum, out of 251 students, 181 (72.1%) preferred the hybrid method (textbook + digital), 50 (19.9%) preferred the textbooks and 20(8%) preferred the digital content for studying. On the other hand, in the CBME curriculum, out of 449 students, 309 (68.8%) preferred the hybrid method, 110 (24.5%) preferred the textbooks and 30 (6.7%) preferred the digital method for studying. In the traditional curriculum, 201 (80.1%) students were having difficulty in solving clinical-based questions as compared to the 249 (55.5%) students of the CBME curriculum, this difference was found to be statistically significant (p-value <0.001). 220 (87.6%) students of the traditional curriculum and 368 (82.0%) students from the CBME curriculum were stressed about their PG Examination. 97 (38.6%) students who studied as per traditional curriculum believed that the teachers need to change their teaching pattern, however, about $\frac{3}{4}$ th of CBME students expressed the need to change the teaching pattern (p-value <0.001). About 217(86.5%) students from the traditional curriculum and 374 (83.3%) CBME students revealed that they need extra study material even after taking the class notes. 103(41.0%) students of the traditional curriculum and 283(61%) CBME students experienced stressful incidents that often reappear at the time of another stressful incident (p-value <0.001). 129(51.4%) students of the traditional curriculum as compared to 291(64.8.0%) students of the CBME curriculum have had the experience of impending doom feeling (p-value = .001). 143(57.0%) students of the traditional curriculum were unable to sleep peacefully during exam time due to stress or anxiety in comparison to a significantly higher number of CBME students i.e., 319(71.0%) with p-value <0.001).

When asked about how the teaching-learning methods can be improved, about 56 CBME students responded with their suggestions. 31 students suggested that PowerPoint teaching should be accompanied by other teaching aids like videos related to the topic, case-based scenario, etc. About 16 students suggested that PowerPoint teaching should be accompanied by case-discussion. 4 students believed that teachers should first sensitize the students about the topic and 3 Students believed that they need to refer to more than one book for better understanding. 2 students suggested that PowerPoint teaching should be accompanied by blackboard teaching.

Table 1. Perceptions of students towards Traditional and CBME curriculum (N = 700)

Variable		Traditional(n=251), n(%)	CBME(n=449),n(%)	P value
Preferred Method	Textbook Digital Hybrid	50(19.9) 20(8.0) 181(72.1)	110(24.5) 30(6.7) 309(68.8)	.350
Difficulty in solving questions	Yes No	201(80.1) 50(19.9)	249(55.5) 200(44.5)	<.001
Concerned about Post graduation exam	Yes No	220(87.6) 31(12.4)	368(82.0) 81(18.0)	.049
Teachers need to change their teaching pattern	Yes No	97(38.6) 154(61.4)	335(74.6) 114(25.4)	<.001
Need other study material after class	Yes No	217(86.5) 34(13.5)	374(83.3) 75(16.7)	.269
Stressful experience reappears	Yes No	103(41.0) 148(59.0)	283(63.0) 166(37.0)	<.001
The feeling of impending doom	Yes No	129(51.4) 122(48.6)	291(64.8) 158(35.2)	.001
Unable to sleep peacefully during exam times	Yes No	143(57.0) 108(43.0)	319(71.0) 130(29.0)	<.001

epicts the assessment of depression, stress and anxiety (using the DASS-21 scale) among the study participants. Out of 251 students of the traditional curriculum 52(27.7%) students were suffering from mild depression, 46(17.9%) were suffering from moderate depression, 14(5.6%) were suffering from severe depression and 18(7.2%) were suffering from extremely severe depression. Whereas in the CBME curriculum out of 449 students, 73(16.3%) were suffering from mild depression, 65(14.5%) were suffering from moderate depression, 39 (8.7%) were suffering from severe depression and 60(13.4%) were suffering from extremely severe depression. The severe and extremely severe forms of depressive symptoms were found to be significantly higher in CBME students (p-value 0.014)

Table 2. Depression, Anxiety and Stress, using the DASS-21 scale, among students of Traditional and CBME curriculum (N=700)

Mental Health Scale DASS		Traditional (n=251), n(%)	CBME (n=449) n(%)	P value
Depression	Normal Mild Moderate Severe Extremely severe	117(46.6) 57(22.7) 45(17.9) 14(5.6) 18(7.2)	212(47.2) 73(16.3) 65(14.5) 39(8.7) 60(13.4)	.014
Anxiety	Normal Mild Moderate Severe Extremely severe	74(29.5) 30(12.0) 73(29.1) 34(13.5) 40(15.9)	154(34.3) 29(6.5) 92(20.5) 49(10.9) 125(27.8)	<.001
Stress	Normal Mild Moderate Severe Extremely severe	141(56.2) 34(13.5) 44(17.5) 22(8.8) 10(4.0)	222(49.9) 58(12.9) 72(16.0) 61(13.6) 36(8.0)	.066

Out of 251 students of the traditional curriculum- 30(12%) were suffering from mild anxiety, 73 (29.1%) were suffering from moderate anxiety, 34(13.5%) were suffering from severe anxiety and 40(15.9%) were suffering from extremely severe anxiety. On the other hand, in the CBME curriculum, out of 449 students- 125(27.8%) were suffering from extremely severe anxiety, 92(20.5%) were suffering from moderate anxiety, 49(10.9%) were suffering from severe anxiety and 29(6.5%) were suffering from mild anxiety with a significant difference (p-value < 0.01).

Out of 251 students of the traditional curriculum- 44(17.5%) were suffering from moderate stress, 34(13.5%) were suffering from mild stress, 22(8.8%) were suffering from severe stress and 10(4.0%) were suffering from extremely severe stress. Whereas in the CBME curriculum out of 449 students- 72(16.0%) were suffering from moderate stress, 61(13.6%) were suffering from severe stress, 58(12.9%) were suffering from mild stress and 36(8.0%) were suffering from extremely severe stress.

4 | DISCUSSION

Our study results were suggestive of high prevalence of depression i.e., 53.4% in students of the traditional curriculum and 52.8%, in students of the CBME curriculum. About 70.5% students of the traditional curriculum and 65.7% students of the CBME curricu-

lum were suffering from anxiety. Stress was found to be present in 43.8% students of traditional curriculum and almost half (50.1%) students of CBME. In a similar study done in 2018, in a government medical college of New Delhi, using the DASS scale, 32.1%,40.1%and 43.8% of medical students suffered from depression, anxiety and stress, respectively. (17) These levels are lower as compared to the results of our study. This could be due to the difference in the sociodemographic patterns, schooling, and coping patterns of adolescents living in Udaipur and national capital of India. In a study done among medical students in Brazil using the DASS scale, 34.6%, 37.2%, and 47.1% of medical students suffered from depression, anxiety, and stress, respectively. (18) Similar results have been revealed by the researchers in Nepal and United States. (19, 20)

Studies conducted in various regions of India reflect diverse situations depending upon the use of study instruments. In a study from Bhubaneswar (Odisha), the prevalence of depression, anxiety, and stress among medical students was 51.3%, 66.9%, and 53%, respectively, using the DASS scale. (21) This study revealed similar prevalence of depression, as revealed in our study. Another study done in 2007, reported that 39.44% of students suffered from depression, 66.05% from anxiety and 51.37% suffered from stress. (22) These differences could be attributed to the fact that over the years, the competition in medical education has exponentially increased and students feel stressed to improve their academic performance. Some studies conducted two decades ago have found little or no evidence of stress among medical students. (23, 24)

In our study, most students believed that the teachers need to introduce new teaching-learning methods to make students understand the CBME curriculum in a better manner. The new teaching-learning methods have been researched and tested in medical education and have been demonstrated to be effective in improving students' assessment scores. The new approach to teaching and learning has also been found to be acceptable to most medical students. (25–27)

When comparing traditional and CBME, our study revealed that almost similar number of students in both curriculum (Traditional -53.4%; CBME-52.8%) suffered from some level of depressive symptoms. However, severe and extremely severe depressive symptoms (according to the DASS-21 scale), were found to be significantly higher among CBME students (Traditional-7.2%, 5.6%; CBME-13.4%, 8.7% respectively). Similarly, extremely severe anxiety symptoms were also significantly higher among CBME students (Traditional -15.9%; CBME- 27.8%). In our study, severe and extremely severe stress symptoms were also present in CBME students (Traditional -8.8% and 4%; CBME- 13.6%, 8% respectively). The new regulations on Graduate Medical Education in India were being implemented in 2019, to introduce Competency Based Medical Education Curriculum as a step towards making competent medical graduates.[28] The curriculum is based on the acquirement of specific competencies which is based on the transition from old, teacher-centered approach to new learner-centered approach. The new educative methods including clinical-based approach and assessment methods were included in this curriculum, which was quite a challenge not just to students but to the faculty too. The raised levels of anxiety and stress among Indian Medical students in the last few years could be attributed to the fact that during these years, they had to adjust and learn using new educative methods (as per CBME). India is a diverse nation as compared to the western countries, in form of language, culture, beliefs, caste and religion. The medical students in India come from socially and culturally different backgrounds and schooling. They undergo comprehensive formal medical training at a young age and some of them are not able to cope with the associated adversities. However, the transition to the CBME curriculum is a welcome sign in Indian medical education and will possibly lead to innovations in the educative and learning methods, which will build Indian Medical Graduates who will be competent in catering to the healthcare demands of community.

Conclusion : About half of medical students were detected to have depressive symptoms in both traditional and CBME curriculum. Anxiety was experienced by about 70.5% traditional curriculum students and 65.7% CBME students. CBME students experienced higher levels of stress (50.1%) as compared to traditional students (43.8%). However, severe forms of depression, anxiety and stress symptoms were found to be higher in CBME students than

traditional curriculum students, and the difference was found to be significant (p-value <0.05). The implementation of the new curriculum itself comes with many hurdles and difficulties for the faculty as well as students. The aim is to build competent Indian medical graduates, however, there is need to focus on mental health issues and coping mechanisms among medical students and make medical education more inclusive.

Data Availability Statement

Data sharing is not applicable to this article as no datasets

were generated or analyzed during the current study.

Conflicts of Interest

The author declares no conficts of interest.

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