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COMPARATIVE ASSESSMENT OF COMPETENCY-BASED AND EMPATHY-BASED CURRICULUM IN UNDERGRADUATE STUDENTS FROM INDIA

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ABSTRACT

Background: CBME (Competency-based medical education) has been in practice since its introduction in year 2019. CBME incorporates AETCOM (Attitude, Ethics, and Communication) module to enhance development of soft skill development, cognition, and empathy in undergraduate students (UGs). Comparative and longitudinal studies are scarce concerning this topic in India.

Aim: The present study was aimed to comparatively assess the competency based and empathy-based curriculum in undergraduate students from India to assess the predictors for the same.

Methods: The present study included 1400 subjects from three medical colleges where the empathy was assessed in all the participants and was compared in cross-sectional fashion. The study included undergraduate students from both new and old curriculum using the TEQ (Toronto empathy questionnaire). The data gathered were assessed statistically.

Results: The study results showed that there are fluctuating levels of empathy seen in undergraduate students with the advancement of the MBBS years followed by a decrease in the end. It was seen that females had significantly higher empathy scores compared to males with 47.50 ± 5.98 and 42.95 ± 7.53 respectively with $p < 0.05$. No comparable increase in empathy score was seen with the new curriculum introduction. Using linear regression, gender was seen as a significant predictor with $p < 0.05$ for both non-CBME and CBME subjects.

Conclusion: The present study concludes that nurture of empathy starts in early medical education. The students had a reduction in empathy score at the end of the medical training with higher empathy levels in the females. The new curriculum tries to incorporate empathic communication for better care but require further assessment on data and causal factors on longitudinal trends.

Keywords: CBME, competency-based curriculum, empathy-based curriculum, medical training, MBBS

Introduction

Empathy is an emotional and cognitive attribute that includes the ability to feel and understand the inner experiences and perspectives of a subject and efficiently communicate this understanding to help. Medical education cumulatively works and nurtures empathy in the formative years and improves with the advances and proceedings of the course. Existing literature studies depict conflicting results for empathy being a trait or state. It can exist as a constitutional and relatively

stable trait that correlates to the mutable state, personality traits, or gender and is affected by affective and cognitive responses to changing situations as life experiences.¹

The NMC (National Medical Commission) has recently updated the curriculum for medical education in the year 2019 with SLOs (specific learning objectives) to primarily address three domains including affective, psychomotor, and cognitive domains. In comparison with the older system of strict compartmentalized years, the CBME (Competency-based medical education) includes AETCOM (AETCOM (Attitude, Ethics, and Communication) module to assess leadership, communication, and empathy. This approach is based on soft-skill development using maximum use of research materials, activity-based learning, and interactive discussion. Hence, physicians can use not only knowledge but also responsiveness, values, attitudes, and skills in first contact with the community.²

The studies concerning empathy in medical students have shown mixed results with significant empathy decreases during progressing with the curriculum or no significant change with course and training advancement. Studies have also assessed empathy change with the new curriculum, however, only a few studies are reported from India that compared it to the traditional approach.³ Hence, the present study aimed to assess the empathy scores, find the predictors, and compare empathy in UGs (undergraduate) medical students before and after the new module introduction and correlated it to sociodemographic factors.

MATERIALS AND METHODS

The present cross-sectional clinical study aimed to assess the empathy scores, find the predictors, and compare empathy in UGs (undergraduate) medical students before and after the new module introduction and correlate it to sociodemographic factors. The study was done at Department of Psychiatry, Madhubani Medical College, Bihar after the clearance was given by the concerned Institutional Ethical committee. The study subjects were from the, Madhubani Medical College, Keshopur, Bihar, RD JM Medical College Muzaffarpur, Bihar. Verbal and written informed consent were taken from all the subjects before participation.

The study assessed 1400 undergraduate students from three different medical college with tertiary healthcare centres. All the subjects were approached with confidentiality and anonymity of their responses was kept. For all the students, responses were gathered in a defined study period using a semi-structured questionnaire. The questions were given to undergraduate students during their lecture time following clear verbal instructions and their doubts were clarified, if any. The exclusion criteria for the study were incomplete responses and subjects that did not sign the consent.

The questionnaire utilized in the study comprised sociodemographic data and TEQ (Toronto Empathy questionnaire). The socio-demographic data included psychiatric illness history in self-or in the family, the decision to opt for medical specialty, accommodation, future specialty choice, year of MBBS, gender, and age. The choice for specialty in postgraduation was divided into medicine and other branches including Anaesthesiology, Ophthalmology, ENT, orthopaedics, and general surgery and one option was unspecified for students that did not yet decide the branch for postgraduation.

TEQ was utilized for quantification and assessment of the physiological, cognitive, emotional, and behavioural aspects of empathy of medical students.⁴⁻⁶ It is a self-reported tool having 16 items rated on a Likert scale of 5 points with normal scoring for positively worded items and reverse scoring for negatively worded items. Higher empathy levels were considered for higher scoring.⁷

The data gathered were analysed statistically using SPSS (Statistical Package for the Social Sciences) software version 24.0 (IBM Corp., Armonk, NY, USA) for assessment of descriptive measures, Student t-test, ANOVA (analysis of variance), and Chi-square test. The results were expressed as mean and standard deviation and frequency and percentages. The p-value of <0.05 was considered.

RESULTS

The present cross-sectional clinical study aimed to assess the empathy scores, find the predictors, and compare empathy in UGs (undergraduate) medical students before and after the new module introduction and correlate it to sociodemographic factors. The present study included 1400 subjects where empathy was assessed in all the participants and was compared in a cross-sectional fashion. The study included undergraduate students from both new and old curricula using the TEQ (Toronto Empathy Questionnaire). There were 802 subjects from CBME and 538 subjects from the non-CBME batch. The mean empathy scores in the CBME batch were significantly lower compared to the non-CBME batch with $p=0.02$ (Table 1).

The study results showed that for comparison of empathy scores to change in curriculum in study subjects, significantly higher empathy scores were seen in females compared to males in both CBME and non-CBME batches with $p=0.000$. In residence, significantly higher empathy scores were seen in home-residing students in the CBME batch with $p=0.001$,

whereas, in the non-CBME batch comparable empathy scores were seen in hostel and home-residing subjects with $p=0.317$. Concerning the decision of medical education. The comparable difference was seen in empathy scores in both CBME and non-CBME batches for decision by self and others with $p=0.814$ and 0.845 respectively. In the CBME batch, significantly higher empathy scores were seen for subjects with a history of self-illness or in relatives with $p=0.01$ and 0.000 respectively. In the non-CBME group, comparable empathy scores were seen for subjects with a history of self-illness or in relatives with $p=0.274$ and 0.504 respectively (Table 2).

It was seen that concerning the other factors for comparison of empathy scores to change in curriculum in study subjects, higher empathy scores were seen in subjects with lower and decreased with an increase in age in the CBME batch with $p=0.005$. However, a non-significant change was seen for age and empathy score in the non-CBME batch with $p=0.866$. For the choice of future postgraduation branch, in the CBME batch, no difference was seen for empathy score and branch with $p=0.788$. In the non-CBME batch, higher empathy scores were seen in the surgery branch followed by the medicine and non-decided group with $p=0.02$ (Table 3).

On assessing the linear regression for empathy scores in study subjects, any history of long-term illness in relatives, any history of long-term illness in self, residence, female gender, and age all depicted a significant correlation to empathy scores with $p=0.002$, 0.000 , 0.006 , 0.000 , and 0.02 respectively (Table 4).

DISCUSSION

The present study assessed 1400 subjects where empathy was assessed in all the participants and was compared in a cross-sectional fashion. The study included undergraduate students from both new and old curricula using the TEQ (Toronto Empathy Questionnaire). There were 802 subjects from CBME and 538 subjects from the non-CBME batch. The mean empathy scores in the CBME batch were significantly lower compared to the non-CBME batch with $p=0.02$. These data were comparable to the previous studies of Shashikumar R et al⁸ in 2014 and Rueckert L et al⁹ in 2008 where authors assessed medical students for empathy in their studies similar to the present study.

It was seen that for comparison of empathy scores to change in curriculum in study subjects, significantly higher empathy scores were seen in females compared to males in both CBME and non-CBME batches with $p=0.000$. In residence, significantly higher empathy scores were seen in home-residing students in the CBME batch with $p=0.001$, whereas, in the non-CBME batch comparable empathy scores were seen in hostel and home-residing subjects with $p=0.317$. Concerning the decision of medical education. The comparable difference was seen in empathy scores in both CBME and non-CBME batches for decision by self and others with $p=0.814$ and 0.845 respectively. In the CBME batch, significantly higher empathy scores were seen for subjects with a history of self-illness or in relatives with $p=0.01$ and 0.000 respectively. In the non-CBME group, comparable empathy scores were seen for subjects with a history of self-illness or in relatives with $p=0.274$ and 0.504 respectively. These results were consistent with the findings of Nicolai J et al¹⁰ in 2007 and Biswas B et al¹¹ in 2018 where a comparison of empathy scores to changes in curriculum in study subjects similar to the present study was also reported by the authors in their respective studies.

The study results showed that concerning the other factors for comparison of empathy scores to change in curriculum in study subjects, higher empathy scores were seen in subjects with lower and decreased with an increase in age in the CBME batch with $p=0.005$. However, a non-significant change was seen for age and empathy score in the non-CBME batch with $p=0.866$. For the choice of future postgraduation branch, in the CBME batch, no difference was seen for empathy score and branch with $p=0.788$. In the non-CBME batch, higher empathy scores were seen in the surgery branch followed by the medicine and non-decided group with $p=0.02$. These findings were in line with the results of Santos MA et al¹² in 2016b and Chen D et al¹³ in 2007 where for comparison of empathy scores to change in curriculum authors also reported higher empathy in female students compared to males as seen in the results of the present study.

Concerning the assessment of the linear regression for empathy scores in study subjects, any history of long-term illness in relatives, any history of long-term illness in self, residence, female gender, and age all depicted a significant correlation to empathy scores with $p=0.002$, 0.000 , 0.006 , 0.000 , and 0.02 respectively. These results correlated with the findings of Akgün Ö et al¹⁴ in 2020 and Chatterjee A. et al¹⁵ in 2017 were similar to the present study, history of long-term illness in relatives, any history of long-term illness in self, residence, female gender, and age all depicted a significant correlation to empathy scores by the authors in their respective studies.

CONCLUSIONS

Considering its limitations, the present study concludes that nurture of empathy starts in early medical education. The students had a reduction in empathy score at the end of the medical training with higher empathy levels in the females. The new curriculum tries to incorporate empathic communication for better care but require further assessment on data and causal factors on longitudinal trends.

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S. No	MBBS year	Number (n)	Mean scores	p-value
1.	CBME batch	802	45.37±7.424	0.02
2.	Non-CBME batch	538	46.08±6.417	

Table 1: Comparison of empathy scores concerning the curriculum in study subjects

S. No	Variables	Mean CBME	p-value	Non- CBME	p-value
1.	Gender				
a)	Males	42±7.97	0.000	44.0±6.6	0.000
b)	Females	47.43±6.19		47.63±5.4	
2.	Residence				
a)	Hostel	44.15±7.8	0.001	46.51±6.4	0.317
b)	Home	46.57±6.4		45.72±6.0	

3.	The decision for medical education				
a)	Self	45.42±7.2	0.814	46.01±6.2	0.845
b)	Others	44.24±7.7		47.17±6.5	
4.	Any history of long-term illness				
a)	Yes	45.57±8.2	0.01	48.16±6.4	0.274
b)	No	40.09±7.1		45.99±6.2	
5.	Any history of long-term illness in relatives				
a)	Yes	47.96±6.9	0.000	45.63±6.1	0.504
b)	No	44.65±7.1		46.23±6.2	

Table 2: Comparison of empathy scores to change in curriculum in study subjects

S. No	Variables	Mean CBME	p-value	Non- CBME	p-value
1.	Age (years)				
a)	<20	46.47±6.8	0.005	44.98±6.3	0.866
b)	20-22	44.19±7.4		46.15±5.5	
c)	>22	42.23±5.9		45.54±7.2	
2.	Future PG branch choice				
a)	Not decided	45.57±7.1	0.788	44.33±6.7	0.02
b)	Surgery and related	45.38±7.4		47.28±6.6	
c)	Medicine and related	45.57±7.1		45.63±5.6	

Table 3: Comparison of empathy scores to change in curriculum in study subjects

S. No	CBME	Unstandardized coefficients	p-value
1.	Any history of long-term illness in relatives	-2.508±0.839	0.002
2.	Any history of long-term illness in self	5.859±1.653	0.000
3.	Residence	1.873±0.686	0.006
4.	Female gender	4.792±0.704	0.000
5.	Age	-2.057±0.950	0.02
6.	Non-CBME (female gender)	3.827±0.770	0.000

Table 4: Linear regression for empathy score in study subjects