Original Article

Comparative study of the relationship between empathy and motivation among undergraduate students of new curriculum and old curriculum

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Abstract

Background: The new competency-based curriculum incorporates the social sciences and humanism to the basic and clinical sciences, thus giving an integrated approach to medical education. Comparing the empathy score with the motivation level across the two curricula was thus planned to assess the current status. **Method:** A cross-sectional qualitative study using an Internet-based electronic survey containing both an academic motivation scale to assess the motivation level and Jefferson's scale of empathy was used to assess empathy score. **Result:** From the above study, we concluded that males have a higher empathy score across both the curricula. >95% of students of both categories belonged to the High Intrinsic High Control motivational category. The empathy scores were slightly higher among the CBME (Competency Based Medical Education) group compared to the non-CBME group, but it was not statistically significant. In subgroup analysis, Phase 3 was found to have a significant association. **Conclusion:** The majority of the students fall in the High Intrinsic High Control category, where they have the next highest level of empathy. Phase 2 was found to have a significant association; it could be because of the positive effects of AETCOM classes on the ready-to-enter clinical exposure batch. The study also revealed that while motivation and empathy are generally linked, outliers existed, particularly among participants with low initial motivation but high empathy. This suggests a potential association between extrinsic motivation and empathy, possibly influenced by external factors.

Keywords: CBME, empathy score, motivation level, non-CBME

Introduction

'Empathy', an important component of doctor–patient relation, is defined as the ability to understand the patient's situation (cognitive aspect), perspective, and feelings (affective aspect) and communicate that understanding with the patient in a helpful or therapeutic way (behavioural aspect).[1,2] Although empathy appears to be more of a behavioural aspect at first glance, various studies and systemic reviews have laid emphasis on it being a predominantly cognitive attribute which after a person gains knowledge about can re-enforce it into his affective and behavioural aspect.[3] Showing empathy is known to have several advantages to both the doctor and the patient.[4] In patients, it leads to greater satisfaction, increased participation, reduced emotional stress, and increased quality of life,[5,6] whereas in doctors, it leads to increased diagnostic accuracy.[7,8] In the recent years, a decline of this important aspect has been noticed due to various factors like burnout,[9] climate of

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professionalism,[10] or motivation. Motivation is seen to decrease among students gradually as they reach the clinical phase of training.[11,12] There may be some phenomena that cause people to avoid empathy, such as feelings of suffering, material costs, and interference with competition, but favourable influences, affiliations, or social desirability could contribute to their increase in empathy.[13]

'Motivation' on the other hand is a desire to do a particular activity aiming at personal satisfaction and creating a balance between intrinsic motivation and extrinsic control factors. Motivation can be defined as a continuum between amotivation, in which there is a feeling of incompetency and an inability to obtain a desired outcome, extrinsic motivation, in which the urge to do or complete something is determined by the environment or external factors, and intrinsic motivation, in which the drive to pursue an activity is aimed at personal satisfaction.[13] Motivation can be categorised into a) HIHC, high intrinsic high control; b) HILC, high intrinsic low control; c) LIHC, low intrinsic high control; and d) LILC, low intrinsic low control.[14]

Empathy is a "motivated phenomenon" where a person either chooses to experience or chooses to avoid the process of understanding other people's emotion.[12] Undergraduate medical education represents a critical time for empathy development, considering that this stage has a strong influence on medical students' professional development, in which they may identify with their future professional roles but have not yet fully integrated them into their practices.[15] This study was conducted to compare the cognitive aspect of empathy and motivation among students of a new curriculum (CBME group A) who have been motivated about empathy through ATECOM classes compared to students of old curriculum (group B) to assess their pre-existing knowledge on the cognitive aspect of empathy so that the impact of AETCOM classes on this aspect of phase 1 students can be assessed. This new curriculum is expected to bring out the modification in group A in their future role as professionals when they encounter the other two aspects of empathy into their practice giving a scope of future research avenues.

Method

Study design

A cross-sectional observational study was conducted using a self-answered questionnaire aimed at comparing the relation between empathy score and motivation type among the students of competency-based medical education groups (academic year 2019–2022) and non-competency-based medical education groups (academic year 2017–2019).

Additionally, we could compare the mean empathy score among the two groups along with the categorisation of motivation type according to their prevalence in each phase.

Instrument used

Internet-based electronic survey containing both academic motivation scale (AMS) to assess the motivation level and Jefferson's scale of empathy (JSE) was used to assess empathy score.

AMS prepared by Vallerand *et al.*[16] and validated by Sobral[17] was used to assess motivation. It consisted of 28 items measuring 3 types of motivation, intrinsic motivation (HIHC, HILC), extrinsic motivation (LIHC, LILC), and demotivation. We did not use the demotivation type of motivation subscale as it is not included in our study objective. The items were scored using a 7-point Likert scale. The cut-off points used were ≤3.0 (low motivation), >3.0 to <6.0 (average motivation), and ≥6.0 (high motivation) according to de Azevedo *et al.*[18]

JES (student version) prepared by Hojat *et al.*[19] was used to assess the empathy related to students. It consists of 20 items on a 7-point Likert scale.

Sample and data collection

After ethical approval from the institutional ethics committee (letter no. 377 dated 20 / 10/2021), the study was conducted. All the undergraduate students of Medical College situated in the eastern state of India were categorised into group A (CBME Phase 1 and 2) and group B (old curriculum Phase 3 part I and II). Those not giving the consent were excluded. A total of 473 students from all the four phases were selected in the study through convenience sampling method. The study was conducted from December 2021 to January 2022 by total sampling method and voluntary participation. Group A following the new curriculum was given a large group lecture on empathy and motivation, followed by small group teaching in the form of Small Group Discussion, role play, and other modalities. Those students absent on any of the intervention day were also excluded from the study.

Now, both the groups were given a few questions on demographic parameters followed by two questionnaires in the online/offline mode.

a) JSE (student version)
b) AMS.

Data obtained were analysed and interpreted.

Statistical analysis

Data obtained were entered into Statistical Package for the Social Sciences (SPSS) version 25 developed by IBM. Forms with more than four blank items were excluded. According to Kusurkar *et al.*,[14] the average of total scores on each subscale was taken as score. The motivation category was compared across the two curriculums using Chi square test. The empathy score was compared across the two by the descriptive statistics and independent sample *t*-test. Nonparametric Kruskal–Wallis test was done to compare the motivation level with empathy across two curriculums.

Result

Gender variation

Among the total respondents of the non-CBME group, 52.3% were female and 47.7% were male, whereas among the CBME group, 54.4% were females and 45.5% were males. Gender, when compared individually with the empathy score of either group, had $x^2 = 5.704$ df = 1: $P = 0.017$ [Table 1].

Motivation category on the basis of curriculum

The within curriculum % for the non-CBME group among the different categories of motivation was found to be in the order of HIHC (96.1%), followed by LIHC (2.6%) and LILC (1.3%). Among the CBME group, it was found in the order of HIHC (98.7%), HILC (0.6%), LIHC, and LILC, both being 0.3% [Table 2].

Chi-square test was applied to see the association between motivation type and curriculum; 6 cells (75.0%) have expected a count less than 5 on the basis of likelihood ratio. There is no statistically significant association between motivation type and curriculum ($X^2 = 7.782$; df = 3; $P = 0.051$) [Table 3].

Empathy score across curriculum

On the basis of descriptive analysis, the empathy score for non-CBME had a mean score of 4.58 ± 0.56, with a minimum of 3.45 and a maximum of 6.9. The empathy score for CBME had a mean score of 4.65 ± 0.56, with a minimum of 3.55 and a maximum of 4.6 [Table 4].

An independent-samples *t*-test was conducted to compare average empathy scores for non-CBME and CBME curricula. The results suggest no significant difference in empathy score and curriculum [t(-236.407) = -1.365, $P = 0.174$) [Table 5].

Table 1: Gender variation among the two groups

Curriculum	Male		Female		Kruskal–Wallis test
	Count	%	Count	%	
CBME	142	47.7	170	52.3	χ^2=5.704 df=1: P=0.017
Non-CBME	73	45.5	80	54.4	χ^2=0.368 df=1: P=0.544

Table 2: Motivation category on the basis of curriculum

Motivation cat	CBME		Non-CBME		*P*
	Count	%	Count	%	
HIHC	308	98.7	147	96.1	χ^2=7.782, df=3, P=0.051
HILC	2	0.6	0	0	
LIHC	1	0.3	4	2.6	
LILC	1	0.3	2	1.3	

Table 3: Empathy score across curriculum

Curriculum	Empathy				
	Mean	S.D	Median	Min	Max
CBME	4.65	0.41	4.6	3.55	6.1
Non-CBME	4.58	0.56	4.55	3.45	6.9

Motivation type and average empathy score

Descriptive analysis of average empathy score on the basis of motivation level shows that among the non-CBME, LILC has the maximum score of 4.9, while in CBME, HIHC has the maximum score of 4.6.

Kruskal–Wallis test (nonparametric alternative to the one-way ANOVA) was applied. Non-CBME: $X^2 = 1.537$; df = 2; $P = 0.464$, CBME: $X^2 = 4.759$; df = 3; $P = 0.190$. This shows that none of the results were found to be significant [Table 6]. When the empathy score and motivation category were compared individually for each phase, phase 2 ($x^2 = 5.516$ df = 1 $P = 0.019$) was found to be significant [Table 6].

Discussion

This appears to be the first study of its sort that examines the connection between motivation and empathy in students enrolled in CBME and non-CBME curricula. A total of 473 students from all the four phases participated in the study. After data cleaning, 6 students were removed as the number of questions unanswered was more than 4; 2 students were outliers, so they were removed. Rest 465 students were analysed [Table 1].

The overall mean empathy score of this study among CBME and non-CBME was 4.65 and 4.58, respectively, showing a slightly higher empathy level among CBME students compared to non-CBME. This may be due to additional cognitive aspects of empathy education being added in the CBME curriculum among the group; its actual impact will be assessed only after measuring the affective and behavioural aspects of empathy among the group when they reach the final year leaving a further scope of the study [Table 5].

The categorisation of students according to motivational type depicted in Table 7 shows maximum prevalence of HIHC category among both the groups, similar to findings of Findyartini *et al.*[4] and Kusurkar *et al.*[14]

It has been earlier established in relation to motivation and empathy that students with a higher motivation level (HIHC) have a higher empathy level, but this study found LILC having the highest empathy level of 4.97 (non-CBME) and 5.29 (CBME), followed by HIHC having 4.57 (non-CBME) and 4.65 (CBME). This points towards extrinsic motivation (LILC) having direct relationship with empathy unlike the previous studies where intrinsic motivation (HIHC) was found associated. The reason behind it could be that their high empathy level being portrait here could be induced due to some external influencing factors among the two participants in non-CBME and one participant in the CBME group and hence low motivation.

Conclusion

From the above study, we concluded that males have a higher empathy score across both the curricula. >95% students of both the categories belonged to the HIHC motivational

Table 4: Levene's s test of equality of variance using average empathy score

	F	Sig	*t*	Df	Sig. (2-tailed)	Mean difference	Std. error difference	95% CI	
								Lower	Upper
Equal variance assumed	10.147	0.002	-1.509	463	0.132	-0.06958	0.04613	-0.16022	0.02106
Equal variances not assumed			-1.365	236.407	0.174	-0.06958	0.05099	-0.17004	0.03087

Table 5: Motivation types vs average empathy score

Motivation types	Average empathy score						
	Measure of variability	Non-CBME	*n*	*P*	CBME	*n*	*P*
HIHC	Mean (SD)	4.58 (0.56)	147	0.464	4.65 (0.41)	308	0.190
	Median (range)	4.55 (3.45 – 6.90)			4.60 (3.55 – 6.10)		
HILC	Mean (SD)	-	-		4.55 (0.00)	2	
	Median (range)	-			4.55 (4.55 – 4.55)		
LIHC	Mean (SD)	4.53 (0.45)	4		3.90 (-)	1	
	Median (range)	4.63 (3.90 – 4.95)			3.90 (3.90 – 3.90)		
LILC	Mean (SD)	4.98 (0.39)	2		5.20 (-)	1	
	Median (range)	4.98 (4.70 – 5.25)			5.20 (5.20 – 5.20)		

Table 6: Empathy score and motivation category compared individually for each phase

PHASES	HIHC		HILC		LIHC		LILC		Kruskal–Wallis test
	n	Mean rank	*n*	Mean rank	*n*	Mean rank	*n*	Mean rank	
Phase 1	227	121.25	2	103.00	-	-	1	218.50	χ^2=2.067 df=2: *P*=0.356
Phase 2	81	42.98	-	-	1	2.50	-	-	χ^2=5.519 df=1: *P*=0.019
Phase 3	147	69.06	-	-	4	89.33	2	104.00	χ^2=2.195 df=2: *P*=0.334

Table 7: Comparison of categorization of students according to motivational type among authors

Authors	Motivation type			
	HIHC	HILC	LIHC	LILC
Findyartini *et al.*[4]	82%	11%	5.4%	9.4%
Kusurkar *et al.*[14]	25.2%	26.1%	31.8%	16.9%
	97.8%	0.4%	1.1%	0.6%
Present study CBME	98.7%	0.6%	0.3%	0.3%
Non-CBME	96.1%	0%	2.6%	1.3%

category consistent with findings of other authors. There was no statistically significant association between motivation type and curriculum. The empathy scores were slightly high among CBME group compared to non-CBME group, but it was not statistically significant. Comparing the motivation level with empathy, no significant association was found, but on doing subgroup analysis, Phase 2 was found to have a significant association; it could be because of the positive effects of AETCOM classes on the now ready to enter the clinical exposure batch.

Merits

i. To analyse whether HIHC have a higher empathy score in both the groups.
ii. To find the mean empathy score in students across the different years.
iii. To emphasise the advantage of adding AETCOM in the new curriculum.
iv. To open more avenues of research in the field so that the implementation of CBME curriculum can be assessed in the upcoming years.

Limitations

i. The sample size in both the groups varied as the clinical year students of non-CBME was of only two batches, whereas the CBME group was from three batches.
ii. The questionnaire was lengthy.
iii. The study was carried out in only one institute.

Relevance of the study to the practice of primary care physicians

The results of this study emphasise the significance of including AETCOM courses in medical education, particularly in the context of CBME. Medical colleges have the potential to contribute to the development of compassionate, engaged, and successful healthcare practitioners who are well equipped to address the different needs of their patients and communities by fostering empathy and motivation among aspiring IMG, especially those headed for primary care catering to the underprivileged strata of the society.

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Conflicts of interest

There are no conflicts of interest.

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