Hybrid PBL versus Traditional System: Are we Training Optimistic Medical Graduates?

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ABSTRACT

Introduction: Optimism is an attitude which shapes the future behavior of a physician. The determinants of optimism are not well known in context of medical education. The current study aimed to measure and compare optimism among medical students in two different educational systems i.e. hybrid problem-based learning hPBL versus traditional didactic-instructions system TDS.

Methodology: A cross-sectional study was carried out in two medical colleges i.e. one with TDS and other with hPBL system collecting data from n=150, 189. Optimism score was measured using Life Orientation Test–Revised LOT-R. LOT-R is a valid tool containing ten items to be rated on a scale from zero to four strongly agree to strongly disagree. Three items are related to optimism, three with pessimism and four are fillers. Score can range from zero to twenty-four. Higher score indicates higher value. The effects of teaching strategy, gender, future specialty preference, year of study and residence were measured.

Results : The mean optimism score for total participants, HPBL system, and TDS were 14.4±3.4, 14.1±3.7 and 14.8±3.01 respectively. Optimism scores lacked temporality across different years in studied population. Majority of the responders were females 227,67%, in fourth year 100,29.5% and living with family 202,59.6%. There was similar distribution of optimism score across two educational strategies p = 0.078. Female gender, living in hostel and preclinical years were positively associated with higher optimism score among students in TDS only. There was no difference found in both system regarding optimism even after adjustment for gender and residence. Specialty preference i.e. people oriented versus technology oriented future specialty has shown no effect on the score. p > 0.05

Conclusion: We are not "killing optimism in medical colleges" both educational strategies are similar in terms of optimism. Female students in their preclinical years in TDS were found more optimistic.

Key words: Medical education, Optimism, Pessimism, Life orientation, Burnout, Coping

INTRODUCTION

Optimism is defined as "a positive human trait that enables humans to look on more favorable sides of the events and to expect the best irrespective of the situation".[1, 2] Optimism is a powerful cognitive filter that plays an important role in influencing individual views of events and their adaptations and reactions to events.[3] Optimism was found to be an important valid augur of a sense of meaningful life. Scarce data is available regarding optimism and pessimism among medical students i.e. future physicians.[4] Optimistic attitude among the treating physicians lead to inculcation of hope and improvement in treatment adherence. A pessimistic approach leads to despair.[5-7] In previous studies, the optimistic patients even with grave and severe diseases like cancer and heart failure have shown a better quality of life measurement and courage to challenging situations.[8, 9]

Pessimistic patients have poor adherence to treatment and poor quality of life in difficult situations. Existing literature propose a medical student to be optimistic and enthusiastic.[1, 10] Optimistic students also perform well in academics and find a positive way out in all situations. They are less likely to be burnt out and depressed.[6, 11, 12]

Despite the importance of optimism in medical field, there was limited empirical research in context of medical education and patient care among Pakistani medical graduates. The available data was for the students living in European and developed countries. There was no local study available regarding the measurement of optimism and pessimism among Pakistani medical students, who have different social brought up and principles of faith. Therefore, different results were expected as compared to the developed countries. We tested four hypotheses that optimism/pessimism scores are associated with gender, year of study, living status and future specialty preference of medical students.

METHODS

An analytical cross-sectional study was conducted in two public medical colleges, one employing a hybrid PBL approach and the other a traditional instructional method. Data collection occurred from April to June 2020, with a sample size of 300 students n = 150 per college drawn from five academic years selected from all five academic years

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using consecutive sampling. Participation was voluntary, with verbal informed consent, and the study received local ethical board approval. A self-administered questionnaire collected sociodemographic data and included the Life Orientation Test-Revised LOT-R to assess optimism. The LOT-R, a validated tool, comprised ten items rated on a five-point Likert scale. 1, 2, 10, 13, 14 The weightage to each response form the respondents was as follows: 0= Strongly disagree, 1= Disagree, 2=Neutral, 3=Agree and 4= Strongly agree. 15-17

Three items measured optimism, three measured pessimism, and four served as fillers. Analysis was performed using SPSS version 23. Descriptive statistics and inferential tests, including the Mann-Whitney U test and Kruskal-Wallis test, were used, with significance set at $p < 0.05$.

RESULTS

Table 1. Comparison between Age and Optimism Score

	N	Minimum	Maximum	Mean	Std. Deviation
Age in years	339	18	29	21.68	1.838
Optimism Score	339	3	24	14.42	3.434
Valid N listwise	339				

P=0.0001

Table 2. Comparison between Optimism Score and Preclinical study years

	Study Year	N	Mean Rank	Sum of Ranks
Optimism Score	Preclinical	178	173.86	30947.50
	Clinical	161	165.73	26682.50
	Total	339		

P=0.443

Table 3. Comparison between Optimism Score & year of study in cloolege Pre -clinical

		Year of study in college				
		1	2	3	4	5
Optimism Score	> Median	16	21	32	41	25
	<= Median	15	41	53	59	36

P=0.562

Table 4. Gender wise comparisons

	N	Mean	Std. Deviation	Minimum	Maximum
Optimism Score	339	14.42	3.434	3	24
Gender	339	1.67	.471	1	2

P=0.004

Table 5. Specialty wise comparisons

	Specialty Preference	N	Mean Rank	Sum of Ranks
Optimism Score	People oriented	202	170.87	34515.00
	Technology oriented	137	168.72	23115.00
	Total	339		

P=0.443

Table 6. Way of living and optimism score

Ranks				
	Current Living status	N	Mean Rank	Sum of Ranks
Optimism Score	With Family	202	155.33	31377.00
	Alone in hostel	137	191.63	26253.00
	Total	339		

P=0.45

The overall mean optimism score was 14.4 SD = 3.4, with similar scores observed in the hybrid problem-based learning hPBL 14.1 SD = 3.7 and traditional didactic instruction system TDS groups, 14.8 SD = 3.01, was observed. Optimism scores across study years showed no significant difference. 67% of respondents were female and in their fourth year of study 29.5%, and living with family 59.6%. An analysis of optimism across educational strategies showed no significant difference $p = 0.078$. However, a higher score of optimism was observed in female students, those residing in hostels, and those in preclinical years in the TDS group of participants. No differences in optimism were observed between the two systems, even when accounting for gender and living arrangements. Further, specialty preferences people-oriented vs. technology-oriented did not significantly impact optimism scores $p > 0.05$.

DISCUSSION

This study explored the relationship between optimism levels among medical students in two different educational systems: the hybrid problem-based learning HPBL and the traditional didactic system TDS. The mean optimism scores for hPBL and TDS groups were comparable, indicating no significant difference between these educational strategies $p = 0.078$.

Our findings suggest that the type of instructional strategy does not have a substantial impact on the optimism levels of medical students. This contrasts with earlier studies suggesting that active learning environments, like hPBL, could foster more positive psychological outcomes compared to didactic methods 3. However, our results align with research indicating that other factors, such as gender and living arrangements, may exert a stronger influence on students' psychological well-being [11].

Cruz et al in their study conducted on optimism and coping mechanisms among nurses found that female students demonstrated a higher adaptive coping mechanisms which supports our findings also[11]. Similarly, findings of Hojat etal support our findings regarding hostel students having a higher level of optimism. This could be due to the social support system of other students in similar situation in the hostel[6]

Our data did not reveal any significant association between future specialty preferences and optimism scores, a finding consistent with studies that emphasize the complexity of career motivation and its diverse influences on well-being [10]. These results indicate that intrinsic and extrinsic factors beyond education mode play a crucial role in shaping students' outlook.

As the stress level in various years differs it was expected to show variable impact on optimism. Previous studies including a study done by Bhagat etal had shown mixed results regarding the year of study and impact on optimism. However, the impact of optimism in our study did not vary significantly across different academic years, suggesting that the medical curriculum's demands do not diminish or enhance students' positive expectations over time[5]

IMPLICATIONS AND FUTURE DIRECTIONS

The study's findings are critical in the context of medical education. They suggest that neither hPBL nor TDS inherently advantages students' psychological well-being regarding optimism. This insight is valuable for curriculum planners, emphasizing that interventions to improve student well-being should focus more on personalized support systems rather than just instructional design.

Future research should consider longitudinal designs to examine changes in optimism across different stages of medical education and include more diverse populations to enhance generalizability. Moreover, investigating how extracurricular activities, mentorship, and institutional support impact optimism could provide a more holistic understanding of student well-being.

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