

Role of mentoring in improving academic performance among low achievers in a medical college of Chhattisgarh, India

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Abstract

Objectives: Mentoring programmes are known to offer support. This study was designed to evaluate the effect on academic performance and experiences of students enrolled in a new mentoring programme.

Materials and Methods: The study was performed on the low achiever first year medical students selected based on the first internal examination performance. Fifty-three students were enrolled in a mentoring programme module consisting of structured, guided assignments and interactive discussions. The academic performance of the low achiever students were assessed in second internal exam. Students' perception about mentoring was obtained by feedback by using a modified Dundee Ready Educational Environment Measure (DREEM) questionnaire. Descriptive statistics and paired t test were used to analyze the data.

Results: Effectiveness of mentoring program was assessed through academic performance which showed significantly higher mean scores in second internal examination among 98.1% low achievers. About 84% of the mentees felt that mentoring program helped in their improved academic performance. The students perceived that mentoring helped them in better understanding of subject, enhanced confidence and communication skills.

Conclusion: Internal motivation strategies would be integral components of teaching. Customized mentoring helps to enhance the academic performance through motivation and better understanding of subject. The mentoring program seems valid in medical education and can be generated in order to have better academic performance.

Keywords: Mentoring, Integrated teaching, Students perception, Medical Education.

Introduction

A mentor is a guide holding his integrity in terms of his behaviour, attitudes and perspectives plays various roles such as small-group leader, academic advisor, supervisor or a role model in students' academic career.⁽¹⁾ The mentor's role is to provide an approachable environment and offer personal support to his students and also deal with their social and emotional problems.⁽²⁾ A Mentor offers help, guidance, support, and inspiration to his students which facilitates his learning and development and hence leading to the students' academic progress.⁽³⁾

Low achievers are the students with underperformance in formative or summative assessments during their course. They just could be slow learners or learning handicaps needing special help.^(4,5) High achievers are performing well and are up to the expectations in academics. High achievers when compared to low achievers try thoroughly learning, understanding strategies to fit the purpose of study and to link new knowledge to the previous learning.⁽⁶⁻⁸⁾

Factors like lack of interest and motivation, absenteeism, peer influences, difficulty in managing time, language and food preferences appear to have a significant impact on the academic performance of students. It is of prime importance to identify the Under-performing students early in medical course after formative assessment and impose appropriate remedies to enhance their self-esteem.⁽⁹⁻¹²⁾

Remedial measures for low achievers include identification of cause, counseling and encouragement by mentors, special classes, assignments, small group and interactive discussions, seminars or presentations and regular feedback.⁽¹³⁻¹⁵⁾ Providing structured guidance and optimal challenges can enhance intrinsic motivation among low achievers.⁽⁷⁾ Guided learning along with motivation can show better results in performance of poor achievers than structured guidance and motivation provided separately.⁽¹⁶⁻¹⁸⁾

This study was undertaken to determine the impact of various factors of mentoring in improving the academic performance of low achievers in the subject of physiology. The main objectives of this study were to determine and improve the performance of the low achievers of first internal examination through mentoring the students using - Structured motivational program, Guided assignments, Interactive discussions and to compare the performance of second internal examination with first internal exam and to obtain the students perception about mentoring.

Materials and Methods

This cross-sectional study was undertaken in a medical college in Durg district of Chhattisgarh. Study population included 150 students of 1st MBBS appearing in first internal examination. The students who have achieved less than 35% marks in first internal examination were selected for mentoring and post-test (Second internal examination) analysis. A total of

selected sample size included 53 low achiever students were enrolled in mentoring program. Approval by institutional ethics committee was obtained. Informed consent of the students was taken.

A self-structured validated questionnaire to identify the causes of poor academic performance which comprised of 2 sections with total of 10 items was administered to students.

Section I (curricular related)- consists of 5 causes on difficulty of understanding what is taught in the class, taking notes and self-study, slow-learners, time management.

Section II (Non-curricular related)-consists of 5 causes of communication skills, interest, fear factor, pressure, personal hobbies and sports.

Mentoring the students by structured motivation, guided assignments and interactive discussions were carried out in a module over a period of 2-3 months. Following interventions were carried out:

1. Counseling by faculty, emotional support
2. Encouraging active participation in groups
3. Develop genuine interest in the subject
4. Topics to be discussed in the next session for more responsibility
5. Structured guidance-if they are going in a wrong direction, correct them
6. Small topics for preparation and presentation
7. Giving positive feedback- non threatening, directed towards learning
8. Give choices for preparation
9. Time management- holidays, hobbies, sports
10. Choice of book- which book they are comfortable with
11. Come prepared with the topics for better understanding during lecture
12. Can ask the difficulties
13. Can change the habit of taking notes- short forms
14. How to divide the topic in must know, nice to know, and desirable to know
15. Important points in model answers by faculty members- synopsis of all the topics
16. Classes & guidance. Possible after college timing
17. Short assignments- correction of it.

The academic performance of the low achiever students were assessed at the end of mentoring module in a post-test (second internal exam).

Students' perception about mentoring was obtained by feedback after the completion of the module, on the last day by using a questionnaire based on Dundee Ready Educational Environment Measure (DREEM) subscales.^(19,20) The modified DREEM was designed, by the investigators and subjected to content, construct validation followed by reliability check by subjecting the questionnaire for test re-test before administration. The Cronbach's alpha was 0.71, indicating that the modified DREEM has adequate reliability for measurement.

The modified DREEM comprised of 16 statements relating to Mentees' perception of learning and academic performance. Each item to be responded on a five point Likert scale ranging from 0 – 4 with 4 = Strongly agree, 3 = Agree, 2 = Unsure, 1 = Disagree and 0 = Strongly disagree. The higher the score, more positive the perception for all items.

Statistical Analysis: All the obtained data were compiled and tabulated systematically in Microsoft Excel Spreadsheet and subjected to statistical analysis using SPSS software (version 17.0 IBM Corporation, SPSS Inc., Chicago, IL, USA) Descriptive statistics was employed in terms of percentages. Co-efficient of variations and paired t-test was applied to check the competency of students and compare the performances before and after mentoring respectively.

Results

The impact of structured motivation, guided assignments and interactive discussions to evaluate the effects of intervention program among 53 low achievers were assessed through the performance in pre university examination. The distributions of marks before and after mentoring are as shown in Table 1 and Fig. 1. The comparison showed higher mean scores post-intervention among all low achievers except for one. This difference is statistically significant ($p < 0.05$), as shown by the results of the paired-samples t-tests presented in the Table 2. In addition to the test of significance, coefficients of variance were calculated to measure the relative magnitude of the mentoring program. Co-efficient of variance of Second internal examination was observed to be less compared to Coefficient of variance of first internal examination.

Perception: All the students completed the mentoring program module and were available for feedback (100% response rate). About 84% of the mentees felt that mentoring program helped in their academic performance. Students were in total agreement that mentoring has motivated them to be an active learner and manage time more effectively. The positive aspects of the mentoring as perceived by the students included encouraging atmosphere (85%), better understanding of subject (92.4), interaction and solutions to queries (92.4% & 96.2% respectively), boost in confidence and communication skills. The low achievers felt they could concentrate for comparatively longer time, memorise and recall more which contributed to enhanced interest in the course (Table 3). The negative perceptions were comparatively minimal and were especially with respect to not getting enough time for extracurricular activities and self study (26.4%). However 20.8% students were uncertain and one student felt mentoring is not contributing to a better performance in future. (Table 3, Fig. 2)

Discussion

Medical education has become very challenging and students entering medical schooling could be in stressful situation subjected to a new system of education, environment and away from home, which in many instances make the first year students vulnerable to low academic performance, depression and dysfunctional behaviours.⁽¹⁵⁾

This study investigated the efficiency of structured motivation and mentoring on academic performance in the subject of physiology among first year medical students. Guided assignments and interactive discussions among the low achievers may alter their cognitive capacities to acquire additional reading skills helping them to overcome the suppressed feelings about their inadequacy in academic activities.^(5,6) Such activities results in putting them at ease in their interaction with peers and teachers. Similarly, there can be a considerable level of reduction in fear factors and pressure among the low achievers.^(21,22)

In relation to academic performance, present study shows that mentoring program produced better grades in terms of improved marks scored in second internal examination; these findings are in agreement with those of previous studies among other medical students.⁽²²⁾ There are a number of factors identified in the relevant literature that may potentially moderate the mentoring and associate with academic performance. For example, those individuals who reported better adjustment to educational environment were more intrinsically motivated toward accomplishment and obtained significantly higher marks during the semester at university. It may be, for example, that effective stress management technique produce better levels of adjustment to university life or were more intrinsically motivated toward their academic studies, which in turn, led to better academic performance.

Structuring the lesson depending on the needs of students motivates the students.⁽¹⁵⁾ Combination of autonomy-supportive and highly structured teaching sessions bring the best outcomes.⁽¹³⁾ Remedial program, motivation can improve the performance of slow learners. Regular, positive and structured feedback to the students is necessary to fill the gap between present and desired status of the students.^(14,15) Motivation along with guided learning help to improve academic

performance of low achievers. Implementation of mentoring to undergraduate MBBS students in a medical college of Chhattisgarh has shown significant results.

The present study findings show that the students' perception about the mentoring are strongly positive, a finding consistent with various published results elsewhere.^(11,12,17,23,24) The reasons regarding the positive view were not particularly investigated but however appeared in connection with the primary objective of this program, namely supporting and assisting students in a custom designed educational setting for low achievers.

As evident from systematic reviews of the impact of medical school mentoring on participants, the perception of benefit through such programs is still not clear to certainty which is in agreement with our study.⁽²³⁾

Limitations

The major limitation of our study was a small sample size. However, given the fact that the responding population of low achievers seemed representative of the medical student population in general, and that the absolute number of responses allows for analysis, we consider reporting our findings to add to the existing literature. The other is that this study was carried out at a solo medical institute in Durg, Chhattisgarh and hence has limited generalizability. Despite this study can very well serve as a good starting point for more studies on the same aspect in medical education; however follow up module of the program is needed to evaluate whether the program will succeed in fostering the students' personal and academic development on long term basis.

Conclusion

It has been confirmed confidently that the customized mentoring program imparting integrated intervention targeted at the slow learners are able to enhance the academic performance. The mentoring program seems valid in medical education in subgroups such as low achievers and motivation positively affects academic performance through deep strategy towards study and higher study effort.

Table 1: Marks scored by the under performers in first internal examination and in second internal examination post intervention among under performers

	Mean	Std. Deviation	Coefficient of variance
Second internal exam	34.868	11.3189	32.15
First internal exam	23.340	8.2763	35.12

Table 2: Paired T-test: comparison of marks scored pre and post intervention among under performers

	Paired Differences*		t - value	df	Mean	SD	Sig. (2-tailed) p- value
	Lower	Upper					
Second internal – first internal	8.9321	14.124	8.911	52	11.52	9.41	.000

* 95% Confidence Interval of the Difference

Table 3: Responses and average ratings in percentages to the questionnaire items assessing the perception of mentees.

Question	Strongly Agree + Agree (%)	Uncertain (%)	Disagree+ Strongly disagree (%)	Mean	SD
1. The mentoring sessions had clear learning objectives.	92.5	7.5	0	3.37	0.62
2. The positive atmosphere during mentoring encourages me as a learner.	85	11.3	3.8	3.01	0.69
3. The mentor motivates me to be an active learner.	100	0	0	3.41	0.49
4. The discussions help me to understand better.	92.4	5.7	1.9	3.15	0.60
5. I can concentrate for longer time.	79.2	11.3	9.4	2.81	0.76
6. I can memorise and recall what is being taught.	84.9	15.1	0	2.94	0.49
7. I have developed interest in this course.	75.5	22.6	1.9	2.90	0.68
8. The teaching sessions are interactive and well focused.	92.4	5.7	1.9	3.15	0.60
9. I am able to present seminars and presentations confidently.	92.4	7.5	0	3.32	0.61
10. I participate in tutorials and come prepared for the topic.	85	11.3	3.8	3.01	0.69
11. I can manage time more effectively than before.	100	0	0	4.00	0.00
12. I get enough time for academic as well as my extra-curricular activities.	56.6	17	26.4	2.33	0.91
13. My communication skills has improved.	49.1	41.5	9.4	2.39	0.66
14. Feedback was exchanged between mentors and students regularly.	90.6	7.5	1.9	3.05	0.56
15. I feel free to ask my queries.	96.2	3.8	0	3.13	0.44
16. I am confident about performing better in the future.	77.3	20.8	1.9	3.00	0.73

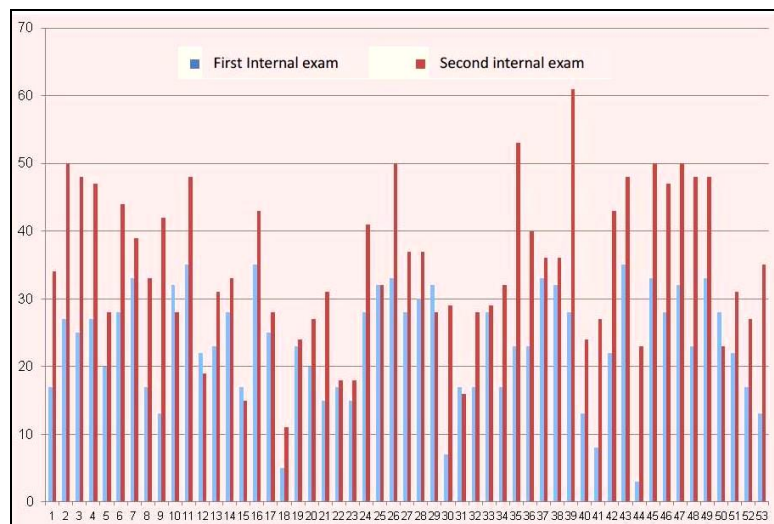


Fig. 1: Distribution of marks scored by under performers in first internal examination and in second internal examination

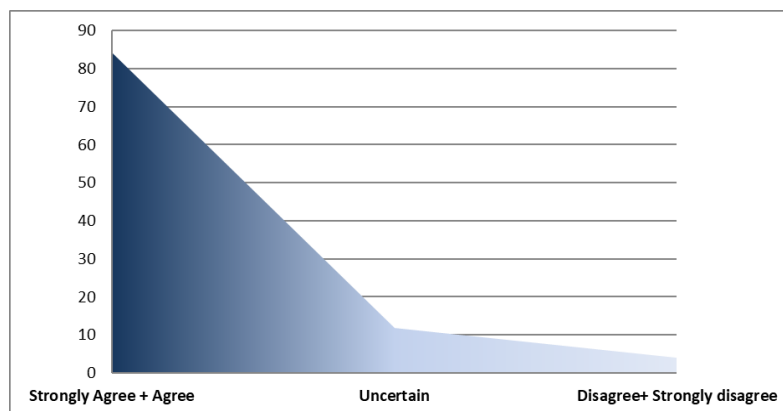


Fig. 2: Perceptions of the low achievers about mentoring program as contributing factor in improving their academic performance

References

- Rose GL, Rukstalis MR, Schuckit MA. Informal mentoring between faculty and medical students. *Acad Med.* 2005 Apr;80(4):344-8.
- Robertson F, Donaldson C, Jarvis R, Jeffrey D. How can an academic mentor improve support of tomorrow's doctors? *Scottish Universities Medical Journal.* 2013 Oct;2(2):28-38.
- Lewis G. British Institute of Management Foundation. *The mentoring manager: strategies for fostering talent and spreading knowledge.* London: Pitman; 1996.
- Shankar MSV. Low Achievers – Are They Really Slow Learners? *Bull NTTC.* 2011 Sept;18(2):4-5.
- Chauhan S. Slow learners: their psychology and educational programmes. *International Journal of Multidisciplinary Research* 2011;1(8):279-89.
- McLendon K. Helping Low-Achieving Students Succeed. <http://www.funderstanding.com/curriculum/helping-low-achieving-students-succeed/> accessed on 22.08.16.
- Wilkinson TJ, Wells JE, Bushnell JA. Medical student characteristics associated with time in study: Is spending more time always a good thing? *Medical Teacher* 2007;29:106–10.
- Dhaliwal U. Absenteeism and under-achievement in final year medical students. *Natl Med J India.* 2003 Jan-Feb;16(1):34-7.
- Sobral DT. What kind of motivation drives medical students learning quests? *Medical Education,* 2004;38:950–57.
- Kannan L, Vijayaragavan PV., Pankaj. BS, Suganathan. S, Praveena P. Factors Contributing Decreased Performance of Slow Learners. *International Journal of Scientific & Technology Research* 2015 Mar;4(3):58-61.
- Gade S, Chari S, Gupta M. Perceived stress among medical students: To identify its sources and coping strategies. *Arch Med Health Sci* 2014;2:80-6.
- Todres M, Tsimitsiou Z, Sidhu K, Stephenson A, Jones R. Medical students' perceptions of the factors influencing their academic performance: an exploratory interview study with high-achieving and re-sitting medical students. *Med Teach.* 2012;34(5):325-31.
- Kusurkar RA, Croiset G, Ten Cate TJ. Twelve tips to stimulate intrinsic motivation in students through autonomy-supportive classroom teaching derived from self-determination theory. *Med Teach.* 2011;33(12):978-82.
- Nye BA, Hedges LV, Konstantopoulos S. Do low-achieving students benefit more from small classes? Evidence from the Tennessee Class Size Experiment. *Educational Evaluation and Policy Analysis* 2002;24:201-17.
- Meinel FG, Dimitriadis K, von der Borch P, Stormann S, Niedermaier S, Fischer MR. More mentoring needed? A cross-sectional study of mentoring programs for medical students in Germany. *BMC Med Educ* 2011 Sep 24;11(1):68.
- Ryan RM., Deci EL. Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology* 2000;25:54–67.
- Ryan RM., Deci EL. Self-determination theory and facilitation of intrinsic motivation, social development and well-being. *American Psychologist* 2000;55(1):68–78.
- Reeve J, Deci EL, Ryan RM. Self-determination theory: A dialectical framework for understanding the socio-cultural influences on student motivation. In D. McInerney & S. Van Etten (Eds.), *Research on sociocultural influences on motivation and learning: Big theories revisited* 2004;4:31-59. Greenwich, CT: Information Age Press.
- Roff S, Mcaleer S, Harden RM, Al-Qahtani M, Ahmed AU, Deza H, Groenen G, Primaparyon P. Development and Validation of the Dundee Ready Education Environment Measure (DREEM). *Medical Teacher* 1997;1:295–99.
- Youssef SB. The Dundee ready educational environment measure: A confirmatory factor analysis in a sample of Malaysian medical students. *Int J Humanities Social Sci.* 2012;2(16):313–321.
- Nakanjako D, Byakika-Kibwika P, Kintu K, Aizire J, Nakwagala F, Luzige S, Namisi C, Mayanja-Kizza H, Kanya MR. Mentorship needs at academic institutions in resource-limited settings: a survey at Makerere University college of Health Sciences. *BMC Med Educ,* 2011 Jul;29:11:53.
- Frei E, Stamm M, Buddeberg-Fischer B. Mentoring programs for medical students - a review of the PubMed literature 2000-2008. *BMC Med Educ.* 2010 Apr 30;10:32.
- Hauer KE, Teherani A, Dechet A, Aagaard EM: Medical students' perceptions of mentoring: a focus-group analysis. *Med Teach* 2005;27(8):732-34.
- Boggiano AK, Flink C, Shields A, Seelbach A, Barrett M. Use of techniques promoting students' self-determination: Effects on students' analytic problem-solving skills. *Motivation and Emotion* 1993;17(4):319–36.