ORIGINAL ARTICLE

Association of Student's Intrinsic Motivation and Autonomous Support of Teachers on Academic Performance of Dental Undergraduates of Karachi

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ABSTRACT

Objective: To assess the impact of teacher's autonomous support on student's academic performance among dental undergraduates of Bahria University Medical and Dental College (BUMDC), and to find out the influence of intrinsic motivation (self-determination theory) on academic performance of dental undergraduates of BUMDC.

Methodology: It was a cross sectional study conducted among dental undergraduates of BUMDC. Total sampling technique was used in this study. Out of total 200 dental students in all four years of BDS, 185 questionnaires were completely filled in all aspects and therefore included for data analysis.

Results: The final calculated scores of two sub-scales of the Learning Self-Regulation Questionnaire (SRQ-L, autonomous motivation and controlled motivation) had an average mean of 5.1 and 3.95. The average of the Learning Climate Questionnaire (LCQ) for tutor autonomy support was 4.51. The average academic performance score was 74.1%. More than half of the respondents (60%) were autonomously motivated. Students' autonomous support and perception towards tutors' autonomy support was (5.1 and 4.51 out of 7 scoring) respectively.

Conclusion: It was concluded from this study that the intrinsic motivation of dental undergraduate has direct association on strong academic performance of learners. On the other hand, teachers' autonomous support has an inverse relationship over academic performance of dental undergraduates.

Keywords: Academic performance, Autonomous motivation, Autonomy support, Self-determination theory

INTRODUCTION:

Learning is a unique process of acquiring knowledge and experience to master great skills and ability to make a difference in the world. Efficient learning results from using systematic, structured and well planned study techniques to the best of one's ability. Also one's curiosity in the subject plays a significant role in determining the academic results[1]. Considerable changes for last few years in the medical education curricula has affected the ways of learning including theoretical and practical understanding of the subject, assessing and imparting quality education and the adroitness required from the doctors[2,3]. In both the medical and non-medical fields, motivational theory has been modified from quantitative to qualitative education, hence, self-determination theory (SDT) explains an educational model that infers to the importance of quality over quantity and emphasizes that teachers' autonomy support and learning environment play a crucial role in enhancing one's self determination and motivation[4,5,6]. Medical students face a lot of challenges while studying various subjects at a time and memorizing all the facts and figures including aetiology, pathophysiology of a disease, investigations and the best quality treatment that can be provided to the patients and yet retaining everything to the best of their abilities[7]. Therefore self-motivation theory accentuates a healthy relationship between teachers and students. Autonomous motivation is known as intrinsic motivation and plays a crucial role in enhancement of students learning capabilities as teachers are advised to pay more attention to the students with poor learning skills and low self-motivation[8,9,10].

Self-determination theory (SDT) was first looked in to by Reeve et al and has since become a topic of increasing interest over the years; it helps to explore and elucidate various types of motivation based on qualities of which other motivation theories are incompetent of clarifying[11]. SDT is the integration of autonomy, competence and relatedness that promotes positive school functioning and cross-culturally nurtures psychological needs of learner[11]. Autonomy can be defined as the ability to make choices according to one's own free will and assume that autonomous-supportive social contexts tend to facilitate self-determined motivation, healthy development and optimum performance. Competence is the ability of an individual to do a job the correct way. A competency is a set of defined behaviours that provide an organized guide enabling the identification, assessment and development of the behaviour in individuals. It

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generally refers to perception of cognition in wide academic areas, such as how good a student is in general. Relatedness is the need to develop close and secure contact with others; when related, students feel emotionally connected to and interpersonally involved in cordial, compassionate relationships[12].

Enormous literature demonstrated that in order to be effective, sufficient contribution is needed from both students' autonomous motivation and teachers' autonomous support to achieve excellence academic performance[11]. According to Richardson; pupils who were taught by conventional/traditional methods performed well in tests comprising of definitions and learned concepts but scored poorly in tests concerning creation and innovation[13].

SDT in a social context entails the relation between students and teachers which markedly contributes in modification of controlled motivation to autonomous motivation or vice versa during the learning activity. This depends on how much independent support is given by the teachers to the students. Nonetheless, teachers are advisable to give autonomy, support and structure at the same time for those students who need improvement in self-regulated learning skills[9,13]. Teachers impose structure in place to aid students engage in learning and become competent[14]. Structure is defined as teachers' advice to their students on students' behaviour. For example; students with poor self-regulated learning skills, teachers are advised to give help in forms of communicating clear goals or prospect, self-regulated learning strategies and regularly evaluating students' progress. The structure will amend students' self-regulated learning skills and autonomous support will inspire students to stay consistent during the study[14].

According to literature, there were some studies conducted on SDT focusing on medical undergraduates but no study had been so far conducted on dental undergraduates. This was the first study conducted in this domain of SDT in Pakistan among dental undergraduates.

It was hypothesized that there is an impact of self-motivation/intrinsic motivation (locus of control, self-efficacy, interest in subject) on academic performance of learner. It was also assumed that teachers' autonomous support has the association with the student's academic performance.

METHODOLOGY:

This cross sectional study was conducted after approval from the institutional Ethical Review Committee (numbered 32/17) among dental undergraduates of BUMDC. The participants were between 18 to 26 years of age. By total sampling technique, 200 questionnaires were distributed among all four years of dental undergraduates, from which 185 participants consented and filled the questionnaires completely and were included in the study. The data was collected in January 2017, when students were promoted to next professional year after their final professional examination. The questionnaires were explained prior to conduction of the study to all the participants and rationale was also given. Data was collected by using two types of validated questionnaires: Learning Self-Regulation Questionnaire (SRQ-L) and Learning Climate Questionnaire (LCQ). SRQ-L is a 12-item questionnaire to measure students' motivation having two sub-scales: autonomous regulation (7-item; $\alpha= 0.80$) and Controlled Regulation (5-item, $\alpha= 0.75$). For Tutor's Autonomy Support, LCQ was used to assess autonomous support from teachers. It was six item questionnaire. Participants indicated their disagreement or agreement with each statement on a 7-point likert scale from 1 (not true at all) to 7 (very true). The sub-scale score was obtained by averaging the total score from the item[15,16]. Hence, the responses that were provided were either controlled (i.e., external motivation or introjected regulation) or autonomous (identified regulation or intrinsic motivation). Student's academic performance was assessed by grades. The students who secured more than 80% in professional examination were considered as A$^+$, students who earned more than 70% were labeled as A grade and students who secured less than 70% were regarded as B grade.

Data was analyzed on SPSS version 23. Descriptive data was calculated by using mean and regression analysis test. Regression Analysis was carried to evaluate the association of tutors' autonomy support towards students' academic achievement. P value less than 0.05 was taken as statistically significant. The collected data was checked for accuracy.

RESULTS:

Out of total 200 questionnaires distributed among all four years of dental undergraduates, 185 questionnaires were eligible to be included in this study. The response rate was 92.5%. From 185 questionnaires 44 (Year-1), 47 (year-2), 47(year-3) and 47 questionnaires from 4th year were included in this study. The final scoring of LCQ was performed by adding mean of every item. The two sub-scales of the LSRQ (autonomous motivation and controlled motivation) had an average mean of 5.1 and 3.95. The average of the LCQ for tutor autonomy support was 4.51. The average academic performance score was 74.1%. More than half respondents (60%) were autonomously motivated. Students' autonomous support and perception towards tutors' autonomy support was 5.1 and 4.51 out of 7 scoring respectively (Table-1).

Table-1: Descriptive Analysis of Self Determination Theory

Variables	N	Mean
Autonomous Motivation	185	5.1
Controlled Motivation	185	3.9
Tutor autonomy Support	185	4.51
Academic Performance	185	74.1

The explicit descriptive analysis of SRQ-L and students' academic performance accepted the research hypothesis. Therefore this study revealed that there was an impact of student's intrinsic motivation on student's academic performance.

Regression Analysis was carried out to evaluate the association of tutors' autonomy support towards students' academic achievement. Regression analysis was performed using academic performance grades in professional summative assessment of dental students. Academic performance was taken as dependent or outcome variable and tutors' autonomy support as independent variables. The analysis revealed that teacher's autonomous support had only 0.019 effect on student's academic performance. Therefore, we failed to accept the research hypothesis as there was no positive association between academic performance of dental undergraduates and teachers autonomous support in this institute (Table-2).

Table-2: Multiple Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.138	0.019	-.014	0.79871

DISCUSSION:
The present study was the first of its kind conducted in Pakistan and in Bahria University Medical and Dental College Karachi, to assess the impact of students' motivation on their academic performance and to assess the relationship between autonomous support of teachers on academic performance of undergraduate dental students. Multiple researches conducted worldwide discovered that students with strong autonomous/intrinsic motivation had a propensity to achieve good grades and indicated that students' desire of learning is directly related to his/her autonomous motivation[4,17]. The response rate of the this study was 92.5%, which was comparatively higher than the study conducted by Halvari et al in 2010[18] and was lower than the study conducted by Feri et al[15]. The observed results of this study divulged that students' intrinsic motivation had an impact over the academic performance of students and these results were indistinguishable with the study conducted among Medical Students of Indonesia in setting of Problem based learning[19]. The primary research hypothesis denoted that the learner's intrinsic motivation was mandatory to excel in academic performance and these findings were consistent with the study conducted by Daniela[19].

It has been evidenced by Feri et al that students with strong autonomous motivation had healthier interpersonal relationship and biopsychosocial value towards patients' health care[15,17]. On the other hand, incongruous results were also stated in ample literatures for example according to Black and Deci[16], there was an absence of direct association between enrichment in student's academic performance and autonomous motivation of students. In this same study, it was proved that improvement in student's academic performance in training of organic chemistry depended on learner's intrinsic motivation[15,17]. Some studies[20,21,22] have proved that allegiance to self-directed learning through deep

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learning approach can improve medical student's academic performance by strong intrinsic autonomous motivation. Other studies also revealed that teacher's autonomous support had a negative impact on learner's academic achievement[22,23] and these findings were consistent with our study results. On the contrary, multiple studies revealed that teacher's autonomous support was fundamental to develop future clinical competence, strong academic performance and well-built interviewing skills among learners[16,17,20,24].

The reasons of why teachers' autonomous support weakened the learner's academic performance in this study was different educational background of all four years of dental undergraduates; they experienced teacher centered learning environment and the learners were not used to with deep learning approach and self-directed learning which had a direct causality with student's intrinsic motivation. The changes in dental education teaching strategies were on initial stages in Bahria University Medical and Dental College, Karachi; though teaching strategies from teacher centered to student centered were highly implemented in all four years of dental under graduate studies, but some difficulties were discovered to accept this changes among first year dental students, via mentoring session, as students of first year completely relied on teachers centered learning in their high school years and were beginner in this educational system. This observation was similar with the first year medical undergraduates and nursing students in a study conducted in Indonesia[25].

The limitation of the study was less sample size, and before implementing Self Determination Theory assessment, orientation of educational background of the learners should have been considered, which was not done in this study. The academic performance could have been evaluated through subject based performance. The strength of this study was use of validated questionnaires as a study tool

CONCLUSION:
It is concluded from this study that the intrinsic motivation of dental undergraduate has direct association on strong academic performance of learners. On the other hand; teachers' autonomous support has an inverse relationship over academic performance of these students. Therefore, it is recommended to revisit the educational strategies implemented in dental curriculum in Pakistan and multicenter study should be conducted for more validated results.

REFERENCES:
1. Seif AA. Learning and study Methods, 3rd edition, Tehran. Seif, AA, (2001) Psychology of learning and teaching, 3rd edition, Tehran
2. Anderson MB, Kanter SL. Medical education in the United States and Canada, 2010. Academic medicine. 2010 Sep 1;85(9):S2-18
3. Ludmerer KM. Creating the system. In: Time to Heal: American Medical Education From the Turn of the Century to the Era of Managed Care. New York, NY: Oxford University Press; 1999:3–25
4. Ryan RM, Deci EL. Intrinsic and extrinsic motivations: Classic definitions and new directions. Contemporary educational psychology. 2000; 25(1):54-67
5. Mann KV. Motivation in medical education: How theory can inform our practice. Academic Medicine. 1999 Mar 1; 74(3):237-9
6. Ten Cate OT, Kusurkar RA, Williams GC. How self-determination theory can assist our understanding of the teaching and learning processes in medical education. AMEE guide No. 59. Medical teacher. 2011 Dec 1; 33(12):961-73
7. Nourian A, Mousavinasab SN, Fehri A, Mohammadzadeh A, Mohammadi J. Evaluation of study skills and habits in medical students. South East Asia Regional Association for Medical Education. 2008; 2(1):61-4
8. Kusurkar RA, Croiset G. Autonomy support for autonomous motivation in medical education. Medical education online. 2015 Jan 1; 20(1):27951
9. Sierens E, Vansteenkiste M, Goossens L, Soenens B, Dochy F. The synergistic relationship of perceived autonomy support and structure in the prediction of self-regulated learning. British Journal of Educational Psychology. 2009;79(1):57-68
10. Vansteenkiste M, Sierens E, Goossens L, Soenens B, Dochy F, Mouratidis A, et al. Identifying configurations of perceived teacher autonomy support and structure: Associations with self-regulated learning, motivation and problem behaviour. Learning and Instruction. 2012 Dec 31; 22(6):431-9
11. Reeve J, Deci EL, Ryan RM. Self-determination theory: A dialectical framework for understanding socio-cultural influences on student motivation. Big theories revisited. 2004; 4:31-60
12. Baumeister RF, Leary MR. The need to belong: desire for interpersonal attachments as a fundamental human motivation. Psychological bulletin. 1995 May;117(3): 497- 529
13. Richardson JT. Mature students in higher education: II. An investigation of approaches to studying and academic performance. Studies in Higher Education. 1995 Jan 1; 20(1):5-17
14. Kusurkar RA, Croiset G, Mann KV, Custers E, Ten Cate O. Have motivation theories guided the development and reform of medical education curricula? A review of the literature. Academic Medicine. 2012; 87(6):735-43
15. Feri R, Soemantri D, Jusuf A. The relationship between autonomous motivation and autonomy support in medical students' academic achievement. International journal of medical education. 2016; 7:417
16. Black AE, Deci EL. The effects of instructors' autonomy support and students' autonomous motivation on learning

organic chemistry: A self-determination theory perspective. Science education. 2000 Nov 1; 84(6):740-56

17. Williams GC, Deci EL. Internalization of biopsychosocial values by medical students: a test of self-determination theory. Journal of personality and social psychology.1996; 70(4):767-79

18. Halvari AE, Halvari H, Bjørnebekk G, Deci EL. Motivation and anxiety for dental treatment: Testing a self-determination theory model of oral self-care behaviour and dental clinic attendance. Motivation and Emotion. 2010; 34(1):15-33

19. Daniela P. The relationship between self-regulation, motivation and performance at secondary school students. Procedia-Social and Behavioral Sciences. 2015;191:25 49-53

20. Sobral DT. What kind of motivation drives medical students' learning quests? Medical education. 2004 Sep 1; 38(9):950-7

21. Kusurkar RA, Ten Cate TJ, Vos CM, Westers P, Croiset G. How motivation affects academic performance: a structural equation modelling analysis. Advances in Health Sciences Education.2013 Mar 1; 18(1):57-69

22. Kusurkar RA, Kruitwagen C, Ten Cate TJ, Croiset G. Effects of age, gender and educational background on strength of motivation for medical school. Advances in Health Science Education, 2010;15: 303–13

23. Williams GC, Wiener MW, Markakis KM, Reeve J, Deci EL. Medical students' motivation for internal medicine. J Gen Intern Med. 1994; 9(6):327-33

24. Levesque C, Zuehlke AN, Stanek LR, Ryan RM. Autonomy and competence in German and American university students: A comparative study based on self-determination theory. Journal of Educational Psychology, 2004;96: 68-84

25. Saha D. Improving Indonesian nursing students' self-directed learning readiness (Doctoral dissertation, Queensland University of Technology).

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