

CHANGES IN THE LEVEL AND FACTORS AFFECTING STUDENTS' MOTIVATION IN THE FIRST 6 MONTHS OF DENTAL EDUCATION AT DENTAL COLLEGES

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ABSTRACT

Objective: To find out the stability of the quality of motivation of first year dental students in the first 6 months at the dental college and to identify the key factors that influence students' motivation during their stay at college.

Study Design: Pre-post comparative design.

Place and Duration of Study: Liaquat College of Medicine and Dentistry and Dr Ishratulibad Dental College from December 2016 to May 2017.

Materials and Methods: Two questionnaires for identifying motivation were sent to 130 dental students of 1st year of both colleges. The first questionnaire was administered in the first month of 1st year dental education and the second questionnaire was administered after 6 months of 1st year dental education to the same students.

Results: Out of 130 dental students only 106 participated in the study. The response rate of the students was 81.5% (106/130), which included 40.5% (43/106) males and 59.4% (63/106) females. There was 40% drop in overall motivation of dental students within 6 months of their dental education. There was 46.9% and 32.1% decline in intrinsic and extrinsic motivation. Motivation of students was increased to 78.5%. Quality of teaching (79.1%), teaching methodology (68.1%) and contents (49.5%) were rated most important factors for students' motivation but were considered only 14.3%, 13.2% and 12.1% respectively at their dental college.

Conclusion: Quality of Teachers, Teaching Methodology and Content which are rated as most important factors by students, turned out to be core reasons for their decline in motivation as per this study.

Keywords: Motivation, Motivating factors, Quality of Motivation.

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INTRODUCTION

Motivation is a driving source of achieving success¹. It is directly proportional to learning-meaning, for learning to take place, motivation is important. It is essential for deep learning, good academic performance and for becoming self-directed learner. In case of medical education these are the main attributes that contribute towards students' becoming better doctors^{2,3}.

There are many theories on motivation; some focus on quality of motivation and others on quantity. Quantity of motivation could be high or low, whereas quality describes whether the source of motivation is internal or external⁴. Studies suggest students choose medicine with different types of motives. These could be

generated internally, like interest in biology or helping people or desire for intellectual challenge and/or from external factors, like desire for monetary rewards, prestige or pressure from parents^{5,6}. However, in case of dentistry, not much is known about the students who opt for it in Pakistan. Be it for external or internal, it requires a great deal of motivation to be able to pursue dental education in Pakistan.

However, literature explains that students' motivation can change with time and experiences with the environment. There can be various factors (quality of teachers/teaching, campus facilities, classroom and lab facilities, peer support, subjects taught and content of study etc). that can effect students' motivation either positively or negatively. According to studies, one of the most serious challenges that dental educators face today is improving the learning environment so that the level of student

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motivation is improved. Dental students come from diversified cultures, experiences, personalities and learning preferences and styles. Thus educators should adopt different teaching strategies and provide conducive learning environment to students to improve or maintain the level of motivation⁷.

There are also numerous studies on the motivations of students in entering medical education where most studies have explored the relationship between motivation and academic results but very little is known about what happens to their motivation over a period of time of dental students. Does academic motivation remain consistent over time and across distinct situations of the undergraduate training or does it get better or worse^{8,9}? Many authors have recommended finding out whether motivational profiles remain stable during study or change according to the learning environment and experience.

Therefore, the purpose of this study was to find out the stability of the quality of motivation of first year dental students in their first 6 months at the dental college and to identify the key factors that influence students' motivation during their stay at college. The knowledge of these factors influencing motivation could provide educators with concrete means to enhance motivation of their students at their colleges.

MATERIALS AND METHODS

We conducted a pre- and post comparative design. Data was collected from 1st year dental students of two selected dental colleges Liaquat College of Medicine and Dentistry and Dr Ishratulibad Dental College using non probability convenience sampling from Dec 2016 to May 2017 after taking approval from Ethical Review Committee. Written informed consent was also taken from all the participants. The sample size was calculated with WHO sample size calculator. By considering the values of confidence level as 95%, anticipation probability proportion 0.5 and absolute precision required as 0.1, sample size of 97 was calculated. Considering rate of 75% the

questionnaire was distributed to 130 students. However, duly completed questionnaire was filled by 106 students. The first questionnaire was administered in the first month of 1st year dental education and the second questionnaire was administered after 6 months of 1st year dental education to the same students. The data was collected through Academic Motivation Scale (AMS). It is the validated and most frequently used instrument to assess academic motivation. It has 20 items rated on a 5 point Likert Scale from 1 (strongly disagree) to 5 (strongly agree).

SPSS version 20 was used for statistical analysis of the data. Mean and standard deviation were calculated for all the items. Frequencies and percentages were determined. Cronbach's Alpha was also calculated for the items to check the reliability of the instrument used.

RESULTS

Out of 130 dental students only 106 participated in the study. The response rate of the students was 81.5% (106/130), which included 40.5% (43/106) males and 59.5% (63/106) females. The mean age for both, males and females, was 20 (the range was 18-30 years). The Cronbach's alpha based on standardized items is 0.879.

The frequency and percentage of the responses of Motivational questionnaire at the start of the study are as below (table-I).

The frequency and percentage of the responses of the Motivational questionnaire at the start of the study are as below (table-II).

In order to understand the increase or decrease in the intrinsic/ extrinsic motivation of first year dental students, we have added the percentage of "Agreed" and "Strongly Agreed" responses for both the questionnaires and observed that there is significant drop in the motivational level of students within 6 months of commencement of their dental education. The median of motivation questionnaire at the start of study was 72 with IQR of 12 whereas after six

months the median and IQR were 58 and 13. The difference between the two medians was statistically significant at *p*-value of <0.001.

The significant drop in the motivation of students as reflected from table-III above can be explained by the question 21 and question 22

Table-I: Responses of Questionnaire at the start of the study (N=106).

Why Did You Choose Dentistry						
S. No	Questions	Strongly Disagree	Disagree	Somewh at Agree	Agree	Strongly Agree
1.	To prove myself that I am capable of completing my school	8 (8.8%)	25 (27.5%)	30 (33.0%)	14 (15.4%)	14 (15.4%)
2.	Because I would like to make a lot of money	0	7 (7.7%)	16 (17.6%)	51 (56.0%)	17 (18.7%)
3.	For the pleasure, I experience when I discover new things	2 (2.2%)	1 (1.1%)	9 (9.9%)	53 (58.2%)	26 (28.6%)
4.	For the pleasure that I experience when I read interesting topics about dentistry	3 (3.3%)	5 (5.5%)	28 (30.8%)	46 (50.5%)	9 (9.9%)
5.	For the pleasure, I experience while surpassing myself in my studies	15 (16.5%)	20 (22.0%)	12 (13.2%)	13 (14.3%)	31 (34.1%)
6.	Honestly, I don't know I really feel that I am wasting my time	54 (59.3%)	29 (31.9%)	2 (2.2%)	0	6 (6.6%)
7.	Because I think that dental education will help me better prepare for the career I have chosen	1 (1.1%)	6 (6.6%)	11 (12.1%)	48 (52.7%)	25 (27.5%)
8.	For the pleasure that I experience when I feel completely absorbed by what certain authors have written.	2 (2.2%)	1 (1.1%)	18 (19.8%)	23 (25.3%)	47 (51.6%)
9.	I wonder whether I should continue	63 (69.2%)	16 (17.6%)	4 (4.4%)	3 (3.3%)	5 (5.5%)
10.	Because I want to be a winner in life	0	6 (6.6%)	16 (17.6%)	43 (47.3%)	26 (28.6%)
11.	Because my studies allow me to continue to learn about many things that interest me.	0	3 (3.3%)	16 (17.6%)	54 (59.3%)	18 (19.8%)
12.	Because school allows me to experience a personal satisfaction in my quest for excellence in my studie.	2 (2.2%)	7 (7.7%)	25 (27.5%)	48 (52.7%)	9 (9.9%)
13.	Because it will enable to enter the job market in a field I like	0	7 (7.7%)	15 (16.5%)	44 (48.4%)	25 (27.5%)
14.	A career in dentistry offers me a stable job	55 (60.4%)	13 (14.3%)	7 (7.7%)	4 (4.4%)	12 (13.2%)
15.	Even if I could hardly maintain my social like, I would still continue dental training	4 (4.4%)	10 (11%)	46 (50.5%)	17 (18.7%)	14 (15.4%)
16.	I wouldn't consider any other profession than becoming a dentist	11 (12.1%)	17 (18.7%)	33 (36.3%)	18 (19.8%)	12 (13.2%)
17.	I would stop studying dentistry if I started scoring low marks and failing tests often	31 (34.1%)	29 (31.9%)	16 (17.6%)	6 (6.6%)	9 (9.9%)
18.	I would quit studying as soon as it became apparent that there were no jobs or resident position after graduation	28 (30.8%)	29 (31.9%)	14 (15.4%)	13 (14.3%)	7 (7.7%)
19.	I would like to become a dentist if that would mean giving priority to my studies over my family	20 (22.0%)	27 (29.7%)	31 (34.1%)	5 (5.5%)	8 (8.8%)
20.	It wouldn't really bother me too much if I could no longer study dentistry	20 (22.0%)	18 (19.8%)	37 (40.7%)	8 (8.8%)	8 (8.8%)

Summary of the table is given in table-III with the mean of percentages:

(reliability 0.72) which specify the variables that students consider important for their motivation and how they rate their college on those

variables. The result of these two questions is presented below in table-IV.

Students were also asked to rate their own

question clearly identifies the reason for the drop in their motivation 6 months into their Dental College Studies. Quality of Teachers which is

Table-II: Responses of questionnaire after 6 months(N=106).

Why Did You Choose Dentistry						
S. No	Questions	Strongly Disagree	Disagree	Somewh at Agree	Agree	Strongly Agree
1.	To prove myself that I am capable of completing my school	8 (8.8%)	7 (7.7%)	26 (28.6%)	29 (31.9%)	21 (23.1%)
2.	Because I would like to make a lot of money	6 (6.6%)	16 (17.6%)	21 (23.1%)	27 (29.7%)	21 (23.1%)
3.	For the pleasure, I experience when I discover new things	4 (4.4%)	7 (7.7%)	42 (46.2%)	16 (17.6%)	22 (24.2%)
4.	For the pleasure that I experience when I read interesting topics about dentistry	3 (3.3%)	15 (16.5%)	37 (40.7%)	22 (24.2%)	14 (15.4%)
5.	For the pleasure, I experience while surpassing myself in my studies	5 (5.5%)	11 (12.1%)	45 (49.5%)	17 (18.7%)	13 (14.3%)
6.	Honestly, I don't know I really feel that I am wasting my time	48 (52.7%)	29 (31.9%)	9 (9.9%)	2 (2.2%)	3 (3.3%)
7.	Because I think that dental education will help me better prepare for the career I have chosen	3 (3.3%)	9 (9.9%)	44 (48.4%)	17 (18.7%)	18 (19.8%)
8.	For the pleasure that I experience when I feel completely absorbed by what certain authors have written.	4 (4.4%)	15 (16.5%)	49 (53.8%)	15 (16.5%)	8 (8.8%)
9.	I wonder whether I should continue	34 (37.4%)	22 (24.2%)	15 (16.5%)	12 (13.2%)	8 (8.8%)
10.	Because I want to be a winner in life	4 (4.4%)	13 (14.3%)	44 (48.4%)	12 (13.2%)	18 (19.8%)
11.	Because my studies allow me to continue to learn about many things that interest me.	5 (5.5%)	6 (6.6%)	41 (45.1%)	21 (23.1%)	18 (19.8%)
12.	Because school allows me to experience a personal satisfaction in my quest for excellence in my studie.	4 (4.4%)	11 (12.1%)	42 (46.2%)	16 (17.6%)	18 (19.8%)
13.	Because it will enable to enter the job market in a field I like	3 (3.3%)	6 (6.6%)	41 (45.1%)	32 (35.2%)	9 (9.9%)
14.	A career in dentistry offers me a stable job	4 (4.4%)	13 (14.3%)	37 (40.7%)	23 (25.3%)	14 (15.4%)
15.	Even if I could hardly maintain my social like, I would still continue dental training	4 (4.4%)	10 (11%)	46 (50.5%)	17 (18.7%)	14 (15.4%)
16.	I wouldn't consider any other profession than becoming a dentist	11 (12.1%)	17 (18.7%)	33 (36.3%)	18 (19.8%)	12 (13.2%)
17.	I would stop studying dentistry if I started scoring low marks and failing tests often	31 (34.1%)	29 (31.9%)	16 (17.6%)	6 (6.6%)	9 (9.9%)
18.	I would quit studying as soon as it became apparent that there were no jobs or resident position after graduation	28 (30.8%)	29 (31.9%)	14 (15.4%)	13 (14.3%)	7 (7.7%)
19.	I would like to become a dentist if that would mean giving priority to my studies over my family	20 (22.0%)	27 (29.7%)	31 (34.1%)	5 (5.5%)	8 (8.8%)
20.	It wouldn't really bother me too much if I could no longer study dentistry	20 (22.0%)	18 (19.8%)	37 (40.7%)	8 (8.8%)	8 (8.8%)

college on the variables that they consider important their motivation in the second part of this study in question 22. The response to this

considered the most important factor by students, only 14.3% students consider this to be Very Good at their college. Similarly, only 13.2% and

12.1% students consider Teaching Style and Content to be very good at their college.

DISCUSSION

Our study shows that motivation level of 1st year dental students significantly dropped within 6 months of their dental education. Quality of

students, turned out to be core reasons for their decline in motivation as per this study.

Some other studies conducted in past on similar subject showed mixed results. Some of these are presented below for reference.

Table-III: Frequency of students with intrinsic motivation, extrinsic motivation and amotivation at start of study and after six months (N=106).

	At start of study	After 6 months	Percentage change
Overall Motivation (Intrinsic + Extrinsic)	735	441	40% decrease
Intrinsic Motivation	377	200	46.9% decrease
Extrinsic Motivation	358	241	32.1% decrease
Amotivation	14	25	78.5% Increased

Table-IV: Motivation factors and their importance rated by the students(N=106).

How important following factors are to make your dental studies interesting

S. No.	Questions	Important	Very important	Doesn't matter
1	Quality of teacher (e.g. teacher attitude)	17 (18.7%)	72 (79.1%)	2 (2.2%)
2	Teaching methodology	25 (27.5%)	62 (68.1%)	4 (4.4%)
3	Classroom (e.g. air conditioning, comfortable seating, a/v aids)	49 (53.8%)	38 (41.8%)	4 (4.4%)
4	Laboratory (e.g. practicals)	48 (52.7%)	39 (42.9%)	4 (4.4%)
5	Peers/ Class mates (e.g. supportive, competitive)	46 (50.5%)	37 (40.7%)	8 (8.8%)
6	Subjects/ content (e.g. interesting, relevance, updated)	43 (47.3%)	45 (49.5%)	3 (3.3%)
7	Campus related (e.g. canteen, rest room etc.)	48 (52.7%)	30 (33.0%)	13 (14.3%)
8	Administration related (e.g. cooperative, supportive)	39 (42.9%)	43 (47.3%)	9 (9.9%)

Table-V: Actual rating of motivation factors at colleges by students (N=106).

How do you rate your experience at your college in terms of following

S. No.	Questions	Need improvement	Average	Good	Very good
1	Quality of teacher (e.g. teacher attitude)	11 (12.1%)	37 (40.7%)	30 (33.0%)	13 (14.3%)
2	Teaching style	11 (12.1%)	44 (48.4%)	24 (26.4%)	12 (13.2%)
3	Classroom (e.g. air conditioning, comfortable seating, teaching aids)	17 (18.7%)	35 (38.5%)	30 (33.0%)	9 (9.9%)
4	Lab related (e.g. practicals)	13 (14.3%)	36 (39.6%)	33 (36.3%)	9 (9.9%)
5	Peers/ Class mates (e.g. supportive, competitive)	11 (12.1%)	19 (20.9%)	35 (38.5%)	26 (28.6%)
6	Subjects/ content (e.g. interesting, relevance, updated)	7 (7.7%)	43 (47.3%)	30 (33.0%)	11 (12.1%)
7	Campus related (e.g. canteen, rest room etc.)	31 (34.1%)	33 (36.3%)	18 (19.8%)	9 (9.9%)
8	Administration related (e.g. cooperative, supportive)	26 (28.6%)	40 (44.0%)	18 (19.8%)	7 (7.7%)

Teachers, Teaching Methodology and Content which are rated as most important factors by

Kim and Jang carried out a study called 'changes in medical students' motivation and

self-regulated learning¹⁰. The questionnaire was administered to the same cohort at the beginning of year 1 and 2. On contrary to our result, they reported that motivation of medical students was increased in the year 2. However, it is important to note that this study was conducted on Medical Students and our study has been conducted on Dental Students. Also the time span in this study was 1 year whereas in our study it was 6 months.

Another study was conducted by Mitchell on 'motivational changes in medical students during two year of preclinical curriculum'¹¹. The result showed that over the course of the study, the levels of intrinsic motivation of students fell down.

Orsini and colleagues carried out a study to explore differences in the quality of motivation of dental student transition from preclinical to clinical courses¹². A longitudinal study was conducted with 95 Chilean students who completed the Academic Motivation Scale in two iterations over a one-year period. The result showed that there was a decline in motivation in the preclinical years that was improved in the clinical years of studies. Patient contact and clinical-based learning have been suggested as positive factors of student motivation. Our study on the other hand showed a decline in motivation in the first 6 months. However, it will be interesting to carry out another research on the same set of students when they reach the clinical year of dentistry and see if their motivation increases or not.

According to Yoshida *et al*, there are many factors influencing students' motivation¹³. Bamasa observed similar results; however they observed that the content overload was the main factor for the decline in students' motivation¹⁴. Orsini and colleagues did another study on determinants and outcomes of motivation in health profession education¹⁵. They reported that motivation could be increased by changes in the educational environment and by an early detection of student's characteristics. They reported that educational environment and

incorporation of new teaching and learning strategies can enhance student's motivation. Our study also produced similar results and 'Quality of teaching', 'Content' and 'Teaching Methodology' were highlighted as key reasons for decline in motivation.

Narayanan *et al* conducted a survey for pre-clinical dental students to explore if the performance levels of pre-clinical students are same or changed. Students were asked about the teaching methodology in the college and 85% of them were not happy with the teaching methodology¹⁶.

Mckay did a research to find out how to improve students' motivation. It was found that teachers play an important role to employ a number of strategies to improve students' motivation¹⁷. Taheri and colleagues in their study reported that educational environment is one of the essential factors that influences student motivation¹⁸.

Our study draws our attention to the most critical factors that contribute to students' motivation and the areas where Dental Colleges must focus to not only keep students motivated about their studies but also improve the level of their motivation during their stay at the college. There are very few studies conducted to measure the level of student's motivation over a period of 6 months. This gives us an advantage to detect the falling motivation early on and take corrective measures.

Limitations of the study: One of the limitations of the study is that questionnaire was sent to 2 dental colleges only. Thus the findings have limited generalizability.

RECOMMENDATION

Whereas this study measures the level of students' motivation over a 6 months period, there is a need to conduct another study to measure the level and factors affecting motivation in entire 4 years of study as some studies suggest that student motivation increases during the clinical years.

It is also recommended that level and factors influencing motivation should also be observed among private and public dental colleges to improve dental education across the country.

CONCLUSION

Quality of Teachers, Teaching Methodology and Content which are rated as most important factors by students, turned out to be core reasons for their decline in motivation as per this study.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

REFERENCES

1. Kusurkar RA, Croiset G, Garre FG, Ten Cate O. Validity evidence for the measurement of the strength of motivation for medical school. In: *Adv Health Sci Educ Theory Pract* 2011; 16(2): 183-95.
2. Mann KV. Motivation in medical education. How theory can inform our practice? *Acad Med* 1999; 74: 237-39.
3. Kusurkar RA. Development of motivation theories and how they relate to development of medical education. In: *Motivation in Medical Students* 2012; 37-69.
4. Kusurkar RA, Ten Cate O, VOS CMP, Westers P, Croiset G. How motivation affects academic performance: a structural equation modeling analysis. In: *Adv Health Sci Educ Theory Pract* 2013; 18: 57-69.
5. Kusurkar RA, Croiset G, Garre FG, Ten Cate O. Motivational profiles of medical students: Association with study effort, academic performance and exhaustion. In: *BMC Medical Education* 2013, 13: 87.
6. Maurer T, Allen D, Gatch DB, Shankar P, Sturges D. Determining The Relationship Between Motivation And Academic Outcomes Among Students In The Health Professions. *Int J All Health Sci Pract* 2012; 10: 1.
7. Alhamdan EM, Tulbah HI, AlDuhayan GA and AlBedaiwi LS. Preferences of Dental Students towards teaching strategies in two major dental colleges in Riyadh. In: *Edu Res Int* 2016; 16: 8.
8. Kusurkar RA, Croiset G, Garre FG, Ten Cate O. Validity evidence for the measurement of the strength of motivation for medical school. In: *Adv Health Sci Educ Theory Pract* 2011; 16(2): 183-95.
9. Sobral DT. What kind of motivation drives medical students learning quests? *Medical Education* 2004; 38: 950-57.
10. Kim KJ, Jang JW. Changes in medical students' motivation and self-regulated learning: a preliminary study. In: *Int J Med Educ* 2015; 6: 213-15.
11. Mitchell, Clinton. Motivation Changes in Medical Students during Two Years of the Preclinical Curriculum. Online [2015]. Available from: <https://researchspace.auckland.ac.nz/handle/2292/25005>
12. Orsini C, Vivian I, Fuentes F, Lezdema P, Jerez O. Implications of motivation differences in preclinical-clinical transition of dental students: A one-year follow-up study. In: *Educacion Medica* 2016; 17: 193-96.
13. Yoshida M, Tanaka M, Mizuno K. Factors influencing the academic motivation of individual college students. In: *Int J Neurosci* 2008; 1: 10.
14. Bamosa AO, Ali BA. Factors affecting students motivation: Perception of pre clinical students in the college of medicine, king faisal university, Dammam, Saudi Arabia. In: *J Fam Comm Med* 2000; 7: 1.
15. Orsini C, Binnie VI, Wilson SL. Determinants and outcomes of motivation in health professions education: a systematic review based on self-determination theory. In: *J Educ Eval Health Prof* 2016; 13: 19.
16. Narayanan A, Sarpangala M, Aboobacker S, Pedikayil F, Bhat Ak. Dentistry: By choice or chance? A questionnaire survey for Pre clinical dental students. In: *J Res Dent* 2014; 2.
17. Mckay S, Using New Research to Improve Student Motivation. [Online]. Available from: <https://www.carnegiefoundation.org/blog/using-new-research-to-improve-student-motivation/>
18. Taheri M, Nasiri E, Moaddab, Nayebi N. Strategies to improve students' educational achievement motivation at Gulian Univeristy of Medical Sciences. *Res Dev Med Educ* 2015; 4(2): 133-39.