ORIGINAL ARTICLE

Analysis of Undergraduate Dental Students' Self-Assessment and Faculty Assessment of Students' Structured Seminar Presentation in Clinical Oral Medicine

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ABSTRACT

Introduction: Continuing Education skills will be accomplished when the student is able to direct their own learning needs, by exposing themselves to the art of unswerving assessment of their own learning methods. The aim of this study was to investigate whether self-assessment of student led seminar presentation in a clinical oral medicine topic by undergraduate dental students could be related with faculty assessment. **Methods:** This cross-sectional study was done among year four undergraduate dental students. The students and the faculty assessed the student`s seminar presentation based on structured rubrics, that were analysed and discussed together. **Results:** The paired differences with regards to both the assessments were analysed, the p- value was less than 0.05, suggesting that there was significant difference in the marks between student`s and faculty`s assessments and that the students gave more grades to themselves when compared with the faculty. There was no statistical difference in assessment among male and female students. There was considerable difference between the two assessment mean scores among the low achiever group of students. **Conclusion:** Dental students generally overrated themselves and there was a definite gap between faculty and student assessment which could be bridged through organised and thoughtful training.
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INTRODUCTION

Dentistry is a dynamic profession and service. Dentists must be life-long learners and service minded individuals who maintain professionalism and should be embedded with competency that lasts long even after their formal education. They must be able to understand their own learning needs, upskill themselves and thus close the identified gaps in their knowledge and practice. To successively achieve this, dental professionals must be able to self-regulate or self- direct. Self- directed learning is, 'selff created thoughts, feelings and actions that are planned and regularly adapted to the accomplishment of personal goals (1). Ability to self-direct depends on the ability to self-assess and accurately identify areas of improvement.

It is imperative to recognize the possible positive roles that self-assessment may play both in learning and development of professional competence (2). Now the goal of dental education is changing, where the focus is not just about inducing knowledge to the students within their domains of study, but also to train them with transferable skills for successful and organized professional life (3). Academicians should now focus to develop student`s abilities to self-assess and evaluate their own work in such a way that they can apply the same in their future profession. Self-assessment is truly essential for effective learning and is a critical tool for learning beyond university education (4,5). One of the essential characteristics of effective learners is that they have a genuine sense of their own strengths and weaknesses, and that they can use the familiarity of their own accomplishments to direct their studying into creative directions. This will considerably improve student`s metacognitive skills. Self-assessment is an important component of critical thinking at a higher cognitive order to improve self-directed learning. Self-assessment has been correlated with steps towards developing greater student autonomy and accountability in learning, particularly self-directed learning, which is an important domain in undergraduate dental curriculum design and delivery.

Many studies reported the use of self-assessment in the undergraduate and postgraduate dental programs in various subjects such as dental anatomy (6);

prosthodontics (7,8), and geriatric dentistry (9). Most of the studies concluded that dental students lack the ability to perform a precise self-assessment (10,11), and this finding was also similar in medical education research (12,13). According to Satheesh et al. (14), though several attempts have been made to improve students' self-assessment accuracy; there were no significant improvement over time. Fitzgerald quoted that self-assessment may be a constant feature that matures during childhood but stops improving by the time students reach medical school (15).

The specific objective of this study was to investigate whether self-assessment of student led seminar presentation by undergraduate dental students could be related with faculty assessment of the same seminar presentation. The other objectives include analysis of the student`s presentation skills, scientific depth, speaking ability and their skill to handle question and answer sessions. Also, evaluation of the differences among male and female students was done. The null hypothesis was that there would be no significant difference in self-assessment markers in comparison with faculty assessment.

MATERIALS AND METHODS

This study was granted ethical approval in December 2021 by Lincoln University College, Selangor, Malaysia (Ethical reference number: LUC/Ethical/LoP/MY/SP/008). Participation in this study was voluntary and confidential. This cross-sectional study was conducted among year four undergraduate dental students in Faculty of Dentistry, Lincoln University College during December 2021 to April 2022. All the twenty-two, year 4 DDS students were included, in this study as we intend to analyse all the student`s self-assessment report and compare with the faculty`s analysis. One student was excluded as the student did not submit the self-assessment report. This student`s data was excluded because it will impart a bias in student`s self- assessment analysis, which wqs the main variable analysed in this study. The participating students age range was from 22 to 25; number of male and female students were 5 and 17 respectively.

The students were earlier, in the beginning of their academic year briefed about their academic schedule, course and topic learning outcomes and assessment patterns. The seminar presentation topic related to clinical oral medicine, that was assigned to the students was taught to them through lectures and clinical sessions by an experienced lecturer. The importance of that seminar topic for an undergraduate dental student was clearly outlined. The students were divided into groups and were instructed to collaborate and discuss among themselves and present the entire topic in 2 sessions of one hour each. The seminar was scheduled 2 weeks after the lecture. The grading pattern and the rubrics of the seminar was also elaborated and discussed with the students with pivotal inputs from them added to the rubrics. This pattern of assessment was a very sample-specific study and may not be applicable to the population of all dental students. The importance of self- assessment was explained to all the students after the lecture session. The self- assessment form was discussed with all the students and the contents were elaborated in detail and given to them. The students were asked to manually submit the self-assessment paper as a handwritten note with all the contents as outlined earlier with advice regarding any special comments or remarks to be written by the students, to enable them to qualitatively assess their own presentation. This was done to ensure that the students were well prepared for the seminar as well as know the importance of self-assessment. The lecturer was always available for guidance regarding seminar presentation and assessment patterns. All the students presented and participated in the seminar presentation sessions. The students were aware that the lecturer will also assess their seminar presentation, based on the same criteria as their self-assessment. The rubrics was designed in such a way that more importance was given to social skills and presentation skills rather than to subject knowledge. The validation of the rubric was performed by two trained expert academician and was approved by the academic head. Faculty assessment was done by a single faculty to minimise bias in scoring, and it was done during and a few minutes immediately after the seminar presentation. The seminar assessment rubric is presented in Table I. The students were asked to submit their self-assessment report within two days after their seminar presentation. The scores were totalled individually under each category and summed up together and statistically analysed.

The data obtained were computed and analysed in MS Excel 365 and SPSS v16. p value less than 0.05 was considered as statistically significant. For the normally distributed data, paired t-test and independent t-test was done. For the data that was not distributed normally, Wilcoxon signed- rank test and Mann-Whitney U test were done. A total of 21 students were assessed. The parameters analysed were presentation skills, scientific depth, speaking ability and question and answer sessions. The total marks allotted was 90.

RESULTS

Student and faculty assessment

Table II depicts the descriptive statistics of student`s self-assessment and faculty assessment as a function of the four parameters and the total score. When the paired differences among all the four parameters with regards to both the assessments were analysed, the sig (2-tailed) p- value was very less than 0.05, suggesting that there was significant difference in the marks between student`s and faculty`s assessments (Table III). This denoted that the students gave more grades to themselves when

Table I: Seminar Assessment Rubric

Category 1: Presentation						
Domain	1- Weak Performance	2- Below average	3-Average	4- Good	5- Exceptional	Remarks/ Notes
Clear						
Bold and confident						
Time						
Eye contact						
References						
Flow						
Organization						
Visual aids						
Category 2: Scientific depth						
Domain	1- Weak Performance	2- Below average	3-Average	4- Good	5- Exceptional	Remarks/ Notes
Knowledge						
Extra information						
Reference from recent journal						
Quality of materials used						
Category 3: Speaking ability						
Domain	1- Weak Performance	2- Below average	3-Average	4- Good	5- Exceptional	Remarks/ Notes
Clarity						
Interaction with audience						
Rate of delivery						
Enthusiasm and expressiveness						
Category 4: Q & A session						
	1- Weak Performance	2- Below average	3-Average	4- Good	5- Exceptional	Remarks/ Notes
Questions handled and answered appropriately during presentation						
Questions asked to peer during their presentation						

Performance indicating score
1. Weak performance: Significantly below performance standards; Unacceptable performance; There are serious weak points in the seminar presentation
2- Below average: Barely achieves performance standards; Sometimes misses expectations; Noticeable important weaknesses observed
3. Average: Usually meets expectations; Achieves performance standards; The quality is not adequate; More scope for improvement
4- Good: Often exceeds expectations; Exceeds performance standards; Successfully accomplished the tasks; There are minor, unimportant weak points.
5- Exceptional: Always exceeds expectations; Significantly exceeds performance standards; Student effectively accomplishes the requirement of the given criteria for presentation. No weak points observed.

Table II: Descriptive statistics of student`s self-assessment and faculty assessment as a function of the four parameters and the total scores

Parameters	Student`s self-assessment		Faculty assessment	
	Mean	± Standard deviation	Mean	± Standard deviation
Presentation	32.90	3.872	26.81	4.297
Scientific depth	15.52	1.806	12.33	1.798
Speaking ability	16.19	2.522	13.57	2.111
Question & Answer	6.43	1.502	4.76	1.044
			Mean	± Std. Deviation
Self-assessment total- 90 ; Minimum- 50; Maximum- 83			71.05	7.902
Faculty assessment total- 90 ; Minimum- 45; Maximum- 72			57.62	7.736

Table III: Paired sample statistics of the difference in student`s and faculty`s assessment

Parameters	Mean	Standard deviation	Sig (2-tailed)
Presentation	6.095	4.346	.000
Scientific depth	3.190	2.358	.000
Speaking ability	2.619	1.987	.000
Question and Answer	1.667	1.461	.000

compared with the faculty. The graph (Figure 1) clearly depicts the difference between the mean of faculty and student's self-assessment in all the four parameters.

Differences among male and female student`s assessment

A total of 16 female students and 5 male students marks were computed for detection of mean and standard deviation (Table IV), the p value was greater than 0.05 and thus the difference in assessment among male and female students were not considered to be statistically significant.

Difference in assessment patterns among high, average, and low achievers

Students were grouped based on their performance in the previous year summative assessments as high scorers/ achievers (70% and above) average achievers

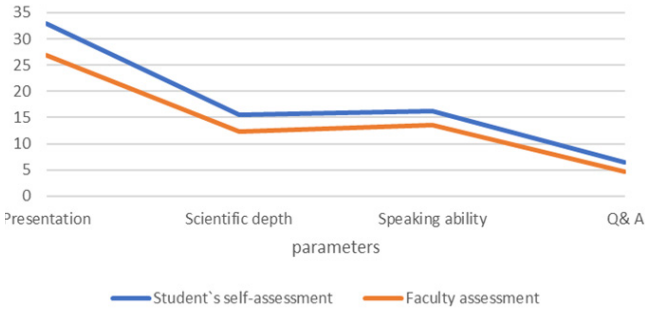

Figure 1: Graphical representation of the differences of the mean. The mean of student`s self-assessment and Faculty`s assessment by the four parameters-presentation, scientific depth, speaking ability and question and answer session.

Table IV: Computation of Mean and standard deviation among male and female student`s total assessment marks

	Sex	N	Mean	Std. Dev ±
Self-assessment total- 90	M	5	69.4	12.137
	F	16	71.56	6.542
FA total- 90	M	5	52.8	5.495
	F	16	59.13	7.848

(60 to 70 %) and low achievers (less than 60 %). Table V depicts the difference among the students grouped based on their academic grades. It was noted that although the p-value was less than 0.05 among all the groups, the difference was highly significant among the low achiever groups. Figure 2 clearly illustrates the differences in the mean scores of students and faculty assessment among the different student achiever groups. There was considerable difference between the two assessment mean scores among the low achiever group of students.

Table V: Difference in assessment patterns among high, average, and low achievers

Students	Mean	Std. Deviation ±	Sig. (2-tailed)
High achievers	7.000	3.391	.010
Average achievers	13.200	4.817	.004
Low achievers	16.273	9.655	.000

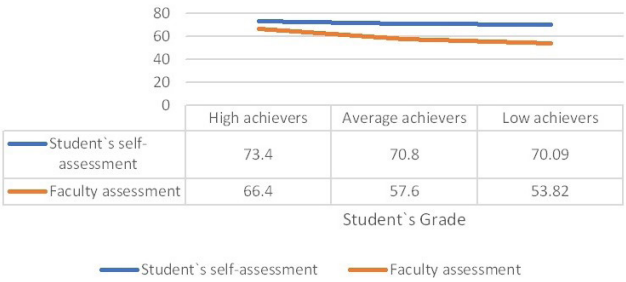

Figure 2: Comparison of mean student and faculty assessment score among different student achiever group. Student`s self and faculty`s assessment was compared among different student achiever groups- High, average, and low achievers.

DISCUSSION

The goal of self-assessment in dental education must not only focus on students assessing their capacity to acquire content knowledge but also focus on the students' ability to make judgements about their own learning process including the act of self-observing their learning progress, identifying strengths and weaknesses, and adapting learning from the experience and feedback given by teachers and peers. This study evaluates the accuracy of student`s self-assessment with that of faculty`s assessment of the same learning method and by using the same evaluation criteria.

Descriptive statistics (means and standard deviations) of students' self- and faculty assessment scores were computed. Correlational analyses were performed to examine the inter-relationships between students' self and faculty assessments. Correlations were also calculated for the scores of students grouped into low-achieving, average and high-achieving students, based on previous year performances.

It was observed in this study that the students comparatively graded themselves more than the faculty, so the null hypothesis was rejected. The students would have assessed their performance based on recollection and self-confidence; that exceeds their expectations. There are no study designs evaluating the student self-assessment on their seminar presentation in clinical oral medicine to correlate our results; however, previous studies by Tuncer D et al (16) and Curtis DA et al (17), demonstrated that students tend to grade themselves higher on self-assessment in other areas of dentistry. The higher assessment of the students in this study would have been due to their perception that their marks could be used to influence their lecturer`s impressions of their performance and that their marks might be used by the faculty to grade their final summative marks. Brown & Harris (18) emphasised that students will rely on irrelevant subjective criteria, rather than intended criteria in judging the quality of their performance resulting in lower accuracy in self-evaluations. In a focus-group study, Lew, and Schmidt (19) compared teachers' and students' perceptions of the use of self-assessment. Their results suggested that though both teachers and students understood the purposes of self-assessment their perceptions of its actual use differed. Teachers generally believed that self-reflection helped students to become better learners. By contrast, students could not appreciate self-assessment as a valuable tool. Boud and Falchikov (2) suggested that self-assessment may be more suited for formative type rather than summative type evaluations. In our study the faculty gave feedback to the students regarding their performance in their seminar presentation. Providing feedback to students who misjudge their performance is challenging and this is particularly difficult with lower performing students who tend to overestimate their achievements, as experienced in our study.

There were no differences in the corelation between self and faculty assessment among male and female students in this study. This could be attributed to a significantly smaller number of male students. Studies by Hadid S (20) and Haist SA (21) revealed that students' sex did not affect self-evaluation, while researchers Vivekananda et al (22), Lind DS et al (23) and Rees C (24) advocated that female students tend to underestimate their scores compared with their male counterparts.

Students who performed well in their third-year exams had relatively not graded themselves too higher for their self-assessment done in the beginning of their fourth year of the course. On the contrary, students who were low achievers graded themselves much higher than the

faculty assessment. The students were grouped into high, average, and low achievers based on their previous year exam performance, only after the completion of their year four seminar presentation and its assessments. Hence, there was no scope for bias in faculty assessment and the difference among the faculty assessment and student self-assessment gap among the different student groups based on their achievement was an incidental finding of the study which was not previously stated in the objective list of this study. This clearly emphasise that students who were academically strong, do not overrate themselves to a greater extent and they understand the importance of self-assessments. The gap in faculty and student assessment mean scores among high, average, and low achievers were 7, 13.2 and 16.27 respectively.

The reason for the considerably high gap in average achievers could be attributed to the fact that these students were more confident, and they find it hard to accept the reality. Probably the low achievers overrated themselves assuming that their self-assessment scores might directly influence the faculty assessment scores and their continuous assessment marks. It is logical to argue that students deemed as being more competent academically are inclined to self-assess more accurately as they could identify their own learning strengths and weaknesses. Another explanation for poor accuracy of scores could be because of the difference in the perception among students regarding self-assessment as some students take it seriously while others do not. This would have resulted on weak to moderate accuracy of these judgements.

The weaknesses of this study are single institution analysis, small sample size, and that the outcome analysis of the student`s performance was not done. The strengths of the study include- clearly defined and specific short task of seminar presentation of a topic in clinical oral medicine, explicit assessment criteria that was discussed and finalised with students and post assessment feedback given to the students. Dental students should be trained to be competent good self-assessors and they must understand its importance during the beginning of the course itself.

CONCLUSION

This study has offered some evidence to support that students generally overrate themselves and there is a definite gap between faculty and student assessment which could be bridged through systematic and deliberate training. Future longitudinal study, using a larger sample size to investigate how self- assessment affects self- directed learning is necessary to achieve this. Moving forward to achieve our long-term vision, formal integration of self-assessment into the curriculum is advocated. This can provide structured opportunities to students for reflection on their performance and amplifies their ability to recognise the importance of the feedback given by lecturers, and thereby students skills in self-regulated learning are increased. In conclusion, though student`s self-assessment could not be used as an assessment tool, it is highly suggested to be used as a self- regulatory tool for students.

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