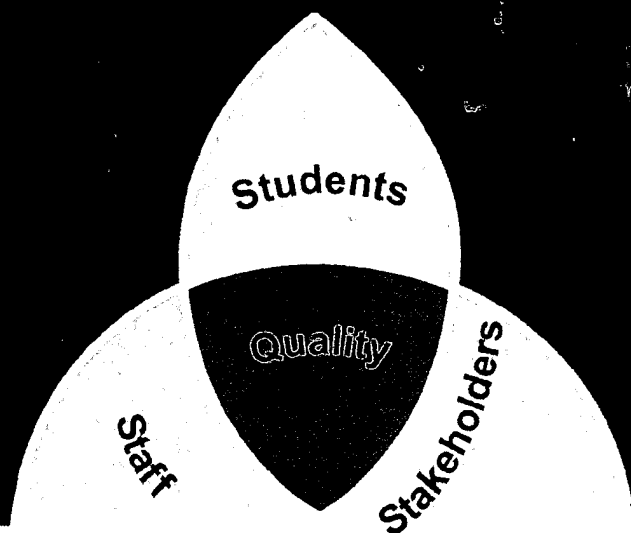




UNIVERSITETI I EVROPES JUGLINDORE
УНИВЕРЗИТЕТ НА ЈУГОИСТОЧНА ЕВРОПА
SOUTH EAST EUROPEAN UNIVERSITY

QUALITY OF ASSESSMENT, QUALIFICATION AND EVALUATION IN HIGHER EDUCATION

Conference Proceedings



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SELF ASSESSMENT OF DENTAL STUDENTS AS A LEARNING MODALITY IN PRE-CLINICAL DENTAL EDUCATION

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Abstract

The goal of dental education is to prepare future clinicians for a general dental practice. The curriculum delivery utilizes learning methodology that includes lectures, pre-clinical laboratories, problem-based learning and clinical internships. The aim of our study was to show whether dental students are able to critically evaluate their work and whether their abilities to self-assess improved over the study. The study examined whether there is a positive correlation between student self-evaluation scores and instructor scores in the second year of Preclinical Cariology and Oral health, courses at the Dental Medicine, Faculty of Medical Sciences, at the University "Goce Delcev", Štip. The results concerning self-evaluation among second year dental students in pre-clinical procedures who rated themselves regularly throughout the course year exhibited some expected outcomes. The Criteria-based Self-Evaluation sheets provided the students with an orderly and systematic approach to evaluating their preclinical work.

Keywords: *dental education, assessment, self-evaluation*

INTRODUCTION

The dental school curriculum places significant emphasis on the acquisition of technical skills resulting in, at the end of dental training, a competent dentist. The goal of dental education is to prepare future clinicians for a general dental practice. The curriculum delivery utilizes learning methodology that includes lectures, working in pre-clinical laboratories, problem-based learning, clinical internships and externships.

“Students become familiar with a didactic approach based on the lectures and the “signing off” of student work.”(Manogue, 1999) To shift from the didactic approach to more of a problem-centred approach involving independent learning, self-assessment and reflection is difficult for students to do.

“Development of these skills is also critical for graduates to be able to manage the changing dental practice environment by being effective life-long learners.” (Winning, 2007) “In particular, they need to be accurate and effective self-assessors and be able to address their learning needs.” (Reap, 2007) “Main goal of professional higher education is to help students develop into practitioners able to reflect critically upon their own professional practice. Students in modern organizations must be able to analyze information’s, to improve their problem-solving skills and communication and to reflect on their own role in the learning process.” (Reap, 2007) Students do not always have the opportunity to reflect on their learning, make connections to basic science information, recall the knowledge that they already have, and employ problem-solving strategies for patients under their care. (Johnson, 2007)

“Undergraduate dental education aims to produce safe, competent and ethical practitioners equipped with the necessary knowledge, skills and behavior’s (attitudes). All of these attributes have to be appropriate to engage in the independent practice of dentistry. All assessment procedures should be adequate in time, meaningful, transparent and appropriate. They should be based upon the learning outcomes of the individual program / course, so that academic and clinical student activity is directed towards those desirable outcomes. All dental schools should be encouraged to clearly present the purposes and processes associated with their assessments so that students and staff are fully informed.” (A.D.E.E., 2010)

“Self-assessment as an educational modality has been used in various health professional programmes as a means to ensure competence.” (Asadoorian and Batty, 2005) “Throughout one’s professional career, health professionals must continually assess to their base knowledge, skills and performance and most importantly, act upon these assessments.”(Gordon, 1992)

“Effective learning that involves two key elements: to understand the given standards and criteria and the ability to accurately judge whether one’s work meets the former. If both of these key elements are fulfilled, only then can evidence support that self-assessment methodology accelerates the learning of novices.” (Boshuizer, 1990)

"Self-assessment is based on two very important underlying principles: self-reflections firstly lead to deeper understanding and collaborative assessment with instructors leads to more accurate self-assessment." (Geissler, 1973)

"Self-assessment has been shown to increase student motivation to learn and shifting of the mindset from "how have I performed to how I can get better". (Epstein and Northrup, 1994) "Students must be trained to critically evaluate their work through self-evaluation. There are noticeable positive correlations between pre-clinical performance and self-evaluation. (Koenigsberg, 1979)

"From an instructor's point of view, discrepancies can serve as an educational diagnosis to problems within the student's abilities to self-assess and of course they can be used in improving the education. (Kunovich, 1988)

The aim of our pilot study was to show whether dental students are able to critically evaluate their work and whether their abilities to self-assess improved over the study.

MATERIAL AND METHOD

The study examined whether there is a positive correlation between student self evaluation scores and instructor scores in the second year of two different courses – Pre-clinical Cariology and Oral Health, courses at the Dental Medicine, Faculty of Medical Sciences, at the University "Goce Delčev", Štip. Total number of thirty six (36) students of Dental Medicine from the fourth semester in the academic year 2013/2014 participated in this study.

Criteria based evaluation forms were created for each of the operative dentistry procedures; preparation, restoration, and finishing with Amalgam procedures. The skills that are assessed for the subject Prophylaxis of oral diseases were learning about the diagnostic methods and therapeutic prophylactic recommendations for the patients. After each exercise or seminar, each student was given a questionnaire that assessed their realization: preparations, restoration, finalizing, diagnostics and prophylaxis. All the above parameters were further analyzed and evaluated by an independent evaluator from the Faculty of Medical Sciences, University Goce Delceva-Štip, mainly by assistants from the group of doctoral students. At the end of each practical examination, students were given ten minutes to complete the Criteria-based self-evaluation form and assign themselves a mark. One faculty member blindly evaluated and assigned a mark for the practical exercises using the same evaluation form without the knowledge of the students' self-evaluation.

The assessment of competencies was realized with attribute evaluating. Marks were awarded on a 1-4 scale based on mark guidelines within the marking rubric (Table 1).

Grade	SKILL LEVEL
4	Excellent or superior result
3	An acceptable or satisfactory result
2	An unacceptable result; significant modifications are required to achieve an acceptable result
1	An unacceptable result; Errors are not correctable by modification; procedure must be redone.

RESULTS

From a total number of 36 students in the practical exercises for the subject Pre-clinical cariology, 24 of them or 61% have self-rated with grade 4, 30% (or 11 students) with acceptable and one student or just 3% of subjects with grade 2. (Tab. 2)

Table 2 - Self-evaluation of students on the subject pre-clinical cariology

Students n=36 competitions	Grade 4	Grade 3	Grade 2	Grade 1
Preparation	24 (67 %)	11 (30 %)	1 (3 %)	/
Restoration				
Polishing				

On the subject Prophylaxis of oral diseases, from 36 students with practical teaching 30 of them (83%) have self-rated with a grade 4 or great knowledge and 17% or 6 students with acceptable. Grades 1 or 2 are not recognized. (tab. 3)

Table 3 - self-assessments of students for the subject Prophylaxis of oral diseases

Students n=36 competitions	Grade 4	Grade 3	Grade 2	Grade 1
Diagnostic methods				
Prophylaxis	30 (83%)	6 (17%)	/	/

The assessment and analysis from the external evaluator for the subject Pre-clinical cariology showed that 22 students or 61% were rated with score 4, 31% or 11 students were rated with acceptable and 3 students or 5.5% with grade 2 (tab. 4).

Table 4 - External evaluation of students for the subject Pre-clinical cariology

Students n=36 competitions	Grade 4	Grade 3	Grade 2	Grade 1
Preparation	22 (61%)	11 (31 %)	3 (8 %)	/
Restoration				
Polishing				

External evaluation of practical teaching subject Prophylaxis of Oral Diseases showed that from a total number of 36 students, 28 of them or 78% were rated with grade 4, 19% of them or 7 students with acceptable and one or 3% of them with grade 2 (Tab. 5)

Table 5 - External evaluation of students subject Prophylaxis of oral diseases

Students n=36	Grade 4	Grade 3	Grade 2	Grade 1
Competitions				
Diagnostic methods Prophylaxis	28 (78%)	7 (19%)	1 (3%)	/

Table 6 - Comparison of self-evaluation and external evaluating for the subject Pre-clinical cariology

Students n=36	Grade 4	Grade 3	Grade 2	Grade 1
Pre-clinical cariology				
Self-evaluation	24 (67%)	11 (31%)	1 (2%)	/
External evaluating	22 (61%)	11 (31%)	3 (8%)	/

Table 7 - Comparison of self-evaluation and external evaluating for the subject Prophylaxis of oral diseases

Students n=36	Grade 4	Grade 3	Grade 2	Grade 1
Prophylaxis of oral diseases				
Self-evaluation	30 (83%)	6 (17%)	/	/
External evaluating	28 (78%)	7 (19%)	1 (3%)	/

The mean evaluation scores for both student self-evaluation and instructor were calculated and are shown in tab. 8.

Table 8- Mean evaluation scores for both student self-evaluation and instructor

QUESTIONNAIRE	Preclinical Cariology		Prophylaxis of oral diseases	
		X=		X=
Excellent or superior result	83.92%	3.19	89.47%	3.47
Acceptable or satisfactory result	82.65%	3.13	91.35%	3.56

A Chi-quadrade test showed no statistically significant difference in self-evaluation and external evaluation, for $p > 0.05$.

The results concerning self-evaluation among second year dental students in pre-clinical procedures who rated themselves regularly throughout the course year exhibited some expected outcomes.

DISCUSSION

The overall responses of the dental students towards the value of self-assessment skill in their dental training were favorable even though the students had not gone through any formal training on how to carry out self-assessment. "(Abdullaha, 2011) "When evaluating the data to determine the relationship of examination scores to self-assessment results, we observed interesting trends that require looking

beyond mean values of each group to carefully consider associations among individual student performance variables.” (Curtis, 2008)

“When reviewing a clinical procedure completed by a student, faculty will identify areas that might be improved. We believe that students who are able to see what the faculty members see and thus recognize both their correct and incorrect actions in completing a clinical procedure may be the students with higher self-assessment scores.” (Eraut, 2000)

“On one hand, we live in a society where mistakes are often perceived as a sign of weakness. Students naturally make mistakes in the process of learning. On the other hand, reflective learning exercises, such as self-assessment, require students to develop skills in recognizing, understanding, and learning from their mistakes.” (Brophy, 2002) “Creating an environment in which students are encouraged to understand that their mistakes are an integral part of the educational process is a challenge, but it could lead to improved self-assessment skills, which the current study suggests could result in improved learning.” (O’Donovan, 2004)

In our study, it was found that students in their self-evaluation indicated that their tasks were performed excellently or acceptably. It refers to both examined subjects-Pre-clinical Cariology and Prophylaxis of oral diseases. 67 % of students from Pre-clinical Cariology and 83% of the students from Prophylaxis of Oral Diseases self-rated their work as excellent. There were no students who assessed their work as unsatisfactory.

The external evaluation found that the majority of students in both subjects, 61 % of those from Pre-clinical Cariology and 78 % from Prophylaxis of Oral Diseases, were rated as excellent. There were no students from the two subjects who assessed the success of their work as unsatisfactory.

Therefore, it is easily noticeable that there was little difference between the self-evaluation and external evaluation made for these two subjects. In the beginning, in the first exercises, the self-evaluation and external evaluation were lower than the results from the same exercise after few months of studying. As time passed, the motivation and skills and competences of students increased, so the evaluation showed grade 4.

“Successful instruction of novice dental learners requires understanding motor skills theory, motor performance, and implicit learning, as well as the schema of stages of learning. For novice students, explicit directions given in small steps and provision of timely and appropriate feedback on performance are techniques that facilitate learning of motor skills. Repetition and continued practice improve performance.” (McDonald and Boud, 2003) “Designing and applying appropriate evaluation instruments may contribute to effective teaching, calibration of faculty, and student learning. Rubrics and rating scales designed with specific criteria related to each step in a preclinical skill performance can be valuable tools for both the learner and the evaluator. Novice students benefit from criteria that are explicit and

meaningful. Further study is needed to assess the impact of nontraditional grading systems for preclinical and clinical courses.”

(Whapp, 2000)

“Dental and dental hygiene programs across the country utilize self-assessment as one of the several components in evaluating pre-clinical and clinical skill development.”

(Biggs, 1982)

“Instructor feedback and reinforcement are critical in helping students advance to the next stage of the learning continuum.”

(Anderson, 2001)

CONCLUSIONS

Self-evaluation is an effective pedagogical activity, and as a methodology should be introduced in dentistry and other medical disciplines. In relation to the consideration of when to start this procedure, we recommend that it be in the 4th semester. This is acceptable especially because pre-clinical subjects in which there is self-evaluation can increase the skills and competencies of students. It can make them even more motivated for further study years and with greater effect in the teaching of different clinical content and subjects.

As a conclusion and recommendation, a system of self-evaluation should be introduced in dentistry in the second year because it enhances teaching, motivation and the competencies of the students so that they develop into ready, willing and successful clinicians.

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