

## Students assessment of the prosthodontics theoretical teaching

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### Abstract

**Introduction:** Student evaluation of teaching is an effective tool for evaluating the quality of teaching. This study aimed to analyze the evaluation of the theoretical prosthodontics teaching by students in dentistry.

**Materials and Methods:** This was a descriptive and cross-sectional study carried out with 103 students in Master 1 and Master 2 of dental surgery. The variables observed included student supervision, lecturing and evaluation of theoretical prosthodontics learning. The Likert scale graduated from 1 to 5 allowed a quantitative assessment. The SPSS® software version 17.0 was used for statistical analysis. The comparison of averages used the Student t-test. The risk of error has been set at 5%.

**Results:** The majority of students (65.1%) felt that the number of teachers was insufficient. The objectives of theoretical teaching were clearly defined for 59.2% of the sample. Concerning the certification evaluation, 66% of them disagreed with the final single formula.

**Conclusion:** Despite its validity and relevance, student evaluation of theoretical teaching has weaknesses that should be controlled in order to improve student training.

**Keywords:** Teaching, Prosthodontics, Students, Assessment, Quality.

### Introduction

The Student Assessment of Teaching is an effective and valid tool for collecting students' assessment of teaching quality. It makes it possible to identify and analyse the strengths and weaknesses of an education in order to gradually make the necessary corrections to improve it. Its practice has become commonplace in Canadian and American universities. In Europe, the implementation of evaluation provisions is timid and difficult.<sup>1,2</sup> In sub-Saharan Africa, approaches supporting the pedagogical development of university teachers should be adopted in line with the global trend to promote performance in higher education. At the Cheikh Anta Diop University in Dakar, the Student Assessment of Teaching process was initiated as part of an overall quality approach.

The objective of this study was to analyse the students' evaluation of the prosthodontics theoretical teaching in the Institute of Odontology and Stomatology of the Faculty of Medicine, Pharmacy and Dentistry of the Cheikh Anta Diop University in Dakar.

### Material and Methods

This was a descriptive and cross-sectional study carried out among volunteers and consenting students enrolled in 2011-2012 in Master 1 and Master 2 in the Institute of Odontology and Stomatology of Cheikh Anta Diop University. The confidentiality and anonymity of the participants were respected. The variables observed included socio-demographic data (age, sex, academic level) and items related to supervision, lecturing and evaluation of theoretical prosthodontics learning during dental studies leading to the state doctorate in dental surgery. The questionnaire used is a synthesis of the sample lecture evaluation questionnaires from a literature review.<sup>3-5</sup> The students concerned had to complete the self-administered questionnaire after receiving the explanations necessary to

understand the various items. The questionnaire was evaluated, corrected and then readjusted for a better understanding at the end of the pre-test carried out on a sample of 10 randomly selected students in Master 2. The Likerts scale<sup>6</sup> graduated from 1 to 5 allowed a quantitative assessment to be made. Each student had to evaluate the items by assigning a score based on the degree of accreditation. The answers were summarized in 3 categories:

1. "Strongly disagree" and "Disagree": Disagree
2. "Neither disagree nor agree": Neutral
3. "Strongly agree" and "Agree": Agree

The quantitative variables were described by the mean and standard deviation. The students' appreciation of prosthodontics theoretical teaching were expressed in number and percentage in an evaluation report. The SPSS® software version 17.0 for Windows was used to perform the statistical analysis. A Principal Component Factor Analysis with Varimax rotation was implemented to evaluate the structure underlying the items. The items in the pedagogical domains were considered relevant to the assessment of theoretical prosthodontics instruction if they had a factor load greater than 0.35. The psychometric qualities of the questionnaire were then analyzed by looking for the internal consistency of the items through a calculation of Cronbach's  $\alpha$  coefficient. This one varies between 0 and 1 and it is all the larger as the items are correlated with each other. An alpha coefficient of 1 would correspond to a redundancy of the items between them in the domain studied. A coefficient of 0 would correspond to an inconsistency between the items. The internal consistency of a domain was good if the coefficient was greater than 0.6. The comparison of age averages by gender used the Student t-test. The significance level has been set at  $p \leq 0.05$ .

**Results**

The students enrolled were 50 in Master 1 and 70 in Master 2. Among the 120 students, 103 had correctly completed the questionnaire, i.e a response rate of 85.8%. The sample consisted of 56 male (54.4%) and 47 female (45.6%), i.e a sex-ratio of 1.2. The average age of the students was  $26.6 \pm 2.2$  years with a maximum of 33 years and a minimum of 23 years. The average age was significantly higher for males than females ( $p = 0.01$ ), with  $27.3 \pm 1.9$  years and  $25.8 \pm 2.3$  years respectively. (Table 1) The response rates were 68% in Master 1 and 98.6% in Master 2. Students in Master 2 represented 66.9% of the sample. Girls accounted for 61.8% in Master 1 and 37.7% in Master 2. (Table 2)

The items selected to evaluate the prosthodontics theoretical teaching had a factor load greater than 0.35. (Table 3) The analysis of the internal coherence of the different items composing the pedagogical domains gave a Cronbach's  $\alpha$  coefficient of 0.64 for the "Lecture course" area with an average of  $3.41 \pm 0.3$ . (Table 4)

The majority of students (65.1%) felt that the number of teachers was insufficient. The objectives of theoretical learning were clearly defined for 59.2% of the sample. 69.9% of students reported that teachers used the video projector to deliver lessons. Regarding the certificative learning assessment, 66% of them disagreed with the final single form and 42.7% agreed with the formula of editorial questions (Table 5).

**Table 1: Age and gender distribution**

Gender	Age (years)				P-value
	Mean	Standard deviation	Minimum	Maximum	
Male (n = 56)	27.3	1.9	23	31	0.01
Female (n = 47)	25.8	2.3	23	33	
Total	26.6	2.2	23	33	

**Table 2: Distribution by gender and academic level**

Gender	Academic Level				Total	
	Master 1		Master 2		n	%
	n	%	n	%		
Male	13	38.2	43	62.3	56	54.4
Female	21	61.8	26	37.7	47	45.6
Total	34	33.1	69	66.9	103	100

**Table 3: Relevance factor analysis of evaluation items**

Pedagogical area	Evaluation Items	Factor load
Student/teacher ratio	The number of teachers is sufficient	0.568
Lecture course	Learning objectives are clearly defined	0.576
	Valuation methods are specified	0.548
	Teachers use the video projector	0.397
Certificative evaluation	The final evaluation is a good formula	0.529
	Editorial questions are a good formula	0.445

**Table 4: Psychometric analysis of assessment areas**

Pedagogical area	Mean $\pm$ standard deviation	Cronbach's coefficient $\alpha$
Student/teacher ratio	$2.28 \pm 0.41$	0.7
Lecture course	$3.41 \pm 0.30$	0.64
Certificative evaluation	$2.6 \pm 0.52$	0.56

**Table 5: Evaluation report on prosthodontics theoretical teaching**

Pedagogical area	Evaluation Items	Assessment		
		Agree	Neutral	Disagree
		n (%)	n (%)	n (%)
Student/teacher ratio	The number of teachers is sufficient	26 (25.2)	10 (9.7)	67 (65.1)
Lecture course	Learning objectives are clearly defined	61 (59.2)	14 (13.6)	28 (27.2)
	Valuation methods are specified	43 (41.7)	20 (19.4)	40 (38.9)
	Teachers use the video projector	72 (69.9)	11 (10.7)	20 (19.2)
Certificative evaluation	The final evaluation is a good formula	23 (22.3)	12 (11.7)	68 (66)
	Editorial questions are a good formula	44 (42.7)	26 (25.2)	33 (32.1)

## Discussion

The selected items are relevant to evaluate the prosthodontics theoretical teaching since their factor load is greater than 0.35 as in some previous studies.<sup>6-8</sup> In addition, the internal coherence of the items composing the domain related to supervision is better, followed by that of the lecture course. As for the field concerning the certificative evaluation, it is composed of items whose internal consistency is acceptable but low, thus limiting the performance of the evaluation made by the students. This implies the need to improve the formulation of items, the format of questionnaires or the process of collecting information from students. A literature review, consultation of the lessons and focus groups with students can help to identify more relevant items. In addition, combining the administration of the questionnaire in several steps with factor analysis can ensure the identification of pedagogical areas with better internal consistency.<sup>6,9</sup>

The sample is characterized by a male predominance. Girls are in the majority in Master 1 but in the minority in Master 2. The study does not corroborate the global trend towards the feminization of medical studies in general and dentistry in particular. In fact, only students at the end of their training were surveyed, so the studies on the profile of students concerned all students in the entire dental cycle.<sup>7</sup> The mean age was significantly higher for men than for women. The same is true in sub-Saharan Africa, where students are generally older than female students.

Almost 2/3 of students find that the number of teachers is insufficient. They show that the supervision ratio of theoretical teaching is inadequate by assigning it the lowest average. This assessment is not objective since the teacher/student ratio is 1:5 at Institute of Odontology and Stomatology. Nevertheless, the availability of teachers could be compromised since, in addition to lectures, they also provide clinical and practical teaching and supervision of research work, all of which considerably increase their workload.

More than 2/3 of students report the use of modern pedagogical tools by teachers to transfer knowledge. In addition, the majority of students are aware of the learning objectives of the lecture course. The same is true in Abraham's study<sup>10</sup> which reports that 96% of medical students reported that teachers clearly articulated learning objectives. These provisions, which combine adapted didactic supports and a docimological approach, meet the pedagogical requirements that enable students to better ensure their learning and effectively prepare for its evaluation. Nevertheless, in order to bring about an overall improvement in the quality of teaching, it is important to consider training new teachers in university pedagogy and supporting their professional development before carrying out their evaluation. In addition, a critical analysis of pedagogical environment and working conditions would ensure a comprehensive evaluation of teaching, taking into consideration, in addition to lectures, all other dimensions and pedagogical activities including tutorials, practical

work, clinical teaching, student learning assessments and doctoral thesis and dissertation supervision.

As for the certification evaluation, it is a pedagogical field that is not well appreciated by students, who attribute a low average to it. A majority of them disapprove of the final single evaluation, while they are very divided about the use of editorial questions for the evaluation of theoretical teaching. However, the use of valid instruments is recommended for a rigorous and reliable process of learning assessment. It seems appropriate then to generalize the implementation of the multiple-choice question evaluation method and to increase the frequency of continuous controls in order to respond to students' concerns.

Thus, taking into account students' assessments and making the necessary corrections are part of the overall approach to improving and regulating teaching in a university operating in a changing society.<sup>11</sup> However, resistance to the spread of Student assessment of teaching is generated by the fact that the evaluation of teaching, moreover by students, is often perceived as an inappropriate means of controlling and judging the teaching performance.<sup>12,13</sup> Nevertheless, in order to implement a more rigorous and valid approach to evaluating teacher performance, it is important to use, in addition to the student survey, other sources of information and differentiated means such as pedagogical commission, pedagogical advisor and mentor for young teachers.<sup>14</sup>

## Conclusion

The student assessment of teaching is an important component of the quality approach, inseparable from the improvement and enhancement of prosthodontics theoretical teaching. Despite its validity and relevance, this practice has weaknesses that should be controlled to improve student training.

**Conflict of Interest:** None.

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