

# Study of the Needs and Access to Training in Dental Surgery in Nouakchott

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## To cite this article:

Mbathio Diop, Serigne Ndam Dieng, Amadou Dieng, Morel Aguiar, Abdallahi Sidena, Aida Kanoute, Massamba Diouf, Daouda Faye, Cheikh Mouhamadou Mbacke Lo, Babacar Faye. Study of the Needs and Access to Training in Dental Surgery in Nouakchott. *International Journal of Health Economics and Policy*. Vol. 8, No. 3, 2023, pp. 70-75. doi: 10.11648/j.hep.20230803.13

Received: April 3, 2023; Accepted: May 4, 2023; Published: July 11, 2023

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**Abstract:** Quality of care requires initial training of professionals in line with current health challenges and continuing education in order to remain up-to-date with good health practices. In dentistry, many changes have been observed in recent years in several areas of dentistry practice. The objective of this work was therefore to study the need for and access to training in dental surgery in Nouakchott. A descriptive cross-sectional study based on a direct and self-administered questionnaire was therefore conducted from October 2021 to March 2022 among 81 dentists from the public and private sectors in the Nouakchott region. Information was collected on socio-professional characteristics, initial training and continuing education. The study revealed that 90% of the respondents were men with an average of 13 years of service. Their initial training was mainly in Senegal (27.16%) and Syria (23.46%). The majority of them (67.90%) had not implemented new technologies and 54.32% of the respondents expressed the need for continuous training in ortho-implantation. However, lack of time (39.5%) and funding (45.7%) were important barriers to accessing continuing education. Therefore, the needs expression should be transformed into learning objectives for continuous training. Also, the establishment of a department of dental surgery is a priority to reduce inequalities in access to dental training.

**Keywords:** Initial and Continuous Training, Dental Surgeon, Mauritania

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## 1. Introduction

Access to health and information being a fundamental human right, it is part of the priority concerns of public authorities universally [1]. That is why, during a general assembly in July 2015, the 195 Member States of the United Nations, of which Mauritania is a part, agreed on the adoption of the 2030 Agenda for the achievement of 17 Sustainable Development Goals (SDGs), of which health is

in 3rd position. This goal of good health and well-being has as its overall target the achievement of universal health coverage (UHC), one of the most important pillars of which is the availability of services. To make this a reality, it is therefore imperative that people have access to high quality services that enable them to take care of their health, and this requires qualified health professionals who provide quality person-centered care [2].

However, the quality of care provided by qualified agents

cannot be a static parameter. Indeed, it requires an initial training of professionals in line with the current health challenges and a continuous training in order to remain up to date with good health practices. In Dentistry, there have been many developments in recent years in several areas of dentistry practice, but also in terms of knowledge of the relationship between oral health and general health [3, 4-5]. This is all the more relevant in view of the speed of growth of technological innovations, their generalization and the profound changes in the global socio-economic context [6]. In addition, patients are increasingly informed thanks to the democratization of the internet and participate more actively in the implementation of their care [7]. In such a context, initial training cannot be sufficient for a practitioner's entire career. They need to adapt and renew their knowledge in order to respond to patient demand, hence the need for continuing education and its legal obligation in several countries [8, 9].

Although there are dentists, Mauritania does not have an educational institution for the initial training of dentists. It would be interesting to know where they are trained? How then is continuous training perceived? Is it accessible? What are the means available to these dentists to overcome the barriers that would impede their access to continuous training, which is essential? The objective of this study was therefore to assess the need for and access to training in dental surgery in Nouakchott.

## 2. Methodology

### 2.1. Type of Study

This is a cross-sectional descriptive study based on a direct, self-administered questionnaire.

### 2.2. Framework of Study

The Study took place in Mauritania from October 2021 to March 2022. It involved public and private health facilities with oral health services in the Nouakchott region.

### 2.3. Target Population

Targets were Mauritanian dentists working in public or private health structures in Nouakchott.

### 2.4. Selection Criteria

Sample selection criteria were:

- 1) Be promoted to the grade of Doctor of Dental Surgery;
- 2) Working in public and/or private health facilities in Nouakchott;
- 3) Be available and willing to participate in the study.

### 2.5. Sampling Strategy

The study consisted of an exhaustive survey of all dentists practising in public or private health structures in Nouakchott. To do this, practices were targeted by neighbourhood. Thus, "snowball" method was used, with dentists indicating other dental practices in neighbourhood.

## 2.6. Survey Variables

Study variables are represented in the table below. (Table 1)

*Table 1. List of variables and indicators.*

Variables	Indicators
Age	Age of respondent
Sex	Sex of respondent
Experience	Years of experience
Initial training	Place of initial training
Use of new technology	Use of new technology
Continuous training	Training needs
	Participation in training
	Barriers to participation in training
	Funding

## 2.7. Resources

This study required the mobilization of several resources on the material, financial and human levels.

- 1) Human resources: (1) enumerator, (1) biostatistician.
- 2) Material resources: survey form...
- 3) Financial resources: transportation, printing.

## 2.8. Conduct of the Survey

Prior to the survey, a request for survey was given to the dentists in order to explain the objectives and the importance to have their free and informed consent. After authorization was obtained, the survey itself depended on the availability of the dentist.

## 2.9. Collection Period

Data collection took place from October 10, 2021, to March 30, 2022, and included all dentists who met the inclusion criteria.

## 2.10. Use of Data

At the end of the survey, data were collected and recorded with the SphinxPlus.V5 software on a file that constituted our database. The use of World and Excel software allowed us to process the data, analyse and interpret results from the survey. For the test, we used a student's t test.

## 3. Results

Results of the survey cover the socio-professional characteristics of dentists, the place where they received their initial training and how they use continuous training.

### 3.1. Socio-Professional Data

The majority of dentists working in Mauritania are men. Indeed, out of 81 practitioners surveyed, 90.1% were men and 10% were women. The average age was 42 years with an average of 13 years of experience.

#### *Distribution of dental surgeons by country of initial training*

Regarding the place of initial training, most of them reported having been trained mainly in Senegal (27.16%), Syria (23.46%), and Morocco (13.58%). (Figure 1)

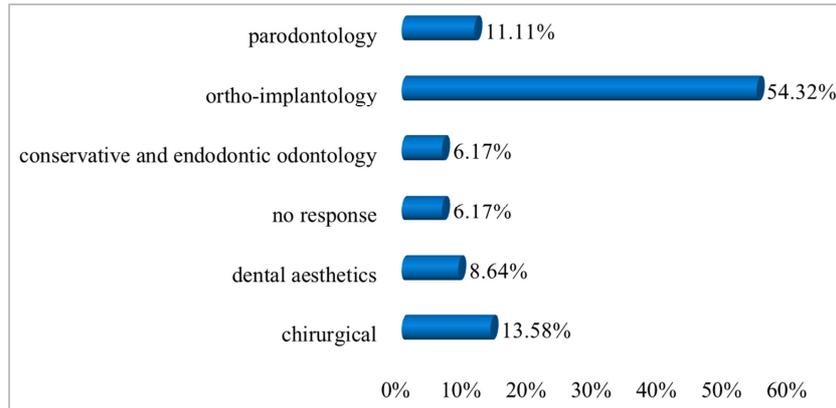


Figure 1. Distribution of dental surgeons by country of initial training.

3.2. Continuous Training of the Dental Surgeons

3.2.1. Distribution of Dental Surgeons According to Participation in Continuing Education

Few of them have implemented new technologies (67.90%). However, the majority (58%) have taken

continuous training courses, generally relying on other sources of funding (50.7%) or their own means (37%).

The surgeons surveyed also reported a need for continuous training in ortho-implantation (54.32%), followed by surgery (13.58%) and periodontology (11%). (figure 2)

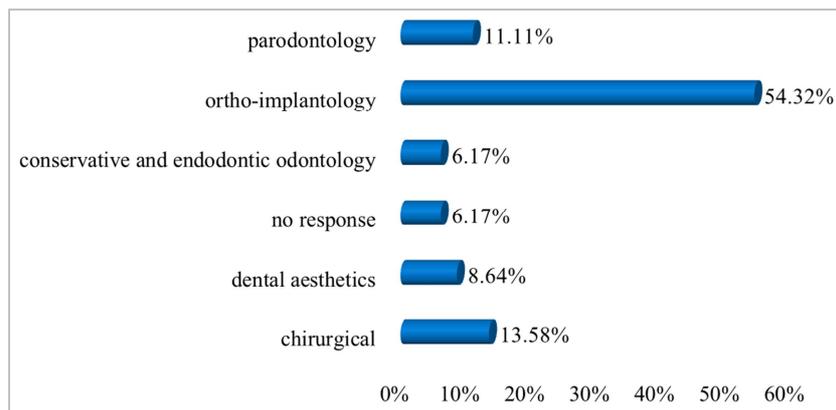


Figure 2. Distribution of dental surgeons according to participation in continuing education.

3.2.2. Distribution of Dental Surgeons According to Obstacles to Participation in Training

Overall, 4 out of 10 practitioners or 45.7% say that the lack of attending training is due to financial problems. A proportion of 39.5% claim lack of time. (Figure 3)

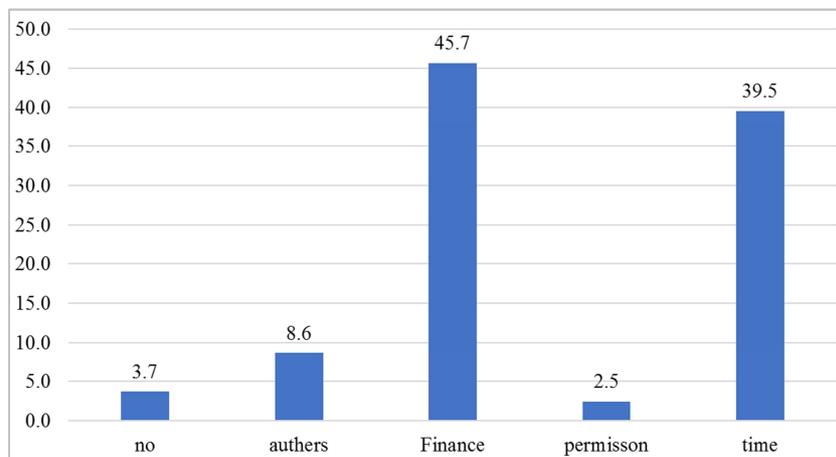


Figure 3. Distribution of dental surgeons according to obstacles to participation in training.

### 3.2.3. Statistical Analysis

Statistical tests were conducted to determine whether there was a relationship between the number of years of experience and the need for continuous training and the use of new technologies. It was found that there was no difference in experience between those who used new technology and those who did not with a p-value =  $0.28 > 0.05$  (Table 2). Similarly, the result obtained in relation to the P-value (P-value=0.0499), allows us to significantly confirm that for the need for continuous training, there was no difference between the two comparison groups (Table 3).

According to the results obtained in Table 1, we can significantly affirm that there is no difference in experience between those who use the new technology and those who do not use it with a p-value =  $0.28 > 0.05$ .

**Table 2.** Equality test of the average number of years of experience and the use of the new technology.

Group	Obs	Mean	Std. Err.	
No	52	14,25	1,53	P=0,2870
Yes	29	11,76	1,47	
combined	81	13,36	1,12	
diff		2,49	2,32	

The result obtained in relation to the P-value (P-value=0.05), allows us to confirm significantly that for the need for continuing education, there is no difference between the two comparison groups (the number of years of experience has nothing to do with people who need continuous training).

**Table 3.** Equality test of the average number of years of experience and the need for continuing education.

Group	Obs	Mean	Std. Err.	
Non	34	10.79412	1.722132	P=0,0499
Oui	47	15.21277	1.418112	
combined	81	13.35802	1.115313	
diff		-4.418648	-4.418648	

## 4. Discussion

### 4.1. Limit of the Study

The absence of information on the exact number of dentists practicing in Nouakchott as well as the dental practices existing in this region was the main limitation of this study. In addition, studies on oral health in the Maghreb are rare, outdated, and conducted at different times, which makes comparisons difficult.

It is also important to note the non-cooperation of some practitioners, marked by non-responses in the results. Indeed, this could be justified by the lack of time.

### 4.2. Socio-Professional Data

This study of 81 dentists in Mauritania revealed a male predominance with a sex ratio of 9.1. This preponderance is found by Al-Shamiri and al in the population of dentists in Saudi Arabia with 57.2% men and 19.4% women [10]. Diouf

and al. in Senegal found the same trend with 70% of dentists being male [11]. The low enrollment rate of girls in Mauritania and the early dropout for various reasons (marriages and negative perception of school) justify such a finding in the present study. In view of the importance of representation in the medical sector, this finding should alert the Mauritanian authorities to the importance of popularizing girls' education and especially of promoting scientific subjects among girls, not to mention emphasizing the profession of dental surgery. This is for example the case in Morocco where Mouhyi and al. in 2020 reported that women dentists were in the majority with 54.78% [12].

The average age of practicing dentists is 42 years, with a difference of 10 years around this average in our study. In Senegal, Diop M and al. found a similar result (40 years) in 2017 in Senegal [13]. The low number of young dentists recruited by the state of Mauritania during the last few years could partly explain this finding. Mohamed's results in 2017 in Nouakchott help confirm this trend [14]. It should also be noted that the practitioners in this study had an average of 13 years of experience with a dispersion of 10 years around this average. Diop M and al. in Senegal also found the same average number of years of experience with a dispersion of 7 years around this average [13].

More than half of the practitioners were trained in Senegal and Syria (50.62%). This shows on one hand the need for the establishment of a dental school in Mauritania for local training of medical staff and on the other hand, the lack of updating of knowledge in the absence of continuous training. It is therefore important to carry out structural reforms to improve health care performance and achieve universal health coverage for the well-being of the population [15].

The study also showed that 67.90% of the dentists surveyed did not use new technologies for dental care. Those who did use them preferred mechanized endodontics (30.86%). However, the use of innovative technology can simplify care (reduction in time and cost) and increase access to it [16].

### 4.3. Dentists and Continuing Education

Regarding continuous training, 58% of practitioners reported that they had attended such training and 50.7% of them had received funding. Gaye's study in Senegal shows higher results with a rate of 70% of which 20% paid for it at their own budget [17]. This difference with Senegal could be explained by the presence of a training framework in Senegal and an oral health division that empowers dentists. However, these participation rates remain low compared to France where continuous training is a legal obligation for any health professional since 2002 and framed by a decree updated in 2016 [18]. The situation in Mauritania and Senegal could therefore be explained by the absence of a legal text giving a mandatory character to continuous training, which is of great importance in view of the technological developments of the platforms and the digitalization of systems calling for increasingly advanced clinical and technical skills [19]. However, Bane reported that, overall, dentists who received

continuing education tended to perform adequate endodontic procedures and that there was a need for mandatory continuing education [20, 21].

Regarding the needs for continuous training expressed by practitioners, orthodontics and implantology were at the top of the list with 54.32%. A similar study conducted in the Côte d'Ivoire reported that Ivorian practitioners were more interested in continuous training, especially in fixed prosthetics [9]. This can be explained by the 10-year gap between the two studies. Indeed, clinical dentistry has evolved considerably and implantology is now the standard goal in modern prosthetic care [22].

However, financial means (45.7%) and lack of time (39.5%) were the main obstacles to participation in continuing education for these dentists. These reasons were also found to be the main obstacles in Côte d'Ivoire and Tunisia [9, 23]. In Senegal, Gaye reports in his study that the various laboratories and the ministry contributed greatly to removing the financial barrier [17]. This could inspire the Mauritanian authorities to seek funding for continuous oral health education. Regarding the lack of time mentioned by respondents, a significant demand for oral health services in Mauritania could be the major cause. Indeed, a study conducted by Maatouk and al. reported that dental caries prevalence exceeded 50% in the temporary teeth at age 6 and was over 60% in the permanent teeth at age 12. Periodontal diseases showed a prevalence of 55% in the population from 15 years of age [24]. In view of the low number of dentists (59 registered with the Order according to the Order's website) for the Mauritanian population (4.38 million inhabitants according to the latest ANSADE estimates), a possible overload of work for practitioners could be invoked [25, 26]. However, better organization of dentists would reduce this time barrier.

According to the cross-tests performed in this work, the number of years of practice does not influence the need for continuous training. These results are contrary to those of Kamagaté in his similar study in Côte d'Ivoire where the more years of experience dentists had, the less they participated in continuous training [10]. This difference could be explained mainly by the absence of an initial training center in Mauritania, making it difficult to compare practices and knowledge on a regular basis and thus reinforcing the need for practitioners to participate in continuous training. In addition, dentistry has evolved considerably in the period between these two studies and practitioners are increasingly aware of the importance of continuous training [20]. Regarding the use of new technologies, the number of years of experience was not an influencing factor either. The low use of new technology may be due to access issues within public health facilities, as the respondents worked in both the private and public sectors.

## 5. Conclusion

Initial dental education is a priority to improve access to oral health care and reduce health inequalities. Also, continuing education is an ethical must that actively

contributes to the updating of dental surgeons' knowledge and to the improvement of the care they provide to patients. Thus, given observations from this study (no initial training schools, little or no funding for continuous training, lack of use of new technology, etc.) in Mauritania it is urgent to adopt strategies to resolve the obstacles to access to training. On the one hand, to build the dental department within the Faculty of Medicine and on the other hand, the establishment of a legal framework that makes continuing education mandatory. Accompanying measures such as support for financing and acceptance of online courses could facilitate the implementation of this policy.

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