

The dental prosthesis at the Bamako district hospital

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ABSTRACT: *Introduction:* Uncompensated dental losses are the cause of functional and aesthetic disorders that require prosthetic treatment.

The objective of this work was to assess the dental prosthetic rehabilitation needs of adult patients admitted for consultation in the odontostomatology service of the CSREF of Commune I of the district of Bamako.

Materials and methods: our study was descriptive and cross-sectional involving 170 subjects admitted to consultations in the odontostomatology service of the CSREF in commune I of the district of Bamako, of both sexes, of adult age. The principle consisted in carrying out an oral and in particular prosthetic examination of each subject in the cabinet.

Statistical analysis used SPSS version 21 software.

Results: in the sample, the female sex was in the majority with 57.6% and a sex ratio of 0.73 in favor of men. The most represented missing tooth interval was 1 to 3 teeth with 69.7% of the sample in the maxilla and 71.2% in the mandible. Prosthesis wearers were 38.7% in the maxilla and 15.2% in the mandible. The prostheses worn were suitable in 76.5% of cases. The prevalence of the diagnosed therapeutic need was 62.4% PCP in the maxilla and 67.4% PCP in the mandible.

But when the patient is asked to formulate a hypothesis of choice; 67.4% will choose the provisional resin PAP in the maxilla and 68.1% will choose the same type prosthesis in the mandible. The reasons may be due to financial constraints and limited access to oral health services for the poor.

Conclusion: a better organization of the socio-health care system could facilitate the accessibility of underprivileged populations to prosthetic rehabilitation.

KEYWORDS: dental prosthesis, edentulousness, prosthetic needs.

1 INTRODUCTION

Uncompensated dental losses are the cause of functional and aesthetic disorders that require prosthetic treatment.

The objective of this work was to assess the dental prosthetic rehabilitation needs of adult patients admitted for consultation in the odontostomatology service of the CSREF of Commune I of the district of Bamako.

1.1 TYPE AND PERIOD OF STUDY

We conducted a descriptive and cross-sectional study, over a period of three (3) months from November 29, 2019 to February 29, 2020.

1.2 PLACE AND FRAMEWORK OF STUDY

The study took place in the odonto-stomatology department of the Reference Health Center of Commune I in the district of Bamako. It is located on the left bank of the Niger River in the eastern part of the Bamako district.

The health district of Commune I covers an area of 34.26 km² or 12.83% of the total area of the district 267 km² with a population of 447,658 inhabitants in 2018.

1.3 STUDY POPULATION

Our study population concerned all the subjects admitted for consultation at the odontostomatology service of the CSREF of Commune I of the district of Bamako.

1.4 MATERIAL USED

During the investigation we used the following equipment:

- a survey sheet (questionnaire)
- an examination tray (mirror, probe, tweezers) kits for disinfection and sterilization of instruments (hypochlorite water; alcohol; soap; poupinel; brush).

1.5 STUDY METHOD

The survey was carried out during the working days of the service. The technique consisted of an interrogation followed by a clinical oral examination (teeth; periodontium; edentulousness; causes of edentulousness; rehabilitated edentulousness).

1.6 SAMPLING

The population studied is all adult patients admitted for consultation at the odonto-stomatology service of the CSREF in commune I of the district of Bamako, chosen according to the inclusion and exclusion criteria during the study period.

Inclusion criteria: we included in our study

- any adult patient coming for consultation and agreeing to participate in the study;
- with partial or total edentulism and/or
- with coronary decay and/or
- with dyschromia requiring prosthetic rehabilitation;

Exclusion criteria:

- all patients under the age of 18;
- any patient who did not present with edentulism, coronary decay or dyschromia or who did not agree to participate in the study was not included in our study.

1.7 DATA ANALYSIS AND PROCESSING PLAN

Data were entered and analyzed with software (Microsoft Office Excel 2016; SPSS 21 and Word 2016).

1.8 ETHICAL CONSIDERATIONS

Participation in our study was completely voluntary. Patients were informed of the purpose of our study in order to obtain their informed consent. The questionnaire was translated, individual and anonymous to guarantee the confidentiality of respondents.

All patients benefited from enlightened information on oral hygiene and dental prosthesis needs.

1.9 SCIENTIFIC BENEFITS

The study will contribute to the establishment of a map of prosthesis needs and the development of a prevention program in Mali.

Contribute to the identification of oral health problems and in particular prosthetic problems among adults in commune I of the district of Bamako.

Contribute to the development of an action plan to meet the demand for prosthetic care in Commune I of the Bamako district.

❖ Socio-demographic variables

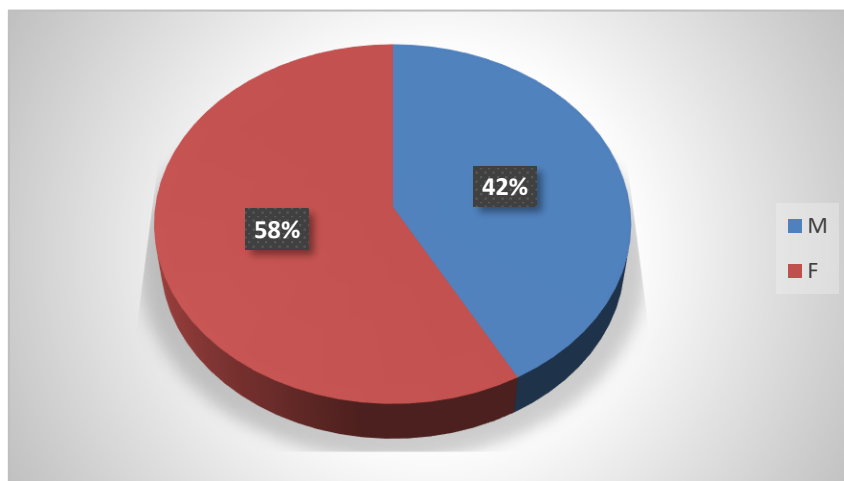


Fig. 1. Graph 1: Breakdown of the workforce by gender

The female sex was the most represented with a sex ratio of 0.73.

Table 1. Breakdown of the workforce by age group

Age group (year)	Number	Percentage (%)
18 à 30	73	42,9
31 à 40	45	26,5
41 à 50	21	12,4
51 à 60	14	8,2
61 à 70	14	8,2
71 and +	3	1,8
Total	170	100,0

The age group between 18 and 30 years old was the most represented with 42.9% of cases and extremes ranging from 18 to 75 years old.

Table 2. Distribution of the workforce by occupation

Occupation	Number	Percentage (%)
Teacher	7	4
Household	34	20
Seller	25	14,7
pupil/student	22	12,9
Mason	8	4,9
Hairdresser	8	4,9
Midwife	5	3
Farmer	9	5,3
commercial employee	12	7
Male nurse	7	4
Carpenter	7	4
Others	26	15,3
Total	170	100,0

Housewives were the most represented with 20% of cases; followed by sellers with 14.7% of cases.

*Others make up various professions: engineer 0.6%; sheet metal worker 1%; repairer 0.6%; cook 0.6%; policeman 1.5; doctor 1.2%; electrician 2%; technician 1.2%; driver 0.6%, shopkeeper 1.2%; laborer 1.8% secretary 1.2% retired 1.8%, *

Table 3. Distribution of the workforce according to the level of education

Education level	Number	Pourcentage (%)
Primary	21	12,4
Secondary	45	26,5
Superior	42	24,7
Coranic school	8	4,6
Unschoolled	54	31,8
Total	170	100

Those without schooling were the most represented with 31.8% of cases; followed by the secondary level with 26.5% of cases.

❖ Clinical variables

Table 4. Distribution of the workforce according to the number of missing teeth in the maxilla

Missing teeth	Number	Percentage (%)
1 à 3	76	69,7
4 à 6	17	15,6
7 à 9	7	6,4
10 à 12	2	1,8
13 à 16	7	6,4

The majority of patients had 1 to 3 missing teeth in the maxilla, i.e. 69.7% of cases.

Table 5. Distribution of the workforce according to the number of missing teeth in the mandible

Missing teeth	Number	Percentage (%)
1 à 3	99	71,2
4 à 6	27	19,4
7 à 9	6	4,3
10 à 12	1	0,7
13 à 16	6	4,3

The majority of patients had 1 to 3 missing teeth at the mandibular level, i.e. 71.2% of cases.

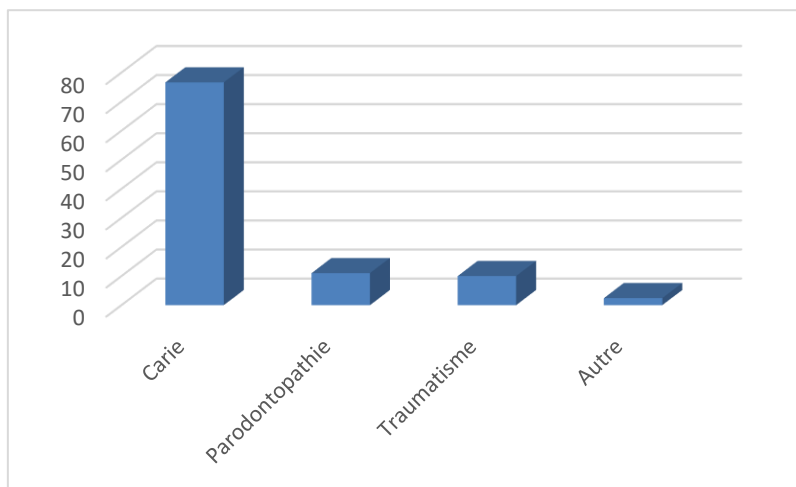


Fig. 2. Distribution of the workforce according to the cause of the edentulism

Dental caries was the cause of edentulism in 76.6% of cases followed by periodontal disease with 11% of cases.

Table 6. Distribution of the workforce according to the wearing of prostheses in the maxilla

Prosthesis wearing	Number	Percentage (%)
Yes	43	38,7
No	68	61,3

The majority of our patients did not wear a maxillary prosthesis, i.e. 61.3% of cases.

Table 7. Distribution of the workforce according to the wearing of a prosthesis on the mandible

Prosthesis wearing	Number	Percentage (%)
Yes	21	15,2
No	117	84,8

The majority of our patients did not wear a prosthesis at the mandibular level, 84.8% of cases.

Table 8. Distribution of the workforce according to the type of prosthesis worn on the maxilla

Type of prosthesis worn	Number	Percentage (%)
PCP	4	9,5
PAP résine (temporary)	32	76,2
PAC	4	9,5
Others	2	4,8
Total	42	100,0

The majority of our patients wore resin PAP-type prostheses (temporary) at the maxillary level, 76.2% of cases.

Table 9. Distribution of the workforce according to the type of prosthesis worn on the mandible

Type of prosthesis worn	Number	Percentage (%)
PCP	1	5
PAP résine (temporary)	18	90
PAC	1	5

The majority of our patients wore resin PAP-type prostheses (provisional) at the mandibular level, 90% of cases.

Table 10. Distribution of the workforce according to the adaptation of the wearing of prostheses

Prostheses wearing	Number	Percentage (%)
Adapted	39	76,5
Not adapted	12	23,5

The prostheses worn were suitable in 76.5% of cases.

Table 11. Distribution of the workforce according to the therapeutic need and therapeutic indication in the maxilla

Type of prostheses worn	Number	Percentage (%)
PCP	68	62,4
PAP metal frame	32	29,6
PAC	7	6,4

The majority of our patients needed PCP with 62.4% followed by PAP with a metal frame with 29.6% of cases in the maxilla.

Table 12. Distribution of the workforce according to the therapeutic need and therapeutic indication for the mandible

Type de prothèse portée	Number	Percentage (%)
PCP	93	67,4
PAP metal frame	41	30,6
PAC	3	2,2
PCU	1	0,7

The majority of our patients needed PCP with 67.4% followed by PAP with a metal frame with 30.6% cases in the mandible.

Table 13. Distribution of the workforce according to the prosthetic choice in the maxilla

Choix prothétique	Effectif	Pourcentage (%)
PCU	2	1,9
PCP	20	18,7
PAP temporary	76	71
PAC	7	6,5
PAP métal farmer	2	1,8

- The resin PAP (provisional) was the most represented with 71% of the cases followed by PCP 18.7% of the cases.

Table 14. Distribution of the workforce according to the prosthetic choice in the mandible

Choix prothétique	Effectif	Pourcentage (%)
PCU	1	0,7
PCP	33	23,9
PAP en résine	94	68,1
PAC	3	2,2
PAP en chassis métallique	7	5

Resin PAP (provisional) was the most represented with 68.1% of cases followed by PCP with 23.9% of cases.

2 COMMENTS AND DISCUSSION

Our study is part of a descriptive and cross-sectional study based on the oral examination of adult patients with edentulism and coming for consultation at the CSREF of Commune I of the district of Bamako from November 29, 2019 to February 29, 2020.

✓ Sociodemographic data:

The female sex was the most represented with 57.6% and a sex ratio of 0.73 in favor of men. The female predominance reported in our study is similar in most national and international series.

Thera B. (1) in her study in 2015 at the CHU-CNOS in Bamako found 65.25% female with a sex ratio of 0.65.

Azzaz A. et al. (2) in their 2013 study in Casablanca found 60% female with a sex ratio of 0.66.

✓ Age: in our study; the most represented age group was that of 18 to 30 years with 42.9% of the sample.

In our study the majority of the subject was young; these results are similar with other

Khady K. (3) found in her study in 2002 in Dakar 69.3% in the age group 18 to 34 years.

Camara S. (4) in 2008 at the CHU-CNOS in Bamako, identified 35.5% in the 20 to 29 age group.

Azzaz A. et al. (2) in a similar study in 2013 in Casablanca showed that most of the subjects were young with an age range between 35 and 44 years.

✓ The profession: the most represented was housewives with 20% of cases.

In the sample, the female gender was the most represented, which explains the representation of housewives in the profession.

Our results are close to those of Thera B. (1) in 2015 at the CHU-CNOS in Bamako, which reimbursed housewives in 24% of the workforce.

Camara S. (4) in her study at the CHU-CNOS in Bamako in 2008 found that 42.5% of the workforce were housewives.

- ✓ **According to level of education:** the majority were unschooled with 31.8% of the sample. The higher level of education was represented by 24.7%; the level of secondary education by 26.7%; the Koranic school level by 4.7% and the primary level by 12.4%.

Similar results were also reported by Camara S. (4) in her study at the CHU-CNOS in Bamako, she identified the unschooled in 45% of cases; patients with a higher level were represented with 10% of the workforce; secondary level patients were present in 28% and primary level patients in 17% of cases.

➤ Clinical data:

- ✓ **The number of missing teeth:** the range of 1 to 3 missing teeth in the maxilla was represented by 69.7% and in the mandible by 71.2%.

Our results are consistent with other similar studies.

Thera B. (1) in her study at the CHU-CNOS in Bamako in 2015 found 66.91% at the interval 1-4 missing teeth in the maxilla and 77.80% in the mandible.

But our results are contradictory with those of Songo B. et al. (7) who found 49.20% in the mandible and 55.7% in the maxilla.

In our study, between 1 and 6 teeth were missing per statistical unit in 76.8% of cases.

- ✓ **According to the cause of edentulism:** dental caries represented 78.2% of the causes of extraction in the workforce. It remains the essential etiology of tooth loss.

Our results are superior to those of FÜRE (2003) (28), according to him dental caries is the main reason for dental extractions. His study conducted on a sample of the Swedish population in 1997 found that 60% of teeth were extracted due to caries.

- ✓ **According to the prosthesis worn:** in the maxilla 38.7% of the gaps were compensated and in the mandible only 15.2% of the gaps were compensated.

Our results are superior to those of Khady K. (32), she found in 2002 in her research in Dakar 10.1% of the workforce were prosthesis wearers.

In our study, the maxilla carried prostheses twice as much as the mandible; this is in agreement with that of JEANNOT reported by Khady K. (32); in his studies, 3.1% of people wearing prostheses concerned the maxilla against 1.5% in the mandible.

Azzaz A. et al. (5) in their study in 2013 in Casablanca found that 48% of subjects had a prosthesis in the maxilla and less than 18% in the mandible had a prosthesis.

In our study, the majority of prosthesis wearers were female and concerned more the maxilla.

In our study, most of the edentulous cases did not have a prosthesis.

A survey by the CPAM (Caisse Primaire d'Assurance Maladie) in 2003 showed that among the elderly population in France, a significant number were edentulous and more than 1/3 were not fitted, i.e. 37.3%. (50)

In our study more than half of the patients did not have a prosthesis, this may be due to financial constraints and limited access to oral health services for the poor.

- ✓ **According to the type of prosthesis worn:** in the maxilla 76.2% of edentulousness was compensated by the PAP and in the mandible 90% were compensated by the PAP. 100% of the PAPs were in resin without a metal frame.

Our results are superior to those of Owall B. et al. (40) who found in Poland that 85.4% of PAPs were made of resin without a metal frame.

- ✓ **According to the adaptation of the prostheses worn:** the prostheses worn were not adapted to 23.5% of the workforce and were there for 76.5% of the workforce.

Our results are superior to those of Thera B. (49) in her study at the CHU-CNOS in Bamako in 2015, with 65.8% of the prostheses worn being adapted.

The prostheses worn were mostly suitable, explained by the location of the survey, including the CSREF of Commune I of the district of Bamako, of the subjects who visit the dentist.

✓ **Therapeutic need:** in our sample, 62.4% suffered from PCP; 28.4% PAP with a metal frame; 2.2% PAC; 0.2% PCU in the maxilla. In the mandible; 67.4% suffered from PCP; 30.6% PAP with metal frame; 2.4% PAC and 1.2% PCU.

These rates are comparable with those of Khady K. (32) in 2002 in Dakar 5.2% needed PCU; 20.2% PCP; 29.9% PAP; 3.5% PAC.

These results are also comparable with a Moroccan national survey.

In 1993, a Moroccan national survey showed that at maxillary level 55.6% of individuals discovered a multiple prosthesis, 15.3% a bridge and 4.6% a total prosthesis. While in the mandible 56.7% obtained a multiple prosthesis; 14.7% a bridge and 3.5% need a total prosthesis. (38)

According to the allocation criteria for social security devices in France, 59% of elderly people in retirement homes need at least one removable prosthesis and the need for prosthetic care increases to 77% if we include the unsuitable devices. (20)

The high PCP requirements are explained by the prevalence of missing teeth (1 to 3) and the edentulousness was essentially of the recessed type. The low rate of CAP is explained by the fact that CAP concerns elderly subjects who are not numerous in our workforce. The rate of PKU can be explained by the late consultation (partial or total coronary decay); lack of information.

✓ **Prosthetic choice:** when patients are asked to formulate a hypothesis on the type of prosthesis they will choose; 71% prefer resin PAP (provisional); 18.7% PCP; and 0.1% metal-framed PAP in the maxilla. In the mandible, 68.1% will choose the resin PAP; 23.9% will choose the PCP and 4.3% the PAP with a metal frame.

Our results are in agreement with that of DJEREDOU K. B et al. (23); they showed in 2003 in RCI in their study that in patients who had already been fitted, the assistant prosthesis was the most frequently found therapeutic choice. It is inexpensive and seems more accessible to patients in relation to their socio-economic level.

El ALAMI F.D in 2003 (27) in a Moroccan city showed that a low use of the fixed prosthesis was made, and this was due to its high cost and a lack of coverage by mutual insurance companies.

3 CONCLUSION

Tooth loss is mainly caused by tooth decay, periodontal disease, and trauma. This will have functional, aesthetic and psychological implications. The dental prosthesis in different forms makes it possible to compensate for the consequences of edentulousness.

In Mali, few studies have concerned the prosthetic treatment needs of the population, particularly in the sector of commune I of the district of Bamako. The objective of our study was to evaluate the needs for prosthetic treatments in adult patients in the odontostomatology department of the CSREF in commune I of the district of Bamako.

The study involved 170 adult patients of both sexes.

The study revealed a large uncompensated tooth loss; Compensated edentulousness is dominated by the wearing of the provisional resin prosthesis.

The need for prostheses is dominated by the multiple joint prosthesis because of the small extended and recessed edentulousness. Due to poverty, the demand of the population is dominated by the resin denture.

Improving the condition goes through the prevention of dental caries; the subsidy of dental prostheses and the training of prosthetists; prosthetic technicians and the introduction of implantology in the training of students.

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