



Oral Health Status in Dirkou Military Region: A Cross-Sectional Study

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Abstract

Introduction: The main objective of our study was to determine the oral and dental condition of the population (military and civilian) of the Dirkou region. **Materials and Methods:** A cross-sectional survey forms were completed after the dental consultation of these patients. Data analysis was carried out by Excel (Microsoft Office 2016) and SPSS.20 (IBM-Statistical Package for the Social Science). **Result:** 131 patients were included in the study including 79 women (60.3%) and 52 men (39.7%). The general Decay-missing-filled (DMF) index was 9.90 in the study population and 6.70 in the military. **Conclusion:** Oral and dental diseases constitute a real health problem. Better education and prevention will help limit the progression of oral and dental pathologies.

Subject Areas

Dentistry

Keywords

Oral Health, Decay-Missing-Filled Index, Military Population, Dirkou (Niger)

1. Introduction

Dirkou constitutes the 8th defense zone of Niger. It is a town of around 30,000 inhabitants located 930 miles from Niamey to the north, in the Agadez region.

Oral diseases, including dental caries and periodontitis, are major global health challenges and priorities [1] [2].

Health in general, and oral health in particular, is very important for the military.

It reduces the number of urgent dental interventions, cuts down on absences from training and the battlefield, and reduces threats to the safety of the entire unit formation, which have proved to be frequent problems in the armed forces in the past [3].

Conditions that require urgent curative interventions include, most frequently, caries and secondary caries, followed by periodontal pathology, dental fractures, and endodontic pathology. These conditions can be prevented with adequate oral hygiene routines, rigorous periodic management and ongoing health education of service members beginning in military education institutions [4].

To reduce these dental emergencies, a military dental mission was deployed to Dirkou for preventive and curative care, enabling a cross-sectional study to be carried out to obtain data.

2. Material and Method

This cross-sectional study was carried out from March 8 to 18, 2023, at the military garrison infirmary in the Dirkou region.

All patients, military and civilians registered during this period were included.

For this purpose, a survey form was drawn up and given to the nurses under the supervision of a dental surgeon specializing in oral surgery and a dental hygienist who carried out a thorough clinical examination.

This survey sheet was used to identify age, gender, the reason for consultation, Decay-missing-filled index (DMF) and treatment received.

The study of the data was carried out using Excel (Microsoft Office) and SPSS.20 (IBM-(Statistical Package for the Social Science) software.

3. Results

During our study, we consulted 131 patients, including 79 women (60.3%) and 52 men (39.7%) with a sex ratio of 1.52.

27 (20.6%) patients were military and 104 (79.4%) civilians. The average age was 28.08 years with extremes ranging from 3 years to 61 years.

Among these patients, 82.4% (108) consulted for dental pain, and 5.4% (7) for dental caries see **Table 1**.

For these 131 patients, only 26% have already consulted a dentist (see **Table 2**).

The general Decay-missing-filled (DMF) index was 9.90, with a prevalence of dental caries of 98%, 52.6% missing teeth and 8.4% filled teeth.

Among the military, the DMF index is 6.70, with an average of decayed teeth of approximately 5.7, of which 100% of military personnel have at least one decayed tooth; 48.14% of soldiers had at least one missing tooth and 22.22% had at least one filled tooth.

These patients were able to benefit from primary dental care. 87 patients

Table 1. Consultation reason.

	Effectiveness	percentage
Dental scaling	1	0.8
Pain	108	82.4
Dental trauma	1	0.8
Defective restoration	2	1.5
dental malposition	2	1.5
Tooth sensitivity	2	1.5
Cellulite	1	0.8
Dental mobilty	1	0.8
Abscess	5	3.8
Decay	7	5.3
Coronal fracture	1	0.8
Total	131	100.0

Table 2. Dental consultation.

	Effectiveness	Percentage
NO	97	74.0
YES	34	26.0
Total	131	100.0

Table 3. Care provide.

	Effectiveness	Percentage
All clear	11	8.4
Dental amalgam	3	2.3
Dental eugenate	12	9.2
glass ionomer cement	3	2.3
Medical prescription	2	1.5
coronectomy	1	0.8
composite	4	3.1
extraction	87	66.4
extraction/glass ionomer cement	2	1.5
extraction/Eugenate	6	4.6
Total	131	100.0

(66%) received dental extractions, 12 (9.2%) dental eugenate and 11 patients (8.4%) received no treatment (see **Table 3**).

4. Discussion

Our study included 131 patients, which represents a small sample. This study provided an overall idea of the level of oral health of these patients. Among these patients 60.3% were women and 39.7% men. These figures differ from the largest study on oral health carried out in Niger in which they found 53% women and 47% men [5]. The average age of our sample was 28 years old, which corresponds to the results of the study by Moussa *et al.* in 2021 (27 years old); this could be explained by the youth of the Nigerien population [6].

In our study, the DMF index represented 9.90, which seems to be a high figure compared to the objectives set by the WHO in 2010 which should be 3 [7]. This high rate could be explained by the weak oral awareness campaign-dental in Niger and in the region in particular, in addition to the lack of dental professional within a radius of 370 miles, but also to the particularly sweet diet of desert populations.

In the military population, the DMF index was 6.70, lower than the general DMF index due to a better general level of education and dental awareness among the military; even if this figure remains high. According to the WHO, adults (35 - 44 years) have a DMF index of between 5 and 8.9 in almost all African countries. These data are similar to those of our study [8].

In the study by Bationo *et al.* in 2017 in a Burkinabé military population, the DMF index was 1.51, comparatively lower than in our study [9].

The prevalence of dental caries in our study was 98%, 52% had missing teeth and 8.4% had filled teeth, this represents an indicator of the poor oral health of these patients. Even if untreated caries in permanent teeth was the most prevalent health condition in 2010, affecting 35% of the global population, or 2.4 billion people worldwide [10].

4.1. Study Limitations

However, our study has limitations. This particularly concerns sample size. This is due to poor dissemination of information from the awareness campaign in the Dirkou region and surrounding areas, but also due to the short period of study execution (10 days).

One of the limitations of the study also concerns the lack of epidemiological data on periodontal diseases, malocclusions as well as dental prosthetic needs.

4.2. Recommendation

In view of these data, the main recommendations primarily concern the adoption of awareness-raising, prevention and oral-dental care campaigns, both civil and military, in all remote areas of Niger for greater effectiveness.

But also to the training and affection of more oral and dental professionals in rural areas. The WHO recommends 1/1000 dental surgeons per inhabitant whereas it is 1/500,000 dentists per inhabitants in Niger [11]. These figures show the urgent need for training of dental surgeons in Niger.

5. Conclusion

Oral diseases constitute a serious health problem for rural populations in Niger.

The establishment of a health policy adapted to the level of the military health services of the armies will allow better efficiency of soldiers.

Authors' Contributions

The participation of each author corresponds to the criteria of authorship and contributorship emphasized in the Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly work in Medical Journals of the International Committee of Medical Journal Editors. Indeed, all the authors have actively participated in the redaction, the revision of the manuscript, and provided approval for this final revised version.

Competing Interests

The authors declare no competing interests with this study.

References

- [1] Khan, S., *et al.* (2023) Self-Reported Oral Health Status, Edentulism and All-Cause Mortality Risk in 12809 Australian Older Adults : A Prospective Cohort Study. *Australian Dental Journal*, 1-11. <https://doi.org/10.1111/adj.12987>
- [2] Peres, M.A., *et al.* (2019) Oral Diseases: A Global Public Health Challenge. *Lancet*, **394**, 249-260. [https://doi.org/10.1016/S0140-6736\(19\)31146-8](https://doi.org/10.1016/S0140-6736(19)31146-8)
- [3] Škec, V., Macan, J.S., Sušac, M., Jokić, D., Brajdić, D. and Macan, D. (2006) Influence of Oral Hygiene on Oral Health of Recruits and Professionals in the Croatian Army. *Military Medicine*, **171**, 1006-1009. <https://doi.org/10.7205/MILMED.171.10.1006>
- [4] Dan, A.D. and Ghergic, D.L. (2021) Assessment of Oral Health Education with the Simplified Oral Hygiene Index in Military Students—A Comparative Study. *Oral Health and Preventive Dentistry*, **19**, 425-431.
- [5] Petersen, P.E. and Kaka, M. (1999) Oral Health Status of Children and Adults in the Republic of Niger, Africa. *International Dental Journal*, **49**, 159-164. <https://doi.org/10.1002/j.1875-595X.1999.tb00901.x>
- [6] Moussa, M., Kourouma, A., Kolié, A. and Camara, A. (2021) La Santé Bucco-dentaire des Patients Hospitalisés à l'Hôpital National de Niamey Oral-dental health status of inpatients of the Niamey National Hospital. *Health Sciences and Disease*, **22**, 132-134. <https://doi.org/10.5281/hsd.v22i12.3164>
- [7] Lamster, I.B. (2021) The 2021 WHO Resolution on Oral Health. *International Dental Journal*, **71**, 279-280. <https://doi.org/10.1016/j.identj.2021.06.003>
- [8] Peterson, P.E. and Who Oral Health Programm (2003) Rapport sur la santé bucco-dentaire dans le monde 2003: Poursuivre l' amélioration de la santé bucco-dentaire au XXIe siècle - l' approche du Programme OMS de santé bucco-dentaire/Poul Erik Petersen. <https://iris.who.int/handle/10665/68507>
- [9] June, J., Bationo, R., Kabore, W.A.D., Guiguimde, W.P.L., Some, B. and Jordana, F. (2017) Etude de l'état de santé bucco-dentaire d'une population de militaires burkinabè. *Odonto-Stomatologie Tropicale*, **40**, 35-40.
- [10] Kassebaum, N.J., Bernabé, E., Dahiya, M., Bhandari, B., Murray, C.J.L. and Mar-

cenes, W. (2015) Global Burden of Untreated Caries: A Systematic Review and Meta-regression. *Journal of Dental Research*, **94**, 650-658.

<https://doi.org/10.1177/0022034515573272>

[11] World Health Organization (2019) Oral Health Country Profile Niger.

https://cdn.who.int/media/docs/default-source/country-profiles/oral-health/oral-health-ner-2022-country-profile.pdf?sfvrsn=e379e964_7&download=true