Research Article

Epidemiological Profile of Noma in the Health District of Maroua

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Abstract

Introduction: The children are the children. Lemurian sweeper occupation in Afrique [1]. Currently,53 countries, all in the inter-tropical zone, declares carcass casing years [2]. The data on epidemiology duomo, especially at the Cameroun countries. C is for this reason we noisome propose degenerate study's reprofile epidemiological du Noma dandle department du Diamaré.

Material and Methods: They were a tenement descriptive in the hospital trainings of the department of the Diamaré. They're out of timer, alliant' April 201 In December 2019. We have carried out a routine and comprehensive routines, representing unknow appendant to criteria of inclusion. The data s the tutorials by using a 24technic,then registered and analyzed at the help of ulogic Excel 2016.

Results: A total, 25 patient says ayslenomatoeined. The media department age was 26.4 years. The exams client predominant, with unsex-ratio of 1.78. The classification of Montana computer effect unctuous, the most frequent in in 36% descas, followed du type I 26% and type IV with 12%. Prevalence is 0,004 per 100 inhabitants. The most frequent partner in the volume-free case is the oral diseased 72.73%. Then venaitla malnutrition 54.54% and malaria 27.27%. Other factors were plagued 9.09% and the patients viH of patients, which were it positive in 45.45% descas.

Conclusion: Lemonades context survient, many, the10-year-olds, concerns the extra seventeen. They are patients with an oral disease, malnutrients, patients who are a disease in ferities use our parasitize-even in minimally immunosuppressed patients.

Keywords: Profile; Epidemiology; Noma; Diamaré; Cameroon

Introduction

In years the world, there are rare diseases whose complications turn out to be serious, thus putting the life-threatening. Frequently, rare diseases are the subject of little research and patients often have to wait a very long time for the exact diagnosis [1]. These delays can result in a clinical deterioration of the patient's physical and mental health, cause fear and depression, and give the patient's family a sense of isolation. Some of these diseases strongly linked to food deficiencies in children are still found in developing countries. The case of the noma, which is of interest to us, remains a concern in Africa. Its pathology is still mysterious and the patients who survive carry terrible facial mutilations difficult to treat even though the means of fighting the infection have significantly transformed the life-threatening [2].

Noma can be defined as a gangrenous process gnawing and mutilating from the facial mass, often emerging in the mouth in the form of Vincent's gingivostomatitis and essentially hitting the

young child. It is very often secondary to a disease or succession of infectious diseases, poor oral hygiene or simply poor nutritional status, thus becoming a general disease [3]. Yves Schumacher, co-founder of the organization Noma-Hlife-Schweiz describes noma as a gangrenous stomatitis at the point of departure that causes extensive necrosis of the face and has a high mortality and morbidity rate [4].

The exact prevalence and etiology of Noma are not known. In 2004 WHO estimates the annual number of new cases of Noma worldwide over a child-age range between 2-16 years of age at an incidence of 12 per 1000 with a mortality of 70 - 90% [6].

In Mali, a retrospective study of Noma cases detected and managed from 2004 to 2009 involved 163 patients, 95 of whom were from the Mopti region, 33 in the Gao region and 35 in the Timbuktu region and the reported frequencies were low in the range of 0.53; 0.63 and 0.72 per 10,000 inhabitants respectively. This study affected the 23 - 50 age group with an average of 22.39 years [7]. A 14-year retrospective study in Nigeria found 133 cases of acute Noma out of a population of 8481 under the age of 16 (1.6%) [8].

There has been very little work in the world on Noma, particularly in Sub-Saharan Africa, where it is plagued by an epidemic. The region of Far North Cameroon from the Sub-Saharan Belt, the infectious diseases that are frequent there, malnutrition, wars like the one against Boko Haram, the multiple displacements of populations, the concentrations of refugee camps and the poverty that prevails in this part of the country motivated the choice of our study.

Objectives of the Study
General objective
Determine the epidemiological profile of the name in the Maroua health district in Cameroon.

Specific goals
- Describe the demographic socioeconomic characteristics of patients with Nomad years old maroua Health District

- Highlight the clinical aspect of the noma

- Calculate the presence of the noma in this District

- Identifying factors associated with the occurrence of noma in the district.

Methodology
Material
- Medical records;

- A computer

- A camera;

- A mobile phone;

- Examination gloves;

- Masks;

- Bleach: for disinfection;

- A light source (flashlight).

Methods
Study type
We conducted a joint, retrospective and prospective study of the individuals and records of patients with noma.

Place of study
Our study took place with the health training groups of the Maroua Health District located in the region of the extreme North Cameroon.

Study time
The study was carried out over a period of 9 months, from 6 April 2019 to 30 November 2019

Study period
Our study covered a 10-year period, from 2009 to 2019.

Study population
Target population
Our study population consisted of the individuals and records of the patients with the noma.

Population source
It consisted of the records of patients with noma and who came for consultation during the study period.

Inclusion criteria
- All records of patients with noma and received in the various hospital trainings of our place of study;

- Patients hospitalized for evolutionary noma;

- Patients who gave informed consent to participate in the survey.

Non-inclusion criteria

- Records of patients with other oral ulceratecrotic conditions;
- Patients with noma but refuse to participate in the survey;
- Records of patients with other surgical conditions or odontostomatologiquees.

Sample size

Our sampling was consecutive and exhaustive.

Data collection

Study participants were recruited consecutively. It consisted of including records or registers of patients seregiseeded for noma in hospitals of the Maroua Health District. As far as health centers are concerned, the choice of sites was made by lottery in each district. For each patient record included in the study, the information collected was collected on a pre-established fact sheet. For each of the patient files, the following data were collected.

Socio-demographic data

Patient identification was done by numbering, other sociodemographic data were sex, age, village of origin

History

The history sought was nutrition, measles, malaria, parasitosis, and HIV.

Clinical data

- Data such as type of linkage, linkage headquarters, teething condition and oral hygiene were sought.

- Also taken into account were: types lesions, the site of the lesion and location.

- For each patient and record included in the study, socio-demographic data and history were obtained from the records and from patients.

- We then conducted an interrogation with the population accompanied by images of noma cases and followed explanations for this in order to detect new cases. The data collected was recorded on the same technical sheet model.

Data analysis

The data was captured and processed by a statistician using Microsoft office world 2016 and Excel 2016 software. Quantitative variables were expressed as average and standard deviation while giving extreme values. The qualitative variables were expressed in the form of staffing and percentages. The means of illustrating the results were the tables and figures.

Results

Descriptive analysis of the study population

During this study period, 25 cases of noma were recorded in the Diamaré.

We conducted a mixed study, 24 of which were in retrospect (96%) and 1 in a forward-looking framework (4%).

Figure 1: Patient breakdown by study type.

Screening date

The number of patients diagnosed is changing into a «sawtooth» with a peak in 2014 (11 or 44%) and in 2017 (6 or 24% of cases).

Sex

We included 16 male patients (64%) in the study and 9 female (36%), representing a sex ratio of 1.78.

Age

The average age of patients was 26.4 ± 20.3 years, with extremes of 1 year and 70 years. The most represented age group was 0 to 10 years (32%) (Table 1).

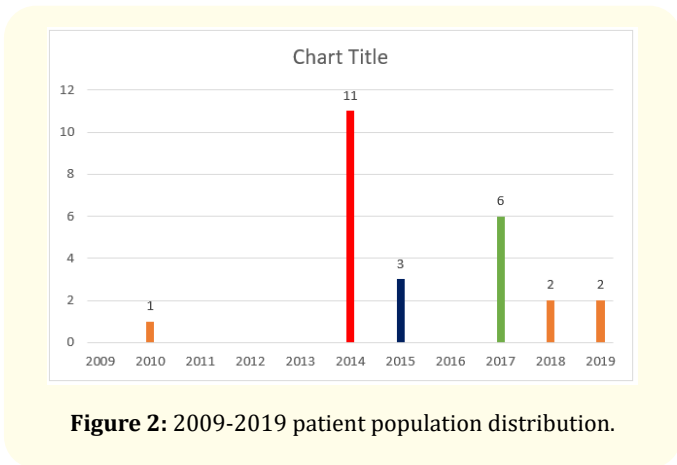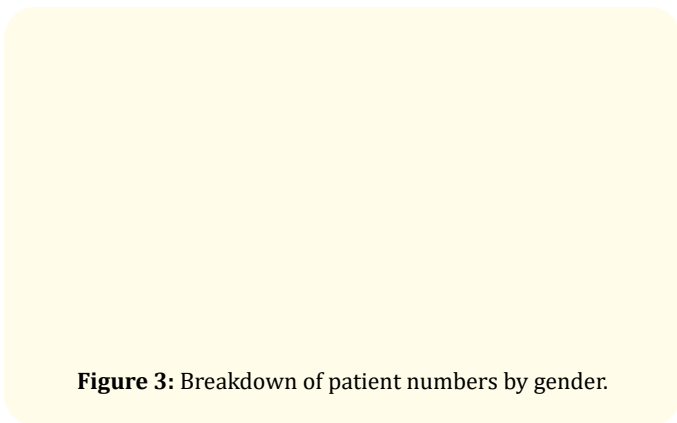**Figure 2:** 2009-2019 patient population distribution.

Figure 3: Breakdown of patient numbers by gender.

Age classes	Staff	%
[0-10]	8	32
[10-20]	5	20
[20-50]	7	28
[50-+]	5	20
Total	25	100

Table 1: Age-based distribution of patients.

Profession

Housekeepers, students and the unemployed represented the largest numbers with 24% each on the population with 16%.

Profession	Effective	%
Trader	3	12
Farmer	4	16
Housewife	6	24
Student	6	24
Other	6	24
Total	25	100

Table 2: Breakdown of patient numbers by occupation.

Clinical aspects

Clinical forms	Age range				Total
	[0-10]	[10-20]	[20-50]	[50-+]	
Evolutionary	8	2	0	1	11
Séquellaire	0	3	7	4	14
Total	8	5	7	5	25

Table 3: Breakdown of 25 noma cases by stage and age group.

Type of lesion

In our study we recorded 18 external cases or 72% followed by 5 cases of internal - external type or 20%. Internal lesions were less common with 2 cases recorded or 8%.

Types of lesions	Staff	%
Internal	2	8
External	18	72
Internal+external	5	20
Total	25	100

Table 4: Breakdown of patient numbers by type of injury.

Seat of the lesions

The left upper hemi-lip was the most common location 36%.

Injury seat	Staff	Frequencies %
Hemi-lip sup left	9	36
Lip -cheek	5	20
Plays - nose	1	4
Left cheek	3	12
Other	7	28
Total	25	100

Table 5: Patient size distribution based on injury.

Prevalence calculation

$$P = \frac{Nombre\ de\ personnes\ presentants\ un\ noma}{poulation\ totale\ étudiée} \times 100$$

$$P = \frac{25}{566921} \times 100$$

P= 0,004%

Key associate factors

These results only took into account noma patients in the evolutionary phase.

Pathologies recovered

Several pathologies were noted, the most striking were malnutrition (7/11), parasitic diseases (6/11) and malaria (5/11). HIV serology is positive in 5/11 patients.

Related Factors	Staff
Poor nutrition	6
Malaria	3
Measles	1
VIH+	5

Table 6: Patient breakdown based on associated factors.

Oral hygiene

Oral hygiene was poor in half of patients (9/11).

Oral hygiene	Effective
Moyenne	2
Mauvaise	9

Table 7: Patient breakdown based on associated factors.

Therapeutic aspect

Medical treatment and local care were performed in all patients in the evolutionary phase 44%.

Therapeutic attitude

Antibiotic therapy

The most commonly used ib therapy was the combination of ceftriaxone and metronidazole.

Antibiotic therapy	Staff
Amoxicillin - clavulanic acid - metronidazole	2
Amoxicillin - clavulanic acid - metronidazole - Azithromycin	4
Ceftriaxone - metronidazole	6

Table 8: Breakdown of patients by antibiotic therapy.

The future of patients

The fate of the evolutionary Noma cases was:

- Healing without major sequelae in 4 patients.

- Healing with major sequelae in 6 of the patients.

Evolution	Staff
Healing without major after-effects (GSSM)	4
Healed with major after-effects (GASM)	6
Death	0
Lost sight	1

Table 9: Patient distribution based on clinical evolution.

Discussion

Changes in the number of patients registered in 10 years

The number of patients diagnosed evolves into a «sawtooth» with a peak in 2014 (44%) 2017 (24%). This result is similar to that reported to Mali by MODIBO KANTE [7] in 2011 in a medical thesis on the epidemiological and clinical aspect of noma in the MOPTI, GAO and TOMBOUCTOU regions. This study had a total of 163 patients between 2004 and 2009. The number of patients diagnosed was in «sawtooth» with a peak in 2005 (58 or 35.6%) 2007 (42 or 25.8% of cases). This result in our context could be explained by the fact that the sick live hidden and appear only during the care campaigns. Indeed in Cameroon there is an organization called "WECCARE FONDATION" specializing in plastic surgery. His team under the leadership of Dr. OBEN has organized several campaigns for reconstructive surgery of hare beaks and noma in several regions. These peaks correspond to the different descents made.

Age

The distribution of patients in relation to age showed that the age class of [0-10 years] was the most affected or 8/25 of the cases.

According to WHO studies in «noma contact» [9] in 1997, the most affected are children aged 0-6 years. This same observation is made in Dakar by Lozes R., *et al*. in 1983 [10] in a study conducted between 1960 and 1982 in which 83% of the patients were children aged 1 to 7 years. During this period the child is weakened by malnutrition and parasitic and infectious diseases [3,9,10]. The relatively young age of patients in our context could be explained by the weakness of their immune system and the phenomenon of malnutrition.

However, subjects over the age of 10 (up to 70 years old) were also recorded in our song and for the most part they were noma séquellaires.

Sex

The distribution of patients versus sex in our study was in favor of the male sex (64% male versus 36% female sex). Our result is similar to that found by T. KONSEM., *et al*. [18] in 2014 in a retrospective study on Evolutionary Noma, about 55 observations seen at the Yalgado Ouedraogo University Hospital in Ouagadougou. This study recorded 50% male versus 49.1% female sex. Among some authors, the female sex would be much more affected by noma. Other authors, on the other hand, found gender equality in their series. Sex would therefore have no influence on the occurrence and progression of the disease according to these same authors.

Profession

Our study found that housekeepers, students and the unemployed were the most effective, with 24% each. A study done by Ould Soufiane [14], gives a fairly high number of unemployed with 47.6%, so screws of housewives 23.8%. At the same time Koyandaoulé Kangale [2] points out in his study that the unemployed may be more numerous in very different proportions, he finds that the sample of patients without particular occupation was 36.10% of cases ahead of farmers 27.90% and housewives 26.20% of cases. Our results could be explained by poor living conditions for patients, poor family situations and insecurity in the region and multiple displacements.

Clinical aspects of noma

In this study, we showed that the left upper hemi-lip was the most frequent location(36%) which corresponds to type II according to Montandon, followed by that associated lip and play with 26% (type I), and a generalized impairment of the left cheek with 12% (type IV). This result is similar to that of Koyandaoulé Kangale [2] in 2002 in his thesis on the epidemiological approach of noma in Kati where out of 61 cases, the noma was located at the lips with a rate of 39.30%, then at the cheek (21.30%). This finding was reported by Diombana in 1998 at Kati Hospital [15] in his epidemiological study of noma in the stomatology and maxillofacial surgery department of Kati Hospital: 61 cases, where the location of the cheek and lips was 77.30% tandis than that of the nose, 22.7%. In this study, lip impairment involved 47.6% of the sample, while pour Ould Soufiane, the rate was 33.33% [16].

From the point of view of the topography of the lesions, the lip region was the preferred site of gangrene.

Related factors
Malnutrition

Malnutrition is observed in more than half of the cases in the evolutionary phase (6/11). Our results are similar to those found in Burkinafasso by Ouedraogo Paulette [50] in 2009, which in a thesis on the clinical-biological and therapeutic epidemiological aspect of noma at Yalgado Ouedraogo University Hospital, found 56% of malnutrition were associated with noma. Malnutrition has always been considered to be a determining factor in the etiology of noma and all published studies on the subject confirm its importance. Unfortunately, our observations can only confirm the presence of malnutrition in most children in our regions. The food imbalance that sets in through a bad relay at the time of weaning and ancestral considerations have met food taboos, all combined contribute to the poor diet of children. Children who were partially protected by antibodies and proteins in breast milk are less protected by the intake of other sources of vitamins, trace elements and proteins.

In Cameroon, the state of undernutrition is often severe in the far north. This region has the highest rate of MAG with 8.6% as revealed by the SMART survey of July August 2013 [17]. The French Red Cross (CRF) and the Cameroon Red Cross (CRC) have been working in the area since April 2012 through a project to combat malnutrition.

VIH

HIV is found in 5/11 patients, including 3 adults. This brings us back to the hypothesis made in Burkinafaso by Millogo M., *et al*.

[18] in 2012 in a study on HIV and nominated where the authors state that the advent of HIV seems to indeed cause the occurrence of noma in adults. This result in our context could be reflected in the fact thatsince2007, the HIV-positive rate has remained almost stable at the national level, after a significant improvement observed between 2006 and 2007 where there was a decrease of 2 points. However, at the regional level, the situation has deteriorated. This rate rose from 3% in 2007 to 3.5% in 2009 among pregnant women, yet considerable efforts had been made to reduce the rate from 5.3% in 2006 to 3% in 2007. The number of subjects is too small to draw statistically significant conclusions in our context.

Oral hygiene

Poor oral hygiene is the most common factor, it is observed in more than half of patients who come into evolutionary phase with 9/11cases. This result is similar to that found in Burkinafasso by OUEDRAOGO PAULETTE [20] in 2009, which in a thesis on the clinical-biological and therapeutic epidemiological aspect of noma at yalgado Ouedraogo University Hospital found that poor oral hygiene was the most common factor found in their patients, 66% had oral-dental alterations. Several authors agree that the lack of oral hygiene promotes the development of acute necrotizing gingivitis (GNA), which most often precedes the passage to noma [21-23]. These surveys highlight a high rate of gum disease with almost no hygiene measures; parents' carelessness about their children's oral hygiene because they are often too busy going about their business.

The inadequacy of dental surgeons and the need for oral health education in this part of the country would appear to be the main cause.

Conclusion

The objective of this study was to determine the epidemiological profile of noma in the Department of Diamaré in Cameroon. The study was based on a population of patients with noma whose records were received in the various hospital trainings of the department. At the end of this work, it emerges that:

- The noma does exist in this department.
- Noma in our context occurs much more in children under the age of 10. It affects both male and female and most often affects very poor people.

- Clinical presentation is dominated by external and localized lesions in the lips and cheeks.
- The prevalence of noma in the Diamaré department is 0.004%.
- The most common associated factors are poor oral hygiene, malnutrition, malaria, and intestinal parasitosis.

Bibliography

1. Eric Dagiral and Ashveen Peerbaye, Health in Public Space. "The construction and dissemination of information on rare diseases chap" (2010).

2. Koyandaoulé Kangale ferdinand. Epidemiological approach on noma at Kati National Hospital Medical thesis 98 (2002).

3. Rachel lozes. "Clinical and Therapeutic Reflection on Noma Thesis". 92 (1983).

4. Yves Schumacher Le Noma devours the face. Rev Mens Switzerland Odontostomatol 118.4 (2008).

5. IIIia Djadi. "Noma disfigures children". Woman Africa info - SYFIA Niger January (2001).

6. Juhos J. The Disappearance of Noma in Europe in the first half of the 20th century, Inauguraldiss., Lübeck (2006): 17.

7. Modibo Kante. "Epidemiological and clinical aspects of noma in the regions of Mopti, Gao and Timbuktu Medicine thesis" (2011).

8. Oginni FO., *et al*. "A survey of cases of cancrum oris seen in Ile-Ife, Nigeria". *International Journal of Paediatric Dentistry* 9 (1999): 75-80.

9. Costini., *et al*. "Noma and its treatment". Edition Elsevier, Paris, France (2003): 9.

10. A M Claveau. Noma EMC- ORL (1992): 5

11. Marc Tsechkowski: WHO. Noma contact October (1997).

12. B Mafart., *et al*. "The noma: past, présent....et future?" *Tropical Medicine* 62 (2002): 2.

13. Buchanan JA., *et al*. "Necrotizing stomatitis in the developed world". *Clinical and Experimental Dermatology* 31.3 (2006): 372-374.

14. French Virtual Medical University. French Hospital-University College of Maxillofacial Surgery and Stomatology, Craniofacial Anatomy 2010-2011.

15. P Breton and Mr Friedel. Maxillofacial surgery, anatomical reminders www.spiral.lyon1.fr.

16. Bercy Tenenbaum. "Periodontology from Diagnosis to Practice". book chap1 (2011).

17. Barati Mayer D. "Study on the etiology of Noma". Ed. Medicine and Hygiene (2004): 118.

18. Millogo M., *et al*. "HIV and noma in Burkina Faso". *Revue de Stomatologie, de Chirurgie Maxillo-faciale* 113.6 (2012): 433-436.

19. Tall F., *et al*. "The name of the child in the hospital of Bobo-dioulasso: epidemiological aspects, clinical and care". *Tropical Odonto-stomatology* 96 (2001): 2.

20. Naidoo S and Chikte UM. "Noma (cancrum oris): case report in 4-year-old HIV-positive South Africa child". *South African Dental Journal* 55.12 (2000): 683-686.

21. Sirol J., *et al*. "The noma or the forgotten ugliness. Clinical study and pathogenic trial of ten cases observed at fort-lamy (TCHAD)".

22. Mazere J. *Le Noma Med. Afr. Nre* 23 (1976): 595-599.

23. Dickson LS., *et al*. "Contribution to the clinical and therapeutic study of evolutionary noma". 23 (1976): 533-539.