

Prescription of Antibiotics in Oral-Dental Practice: Case of the Dental Practice at the Coyah Prefectoral Hospital in the Republic of Guinea 2019-2020

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Abstract

Introduction: Antibiotics are medications that have the property of destroying bacteria or preventing their proliferation. The aim of this study is to evaluate antibiotic prescriptions in oral practice: case of the dental office of the Coyah prefectural hospital. **Methods:** This is a descriptive cross-sectional study which took place from August 2019 to January 2020 inclusive, *i.e.* a duration of six (6) months, during which 400 patients were identified. **Results:** Our results revealed a frequency of 70% of antibiotic prescriptions. The 16 - 25-year-old age group was the most dismayed, at 47.25% and with an average age of 27.78 years. Men represent 55% compared to 45% of women, *i.e.* sex ratio of 1.22. Pulp gangrene was the most common pathology in 55% of cases. The most prescribed family was Betalactamine or 61.71% and the most represented molecules were Amoxicillin with 56.10% followed by Metronidazole or 34.16%. And the favorable prognosis was observed in 99% of cases. **Conclusion:** Prescription should always be based on the benefit-risk ratio. This prescription by practitioners aims to prevent or eradicate infections and pain in order to obtain a good therapeutic result.

Keywords

Prescription, Antibiotics, Oral Practice, Dental Office, Prefectoral Hospital,

1. Introduction

A medication prescription is considered to be a medical act which engages the responsibility of the person who writes it and indicates the different medications in the therapeutic model proposed by the doctor and/or pharmacist, guided and accepted by the patient [1]. In hospitals, antibiotics represent one of the most prescribed drug classes [2]. It is indicated in irreversible pulpopathies, that is to say categories 3 and 4 of BAUME, when the tooth can be preserved. In the management of endodontic infection (categories 4), antibiotic therapy can be recommended as a curative measure; in addition to the treatment, the antibiotic is only an adjuvant and not an alternative to cleaning or re-cleaning of the canal and drainage of pus or exudate [3]. It helps to slow down and eliminate the body's infectious process more quickly and thus prevent more serious complications [3]. Whatever the patient's level of infectious risk, in the following cases: presence of pain accompanied by fever, trismus, lymphadenopathy, persistent or progressive edema [3]. Antibiotic is a natural substance produced by synthetic or semi-synthetic microorganisms produced in the laboratory, which exhibits antimicrobial activity at low doses [4]. Despite these guidelines, antibiotics are among the most frequently prescribed medications, sometimes unnecessarily [5]. In 20% to 50% of cases, their prescriptions are inappropriate [2]. The consequence of the development of resistant strains of bacteria favored by unjustified treatments and significant morbidity and mortality linked to inadequate antibiotic therapy of severe infections [6]. In an epidemiological and infectious context, the practice of dentistry in Africa is also tainted by bad practices, particularly concerning antibiotic therapy, but the part relating to endodontics has not yet been appreciated. Furthermore, their prescribing principles do not always seem to be common practice [7]. Numerous studies carried out around the world [8]-[10] and in Guinea [11] have shown that the frequency of antibiotic prescription varies depending on the country as well as its effectiveness. The objective of this work is to evaluate antibiotic prescriptions in oral practice at the dental office at the Coyah Prefectural Hospital, determine the frequency of antibiotic prescriptions at the dental office, identify the different antibiotic molecules prescribed, list the different pathologies for which these antibiotics are prescribed and evaluate the results obtained.

2. Material and Methods

2.1. Type and Duration of Study

This is a descriptive cross-sectional study lasting 6 months from August 2019 to January 2020 at the dental office of the Coyah Prefectural Hospital, which aims to

provide care, training and research.

2.2. Sampling Technique

We carried out an exhaustive recruitment of 400 patients among the 571 who came for consultation at the dental office of the Coyah Prefectural Hospital. During the study period, all patients received prescriptions containing an antibiotic. Other patients who received prescriptions other than antibiotics were excluded.

2.3. Operational Definition of Variables

The different study variables described were qualitative (frequency, sex, clinical modalities, therapeutic modalities, assessment criteria) and quantitative (age).

2.4. Collection of Data

Data was collected manually using a well-established survey form for this work. The data were entered, analyzed and presented with EPI info in version 7.2 and using the software: Word, Excel and Power Point from the 2013 office pack.

Data analysis:

We conducted a descriptive analysis of the sample characteristics using the median for quantitative variables and the proportion for qualitative variables.

2.5. Ethical Considerations

The protocol for this study was approved by the scientific committee of the department of odontology of the Faculty of Health Sciences and Techniques of the Gamal Abdel Nasser University of Conakry and registered under number 346/UGANC/2020 of the Rectorate. Informed consent from each patient or patient's parent was obtained before data collection.

3. Results

Our study included a total of 400 patients, or 70%, who received a prescription containing an antibiotic and were successfully managed in most cases despite the technical weakness of the context (**Figure 1**). The male gender was the most represented, at 55% (**Figure 2**). The average age of the patients was 27.78 years with a range = 6 to 85 years (**Table 1**) with a predominance of pain as the main reason for consultation, *i.e.* 81% (**Table 2**). In terms of distribution of the different pathologies, pulp gangrene was the most diagnosed, *i.e.* 55% (**Table 3**). Regarding the molecules and families of antibiotics prescribed, amoxicillin 500 mg was by far the most prescribed, *i.e.* 56.10% (**Table 4**). The generic forms were the most dominant type of antibiotic, *i.e.* 93.75% (**Table 5**) with a predominance of the pills form, *i.e.* 88.63% (**Table 6**). Depending on the type of treatment, curative antibiotic therapy was the most proposed, *i.e.* 61.25% (**Table 7**) and we have a favorable prognosis which was mainly represented, *i.e.* 99% (**Table 8**).

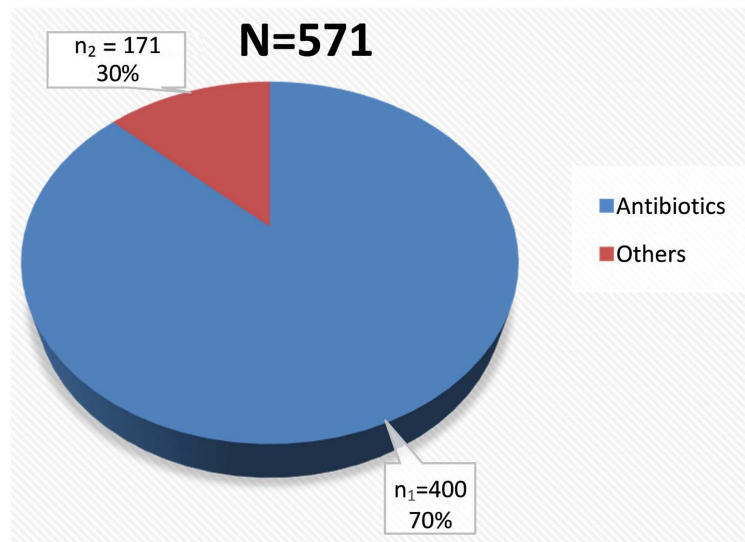


Figure 1. Frequency of antibiotic prescriptions in the dental office at the Coyah prefectural hospital 2019-2020.

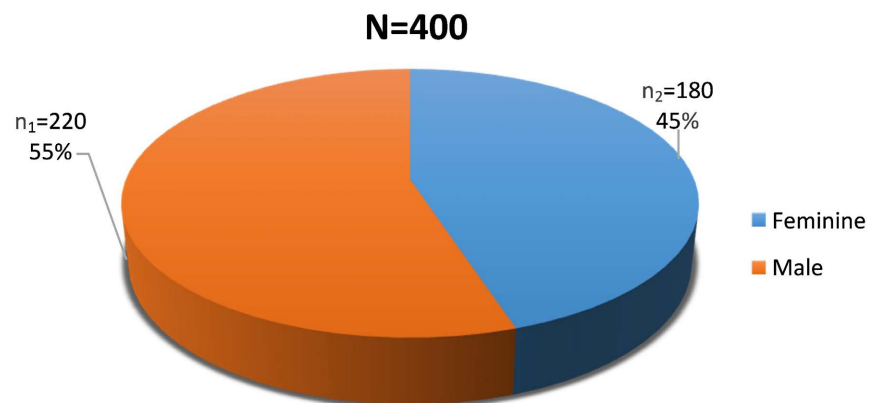


Figure 2. Distribution of patients by sex. Others: Analgesic, Anti-inflammatory, and Anti-septic.

Table 1. Distribution of antibiotic prescriptions according to reasons for consultation.

Age	Workforce	Percentage
6 - 15 years	31	7.75
16 - 25 years old	189	47.25
26 - 35 years old	97	24.25
36 - 45 years old	45	11.25
46 - 55 years old	13	3.25
56 - 65 years old	12	3
66 - 75 years old	4	1
76 - 85 years old	9	2.25
Total	400	100

Average age = 27.78 years; Extreme = 6 to 85 years.

Table 2. Distribution of antibiotic prescriptions according to reasons for consultation.

Patterns	Workforce	Percentage
Pain	324	81
Swelling	36	9
Dental Mobility	20	5
Aesthetic	20	5
Total	400	100

Table 3. Distribution of the different pathologies for which these antibiotics are prescribed.

Diagnostics	Workforce	Percentage
Pulp gangrene	220	55
Pulpitis	114	28.5
Alveolodental fracture	10	2.5
Periodontitis and dental abscess	26	6.5
Cellulite	6	1.5
Bone Fracture	4	1
Osteitis	2	0.5
Others	20	4
Total	400	100

Others; aphthous lesion; gingivitis; traumatic wound.

Table 4. Distribution of patients according to the molecules and families of antibiotic prescribed.

Families	Molecules	Number	Percentage
Betalactamine	Amoxicillin	340	56.10
	Ampicillin	16	2.64
	Amoxi + clavulanic acid	8	1.32
5-nitroimidazoles	Ceftriaxone	10	1.65
	Metronidazole	207	34.16
Macrolide	Erythromycin	15	2.47
	Clindamycin	10	1.65
Total		606	100

Table 5. Distribution of patients according to the type of antibiotic.

Nature of the antibiotic	Workforce	Percentage
DCI	375	93.75
Speciality	25	6.25
Total	400	100

Table 6. Distribution of antibiotic prescriptions according to administration and pharmaceutical forms.

Pharmaceutical form		Workforce	Percentage
Oral	Pills	525	88.63
	Capsule	53	8.74
	Syrup	2	0.34
Parenteral injectable		26	4.29
Total		606	100

Table 7. Distribution of patients according to type of treatment.

Type of treatment	Number of employees	Percentage
Curative antibiotic therapy	245	61.25
Antibiotic therapy prophylaxis	155	38.75
Total	400	100

Table 8. How often patients progress after treatment.

Results obtained	Effective	Percentage
Favorable	396	99
Unfavorable	4	1
Total	400	100

4. Discussion

Antibiotics are among the most commonly prescribed medications in dental practice. In this study which took place over six (6) months, 571 patients were registered in the department, among whom 400 benefited from the prescription of antibiotics, *i.e.* 70%, of which 30% concerned other medications. Our results are almost similar to those of Anass Elbouti *et al.* in Morocco, who had reported 74 prescriptions or (70.5%) were both relevant and compliant compared to 9 prescriptions or (8.6%) justified but not relevant and 6 prescriptions or (5.7%) were judged unjustified by the referring physician due to the absence of infection [12]. This result could be explained by the fact that practitioners are concerned with preventing post-extraction infection or curing the established one. During the investigation we observed a predominance of males in 220 cases or 55% compared to 180 cases or 45% of females with a sex ratio (M/F) of 1.22. Our results are similar to that found by Sacko N. who, in his doctoral thesis in pharmacy in 2016, reported 54.51% males compared to 45.49% females [11]. This result could be explained by the fact that men are less concerned about their oral hygiene than women. The ages of our patients ranged from 6 to 85 years. The most represented age group was between 16 to 25 years old, or 47%; with an average age of 27.78 years and extremes of 6 to 85 years. Our results are lower than those of Mathieu S. at the Saint-André de Bordeaux University Hospital in 2015, the age groups of

18 - 85 years were the most represented, with an average age of 37.5 years [13]. This result shows that no age group is spared from oral and dental infections in the absence of adequate hygiene. Pain was the main reason for consultation with 81%. This result is higher than that of Mathilde L. in France in 2017 who found 36% of cases [14]. This could be explained by the fact that pain is a reason often mentioned in dental consultations. The reason for antibiotic prescription was more noted in the case of pulp gangrene with 54.5% followed by chronic pulpitis with 28.5%. Our results are lower than those of Traoré D. in his doctoral thesis in oral surgery, in Abidjan in 2018, reported that 57.70% of pulpal gangrene [3]. This could be explained by patients' ignorance of oral diseases. In this study, beta-lactams were the most prescribed antibiotic family with 61.71% and amoxicillin the most prescribed molecule with a frequency of 56.10% followed by metronidazole 34.16%. Our results are superior to those of Mari François C. *et al.* in 2005 France, reported 33.6% of antibiotic prescriptions were for amoxicillin [15]. This could be explained by the fact that the combination of antibiotics from the beta-lactam family associated with imidazoles has a broader field of action, allowing them to act on a large number of bacteria giving a good result in the management of infections. In this study, antibiotic specialties were the most prescribed with 95.87%. This result is higher than that of Traoré N. in Bamako in 2018 who found 89% [9]. This could be explained by the fact that antibiotic specialties are more popular with practitioners than generic drugs. It results from our study that the oral route was the most used *i.e.* 95.71% and the compressed form the most prescribed *i.e.* 86.63% followed by capsules *i.e.* 8.74% route. This result is higher than that found by Ouattara K. who in his thesis Bamako in 2018 reported 88.8% oral administration [16]. This result could be explained by the accessibility of the products and the ease of use of this route by the greatest number of patients. The study involved 400 antibiotic prescriptions. Prescriptions could be declared for curative or prophylactic purposes and relate to a pathology. Prescription for curative purposes was predominant: 245 or 61.25% versus 155 or 38.75% as prophylactic. Our results are superior to those of Mari Françoise C. *et al.* in France 2005 reported 16.32% of prophylactic antibiotic therapy [15]. This result could be explained by the fact that most of the prescriptions there are unjustified. We recorded 396 favorable cases, or 99%, compared to 4 cases of post-surgical infection, or 1% of cases. Our results are lower than those found by Doumbouya M. In his thesis in Oral Surgery, mandibular fractures in Guinea in 2020 reported 4.54% unfavorable cases [17]. Post-surgical infections could be linked to the failure to purchase prescribed antibiotics on time but also to sometimes non-compliance with the therapeutic protocol.

The main limitation of this work is the non-cooperation and the fear of some patients to be consulted in our dental office.

5. Conclusion

Antibiotics are medications with the property of destroying bacteria or preventing

their proliferation; they have no effect on parasitic, viral infections or mycoses, which requires therapy using antiparasitics, antivirals and antifungals. At the end of our study, we note that antibiotics were widely prescribed, *i.e.* 70%, in the dental service of the Coyah prefectural hospital, either alone or in combination with others. This is due to the presence of dental and periodontal infections and then the poor oral hygiene. This prescription of antibiotics by the practitioner aims to prevent or eradicate infections and pain in order to obtain a good therapeutic result. The main limitation is the non-cooperation of certain patients and the fact that this study is limited to a single hospital structure, but it can guide future research concerning the prescription of antibiotics.

Authors' Contributions

MC, ABN, MD, AT, MK, and TK participated in the design of the protocol. MC, SS and ASM were involved in data acquisition, analysis and interpretation. ABO, ABN MSF, MD and MAD reviewed the manuscript. All authors read, approved the final version and agreed to publication.

Data Availability

Data regarding this study are available upon request from the authors.

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Conflicts of Interest

The authors declare that they have no competing interests.

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