


Research Article

# Epidemiological Profiles of Acute Otitis Media at the Commune II Referral Health Center in the Bamako District

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## Abstract

Acute otitis media is a very common condition in children under the age of 7, most of whom suffer their first episode before the first three years of life. Despite scientific advances in its therapeutic and preventive management, this condition remains frequent and cosmopolitan, particularly in otolaryngology (ENT) and pediatric wards. In view of the possibility of disabling complications, we set out to study the epidemiological and clinical profile of this condition for the first time in the ENT department of the Commune II Reference Health Centre in the District of Bamako, Mali. This is a descriptive, retrospective study, using routine consultation data from January to December 2022. Based on exhaustive sampling, we collected 568 cases of confirmed AOM, representing an incidence of 20.63%. Patient age ranged from 3 months to 83 years, with an average of 12.49 years. Overall, the 3-7 age groups predominated, with 30.63% of cases. However, patients under 2 years of age predominate in progressive forms of the various stages. This study shows that AOM is a frequent occurrence in our department, and highlights the need for good interdisciplinary networking between pediatricians and ENT specialists in the management of AOM, in order to avoid possible recurrences and functional sequelae.

## Keywords

Acute otitis Media, Epidemiology, Clinic, ENT Department, Bamako/Mali

## 1. Introduction

Acute Otitis Media (AOM) is an inflammatory disease of the middle ear mucosa that has been evolving for less than 3 weeks. [1]. It is very common in children under 5 years of age, with three out of four children having an episode before

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the age of three [1-5]. It generally occurs after viral or bacterial infections of the respiratory tract [1, 2]. AOM is commonplace in most cases, with spontaneous recovery; however, if inadequately treated, it can develop into complications causing functional disorders such as deafness and facial paralysis, or life-threatening conditions such as meningitis or encephalitis [6].

Scientific progress has made it possible to identify causal germs and therapeutic means (antibiotic therapy) [1, 6-8] and the implementation of preventive vaccines such as pneumococcal conjugate vaccine (PCV) have reduced the incidence of pneumococcal disease in the field by around 10%, as well as its recurrence and therapeutic failures [2, 10]. Despite these advances, the condition remains cosmopolitan and predominant in pediatric and ENT practices [4, 10, 11].

In the USA, it is estimated to account for more than 20 million consultations with general practitioners [4]. In France, it accounts for 10 to 20% of consultations in pediatrics and Ear Nose Throat (ENT) [11]. In Côte d'Ivoire, it varies from 0.5% to 13% of pediatric ailments [1, 12]. In Burkina Faso, it represents 28.7% of 718 sick children examined in ENT [6].

In Mali, studies in this area are rare. For the first time, we set out to understand the disease in the ENT department of the CSRéf in Commune II, in order to determine its epidemiological and clinical profile.

## 2. Materials and Method

This was a descriptive, retrospective study from January to December 2022 in the ENT department of the Centre de santé de Référence de la Commune II du District de Bamako. Sampling was exhaustive, including all patients presenting with acute otitis media during the study period. The diagnosis was made by physical examination using a videotoscope. Acute otitis media has been classified into three stages. Data

were collected through the consultation register, and the variables studied were sociodemographic data (sex, age, ethnicity and residence) and clinical data (reasons for consultation and stage of evolution). Data analysis was performed using Microsoft Excel version 2010, and results were presented using Microsoft Word version 2010.

## 3. Results

### 3.1. Socio-Demographic Profile

In all, we recorded 568 confirmed cases of otitis out of 2753 consultations, representing an incidence of 20.63%. The 3-7 age groups was the highest, with 174 cases, or 30.63% of cases, and the mean age was 12.49 years, with a minimum of 3 months and a maximum of 83 years. Females predominated, with 335 cases (58.98%) and a sex ratio of 0.99. The Bambara ethnic group was the most represented, with 144 cases (25.35%), and patients residing in Commune II were the most frequent, with 297 cases (52.29%). These data are shown in Table 1. In order of frequency, the most common ethnic groups were Bambara, Soninke, Malinke and Peulh (25.35%, 17.96%, 13.91% and 11.80% respectively). The others are sénoufo, bobo, bozo, sonrhail, maure.... which vary from 1.94% to 3.7%.

### 3.2. Clinical Data

Otalgia was the most frequent reason, with 428 cases (75.35%). In our series, congestive otitis (satade1) was the stage most frequently found on otoscopic examination, with 293 cases (51.58%), of which the 3-7 age group was the most affected (31.06%). In the other stages (Stages 2 and 3), the 0-2 age group was the most affected, with 36.31% and 34.3% respectively. These clinical data are shown in Tables 2, 3 and 4.

**Table 1.** Distribution of patients according to sex.

| Sex                      | Number | Percentage |
|--------------------------|--------|------------|
| Male                     | 233    | 41,02      |
| Feminine                 | 335    | 58,98      |
| Slice of ache            | Number | Percentage |
| 0-2 years                | 168    | 29,58      |
| 3-7 years                | 174    | 30,63      |
| 8 -17 years              | 141    | 24,82      |
| 18 years and over        | 85     | 14,96      |
| Residence                | Number | Percentage |
| Municipality Residential | 297    | 52,29      |
| Out of town              | 271    | 47,71      |

**Table 2.** Distribution of patients according to reasons for consultation.

| Patterns   | Number | Percentage |
|------------|--------|------------|
| Ear pain   | 428    | 75,35      |
| Tinnitus   | 16     | 2,82       |
| Otorrhea   | 116    | 20,42      |
| Hypoacusis | 8      | 1,41       |
| Total      | 568    | 100,00     |

**Table 3.** Distribution of patients according to types of ear infections.

| Type of ear infection | Number | Percentage |
|-----------------------|--------|------------|
| AOM Stadium 1         | 293    | 51,58      |
| AOM Stadium 2         | 179    | 31,51      |
| AOM Stadium 3         | 96     | 16,90      |
| Total                 | 568    | 100,00     |

**Table 4.** Distribution of stages of development of ear infections and by age group.

| AOM Slice Age     | Stage 1 |            | Stage 2 |            | Stage 3 |            |
|-------------------|---------|------------|---------|------------|---------|------------|
|                   | Number  | Percentage | Number  | Percentage | Number  | Percentage |
| 0-2 years         | 70      | 23,89      | 65      | 36,31      | 33      | 34,38      |
| 3-7 years         | 91      | 31,06      | 60      | 33,52      | 23      | 23,96      |
| 8-17 years        | 82      | 27,99      | 34      | 18,99      | 25      | 26,04      |
| 18 years and over | 50      | 17,06      | 20      | 11,17      | 15      | 15,63      |
| Total             | 293     | 100,00     | 179     | 100,00     | 96      | 100,00     |

## 4. Discussions

### 4.1. Socio-Demographic Profile

In this study, AOM represented an incidence of 20.63%. This is higher than studies in Côte d'Ivoire ranging from 0.5% to 13%. [1, 12] and that in Douala (5.20%) [13]. However, our rate is similar to that found by OUEDRAOGO B.P. in Burkina Faso, with 28.7% [6] and FRANCOIS M. in France (10-20% of pediatrics and ENT consultations) [11]. Acute otitis media concerned all ages, from 3 months to 83 years, with a predominance of the 3-7-year age group (30.63%). Here, our data differ from those found in the literature, which found a predominance of patients under 3 years of age [1, 5,

6]. This difference can be explained by the fact that, in the absence of any suppuration, infants are generally referred to the pediatric service for fever or plaintive cry. According to OUEDRAOGO B.P, otitis is most often diagnosed in infants when parents notice spontaneous suppuration [6]. In the same vein, FRANCOIS reports that pediatricians are the first to be consulted about non-specific symptoms of otitis in infants and young children, and that apart from correspondence, ENT specialists mainly see children over 2 years of age [11]. However, Konaté M O's study in the same country in 2021 also found an age range from 3 months to 78 years, with an average of 24.1 years [14] and Njifou Njimah A in Douala patients ranged from 4 months to 78 years with an average of 18.13 years  $\pm$  19.25 [13].

The female sex was the most frequent at 58.98%, with a

sex ratio of 0.99. The same predominance was reported in Mali by H. B Sacko in 2014 and Konaté M O in 2021 [9, 14] who found 52, 63% and 61.5% respectively. On the other hand, studies in Burkina Faso and Douala found a predominance of the male sex [5, 6, 13]. The Bambara ethnic group was the most represented with 25.35%, which is in line with the study by KONATE M O with a predominance of Bambaras at 22.5% [14]. This can be explained by the fact that Bambaras make up the majority of the general population in Mali. The majority of our patients (52.29%) lived in the residential commune of the Commune referral health center, explained by its proximity and easy accessibility.

## 4.2. Clinical Data

Otalgia was the most frequent reason for consultation with 75.35%. This converges with the high proportion of congestive otitis in our series i.e. 51.58% which are obviously painful. Our data are in line with the literature including NjifouNjimah A et al in Douala in 2018 [13] who also found otalgia as a clinical sign with 93.3%. Clavelin-Truchon Romain in Lyon in 2015 and OUEDRAOGO BP., report a predominance of congestive otitis with respectively 27% and 56.3%) of cases [6, 15]. On the other hand, NjifouNjimah A found that collected otitis was the predominant stage [13].

However, our analyses focus on otitis in infants (0 to 2 years), which predominate according to stage 2 and 3 progression, i.e. 36.31 and 34.38% respectively. This can be explained on the one hand by the mode of recruitment of this age group, most of who are treated at the congestive stage in pediatrics services, and on the other hand by the late discovery of these otitis in infants by their parents, who bring them to an advanced stage.

## 5. Conclusion

Acute otitis media occurs at all ages, with an incidence of 20.63%. However, it is most common in children under 7 years of age. In view of the delay in diagnosis in the 0-2 age group, treatment requires a good interdisciplinary network between pediatricians and ENT specialists, to avoid possible recurrences and functional sequelae.

## Abbreviations

AOM: Acute Otitis Media  
ENT: Ear Nose Throat  
PCV: Pneumococcal Conjugate Vaccine  
USA: United States of America

## Conflicts of Interest

The authors declare no conflicts of interest.

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