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# Does Hearing Impairment Have an Impact on the Children's Education in Casamance, South of Senegal?

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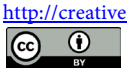



## Abstract

**Goal:** To determine the impact of deafness on the schooling of children in Casamance and the factors that characterize these repercussions. **Patients and Methods:** This was a retrospective, cross-sectional and multicenter study carried out in the ENT departments of the peace and regional hospitals of Ziguinchor over a period of 7 years from January 1, 2012 to December 31, 2019. It included hearing impaired children aged 1 to 18. **Results:** 178 hearing impaired children were collected during the study period. One hundred and forty-seven children were in school (82, 58%), the majority (85.03%) attending formal schools. Fifty-seven children had a speech disorder (32.02%). The average age of screening for deafness was 9 years. Deafness was mild in 53 patients. Thirteen patients had severe deafness. Two patients presented with cophosis. **Conclusion:** Our study shows that deafness does indeed have an impact on a child's education in Casamance, but this impact is hardly taken into account.

## Keywords

Repercussion, Hearing Impairment, Child, Casamance

## 1. Introduction

Hearing from the first days of life is infinitely precious for children [1]. Hearing impairment, which is the most frequently encountered sensory deficit in children, has serious repercussions on language and social interactions [1] [2]. WHO estimates that 32 million children worldwide suffer from a hearing impairment and are considered disabling [3] yet 60% of children's hearing impairment cases

could be prevented [1]. In cases where hearing impairment is unavoidable, interventions are needed to ensure that children reach their full potential through rehabilitation, education and empowerment [1] Hearing impairment is therefore a handicap [4]. Authors have studied the impact of deafness on children's schooling, and the factors that may influence it [5]. A Martinican study reported a language delay or pronunciation disorder in children in that study [6]. In southern Senegal, the hospital prevalence of children's hearing impairment is 1.30% [7]. Socially integrating a child with this disability is not always easy [8]. The problem of deaf children thus constitutes a challenge for society [9]. Few studies in Senegal were interested in the impact of deafness on children's schooling. Lines of research must be multiplied to better understand this public health problem. The objective of this study is to determine the repercussions of deafness on children in Senegal and the factors that characterize these repercussions.

## 2. Patients and Method

The protocol of this study was the same as that of the first study published by the same authors on deafness in children in Casamance, unlike the study variables [7]. This was a retrospective, transversal and multicenter study that we carried out in the ENT-CCF departments of the peace and regional hospitals of Ziguinchor over a period of 7 years, from January 1, 2012 to December 31, 2019. The target population was children and older children aged 1 to 18 years old with hearing impairments who received functional exploration when necessary. We have selected the medical records of patients meeting these selection criteria. Information was collected from consultation records, operating report registers and archives retained for this research. Analysis of the series was performed using data from the clinical observation patients' records. This study is a continuation of a first study carried out in the south of Senegal. She studied the epidemiological, clinical, audiometric and etiological parameters of deafness in children. Since childhood deafness is a vast theme, in the current study we discuss the following variables: The number of children in school, the type of schooling followed at the time of diagnosis and the number of children with language delay, the factors which characterize the impact of child deafness, namely the degree of hearing loss, the age of diagnosis [9]. The data thus collected was analyzed using the software Epi info 7.2.2.6 and Microsoft Excel 2016. The data were entered and processed using the Microsoft Word and Excel software from the 2016 office pack.

### Ethical Considerations

Not required for this retrospective study. The database has been kept in a secure place accessible only by medical personnel.

## 3. Results

One hundred and seventy-eight children with hearing impairment were in-

cluded in this study, including 147 schooled children (82.58%) (Figure 1).

Over the 147 schooled children, the vast majority (N = 125) attended Conventional schools (Figure 2).

Fifty-seven children presented a language disorder (32.02%) (Figure 3). The median age was 9 years with extremes ranging from 1 year to 18 years. One

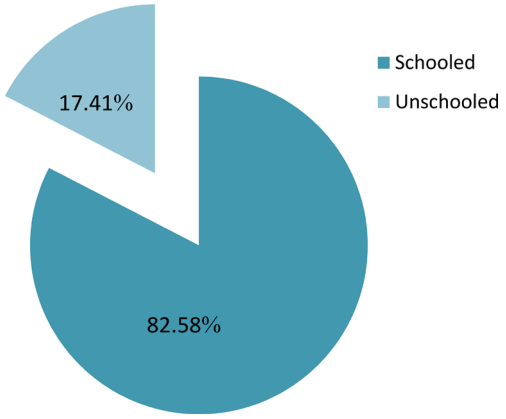


Figure 1. Distribution of patients according to the schooling percentage.

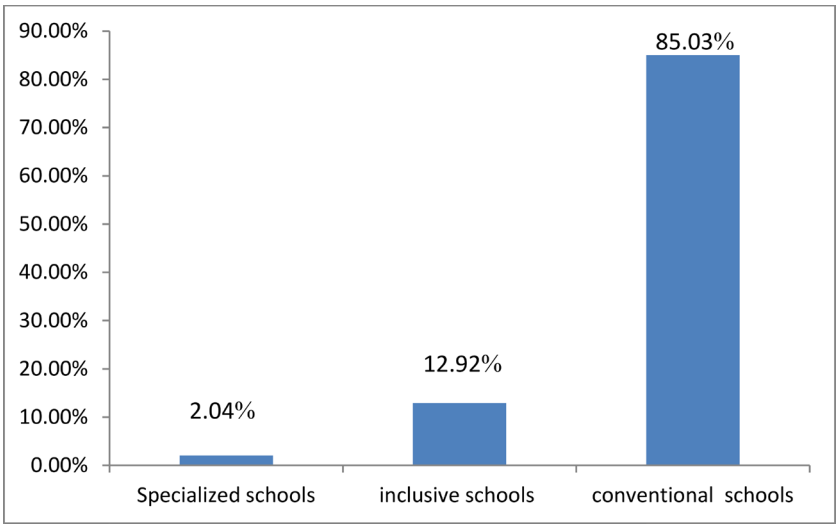


Figure 2. Distribution of patients according to the type of schooling followed.

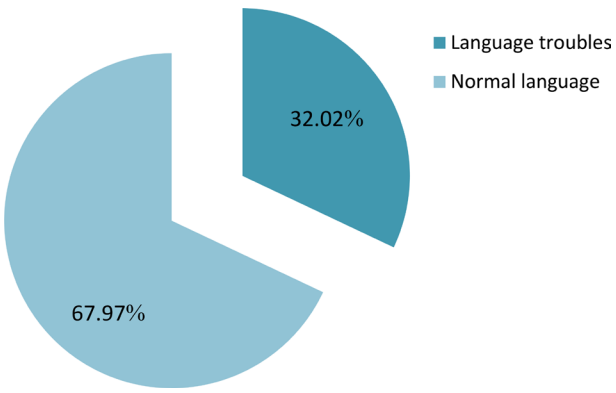


Figure 3. Distribution of patients by language.

**Table 1.** Factors determining the repercussions of children hearing impairment in Casamance [7].

| Factors | Variables | Numbers | Percentages |
|---|---|---|---|
| Epidemiological | Average age at diagnosis of deafness | | |
| Audiometric (hearing impairment degree) Mild deafness | Mild deafness | 53 | 43.09% |
| | Moderate deafness | 26 | 21.14% |
| | Profound deafness | 24 | 19.51% |
| | Severe deafness | 18 | 14.63% |
| | Cophose | 2 | 1.62% |

hundred and twenty-three patients received introductory tone audiogram. Deafness was severe in 14.63% of the (N = 18) patients (Table 1).

## 4. Discussion

In France, the law of February 11, 2005 stipulates that each pupil should have an ordinary education and close to his home whenever this is feasible [10]. In our series, 82.72% of the children were in school. This high schooling rate of deaf children can be explained by the fact that in Casamance, the average age for children deafness screening is 09 years [7]. Children are enrolled overwhelmingly in schools from early childhood.

The majority of deaf children attended regular schools. In southern Senegal, there are no specialized schools for the deaf. There are only schools with inclusive classes in which are mixed children with all disabilities (deafness, Down's syndrome, autism, motor disability) with normal hearing children. However, integrating a child with a disability into a classroom is not always easy. In Senegal, the negative image of disability adds to practical problems [8]. The children in our study who attended a specialized school were passing through Ziguinchor at the time of the study. They were actually enrolled in the verb-tonal center of Dakar. Our high rate of hearing impaired children (85.03%) enrolled in ordinary schools is similar to that of Francois *et al.* [5] who reported a rate of 76% of average deaf children enrolled in ordinary schools.

For deaf children attending regular school, the comparison of their educational level compared to the theoretical curriculum revealed an academic delay of one year or more in 45% of cases [10]. In our study, because it was retrospective, we did not have data to assess the impact of hearing impairment on children's educational results.

Studies carried out to date showed that deafness, as well as the age of its diagnosis, has an impact on the child's development and on the language [10]. Mbou studied hearing impairment in a child from Martinique over a 2-year assessment and the language delay or pronunciation disorder accounted for 21.4% [11]. It is also a good idea to look for language regression in children with hearing impairment. A Moroccan study found language regression in 2.6% of the children

in its series [7]. We did not report language regression in our study, but the rate of language delay (32.02%) was higher than that of Mbou.

A number of factors determine how hearing impairment affects a person, including: age of symptoms' onset, degree of hearing impairment, age of diagnosis [9]. These factors have been studied by authors. François *et al.* [5] chose to analyze the age of deafness diagnosis, the degree of deafness and its possible impact on the children's schooling in their study. This study was in favor of a slight (not statistically significant) decrease in academic delay with the lowering of the age at diagnosis of moderate and severe bilateral hearing impairment [5].

Regarding the time between the onset of symptoms, a Moroccan study finds that the time between the first doubts on the part of those around them and rehabilitation is still dramatically long and detrimental for the child [9]. In France, on the other hand, even if there is a delay between the moment the diagnosis is announced and the rehabilitation, the confirmation of the hearing impairment existence allows the family and those around them to become aware of the child hearing difficulties, to adapt his behavior to daily life and to notify the school. Teachers become more attentive to this pupil and can already take useful measures (child placed in the first rows, written support) [5]. This is not yet the case in southern Senegal. The environment in which a child lives, including access to services, greatly influences the development of a child with hearing impairment. Es Saadia [9] reported that among deaf children, those who have access to hearing aids and cochlear implants, sign language and special education are often able to take part in social life on an equal footing with their peers who can hear normally. Support groups for parents and families facilitate the social integration of children with hearing impairment.

### Study Limit

In our context, very few children have benefited from prosthetic rehabilitation. The fitting of children, is very difficult to achieve. There is no social security coverage in Senegal, very few families can afford to buy a hearing aid [12]. Cochlear implantation is difficult to envisage. Some data was also lacking from the study because it was retrospective, but we nonetheless looked at all the variables that were possible. The study is therefore a contribution to the first study carried out in southern Senegal on childhood deafness.

## 5. Conclusion

Our study shows that the context in which the southern Senegal deaf child evolves is not very favorable to his blossoming and social integration. In order to improve this condition, screening for deafness should be done systematically at birth, then at the entrance to kindergarten and in primary schools. This will make it possible to quickly identify and to effectively support the children who need it. The State must become more involved by creating not only more inclusive schools but also special schools. It will be beneficial to subsidize hearing aids

and cochlear implants.

## Study Context

This research is the continuation of a first study carried out in the south of Senegal on childhood deafness entitled: "Child Deafness in Sub-Saharan Africa: Experience of Two ENT Services in Casamance, South of Senegal" and published in the IJOHNS DOI: 10.4236/ijohns.2021.102010. The first study explored the epidemiological, clinical, audiometric and etiological parameters of children's deafness in south of Senegal. Since child deafness is a broad topic, the authors chose to continue the study and explore its impact on the children's education in southern Senegal.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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