

## Oral and Dental Status of Visually Impaired Children: A Cross-Sectional Study in an Institute for the Visually Impaired in Morocco

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### Abstract

**Context and objective:** Early impairment in visual function can interfere with a child's development and affect all motor, cognitive and emotional skills [5,11]. The oral health of visually impaired children has been the subject of a number of studies around the world assessing the oral health status of these special needs' children, most studies conducted on this topic found that visually impaired children had more oral health problems compared to the normal population [1,8].

In Morocco, the prevalence of blindness is 0.76% and of visual impairment is 2.27% [7]. However, there are few studies evaluating the oral status of visually impaired people,

With this in mind, we conducted a survey to evaluate the oral and dental status of visually impaired and blind children at Alaouite Organization for the Protection of Moroccan blind people (OAPAM) in Casablanca.

**Material and methods:** The study concerned all the students of the OAPAM institute in Casablanca. Data were collected by face-to-face interview and clinical examination.

**Results:** The center for the visually impaired and blind in Casablanca had 141 students, 68.8% of whom were boys. 39.7% of the students reported having a significant consumption of sweets between meals. The evaluation of brushing habits showed that 75.2% of the students brushed their teeth, 46.2% of whom did it irregularly. The caries prevalence was 87.94% with a DMF index of 4.38±3.1.

**Discussion:** The analysis and processing of the results of this study undertaken within the OAPAM institute of Casablanca, allowed the evaluation of the oral problems presented by the visually impaired children attending this institution.

Oral health of these children was defective, due to their lack of knowledge of oral and food hygiene.

The oral health of blind and visually impaired children has been the subject of a number of studies around the world assessing the oral health status and oral hygiene knowledge of these special needs' children. The study conducted by Ashish Jain et al in 2013 in visually impaired children showed that 58% had good hygiene, 37% had average hygiene and 5% had poor hygiene, compared to our study, less satisfactory results were noted, with only 46.7% of the children had good hygiene [3].

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Our study revealed that 75.2% of the students brushed their teeth, of which 46.2% did it irregularly (a few times), 25.5% said they brushed once a day, and 20.8% did it twice a day, and only 7.5% brushed three times a day.

Better results were obtained by the study conducted by A.N. AZRINA, G. NORZULINA and R. SAUB, among visually impaired adolescents in SMPK (School for the Visually Impaired in Malaysia), in 2007, which showed that 100% of the students brushed their teeth, and 50% of the students brushed twice a day [4].

**Conclusion:** Considering the importance of caries prevalence, the difficulty of psychological and therapeutic approach in these children as well as their lack of knowledge about oral and food hygiene, prevention is very important. Therefore, it is necessary to set up an adapted prevention program which aims to make these children aware of the importance of food and dental hygiene for a better oral health.

## Introduction

Visual impairment represents a very heavy burden for society and, apart from the suffering of the patients who suffer from it, it creates a real public health problem and a major economic handicap [6,12].

Early visual impairment can interfere with a child's development and affect all motor, cognitive and emotional skills [5,11].

In visually impaired children, the integrity of intellectual functions is preserved, the visual impairment does not affect the mechanism of intellectual functioning, but it deprives the child of the means of control for the adjustment of reality; it is therefore necessary to support cognitive development by stimulating the exploration of the environment and by adding verbal support [3,5].

These particularities can hinder, to varying degrees, the learning and application of the correct oral hygiene method, resulting in a defective oral condition [1,2,8,10,14,15,17].

The oral health of visually impaired children has been the subject of a number of studies around the world assessing the oral status of these special needs children.

Most studies conducted on this topic have found that visually impaired children have more oral health problems compared to the normal population [1,8].

In Morocco, the prevalence of blindness and visual impairment is 0.76% and 2.27% respectively [7]. However, no study has evaluated the oral status of visually impaired people.

In this regard, we conducted a survey to assess the oral status of visually impaired children at the Alaouite Organization for the Protection of the Blind in Morocco (OAPAM) in Casablanca.

## Material and methods

### Type, location and duration of study

A descriptive cross-sectional study was conducted at Alaouite Organization for the Protection of Moroccan blind people (OAPAM) in Casablanca.

### Study population

**Inclusion criteria:** All students enrolled at the institute were included in the study.

**Exclusion criteria:** children with a general pathology that could have an impact on oral health was excluded from the study.

## Data collection

Data for the study were collected by means of a face-to-face interview and a clinical examination, all reported on a form consisting of three sections:

- Section I: Socio-demographic data (age, sex, economic level, Residency, educational level).
- Section II: Dietary habits and oral hygiene practices.
- Section III: Oral and dental status, treatment needs.

## Ethical considerations

The recruitment of the children was done from the lists of pupils of each class at the administration, and after consent signed by the director of the institute, considered as the legal guardian of the children.

A liaison form for parents was filled out and given to the director of the institute in order to inform the parents of the students examined about the oral condition of their children and their possible care needs.

The anonymity, respect of privacy and confidentiality of the data were guaranteed.

## Statistical analysis

Statistical data were processed using statistical package for Social Science (SPSS) software.

Qualitative variables were expressed by their numbers and percentages, and quantitative variables by their means and standard deviation.

## Results

### Socio-demographic Data

The center for the visually impaired and blind in Casablanca has 141 students, 68.8% of them boys. These students were between 5 and 24 years old.

32.6% of the students went home only at weekends (boarders), and 50.4% of the students were blind (Table 1).

### Dietary habits and oral hygiene practices

The assessment of these habits reported that 39.7% of the students had a significant consumption of sweets between meals. The assessment of brushing habits showed that 75.2% of the students brushed their teeth, of which 46.2% did it irregularly (Table 2).

**Visually impaired children’s perception of the dentist**

For this question we noted that 52.5% found the dentist to be a friend of the children, 23.4% had no idea about the dentist and 18.5% reported that the dentist is a person who causes pain (Table 3).

**Oral health status**

The evaluation showed that 46.7% of the students had good hygiene (plaque index < 1)

The periodontal results showed a Löe-Silness Gingival Index of 0.57±0.49

The evaluation also reported that 60.3% of students had dental problems;

Finally, the prevalence of caries was 87.94% with a DMF index of 4.38±3,1 (Table 4).

**Table 1:** Socio-demographic data.

Variables	Effective (N)	%
<b>Gender</b>		
Girls	44	31,2
boys	97	68,8
<b>Age</b>		
5-10 years	34	24,2
11-13 years	27	19,2
14-17 years	41	29
18-24 years	39	27,7
<b>Residency</b>		
Internes	46	32,6
Externs	95	67,4

**Table 2:** Dietary habits and oral hygiene practices.

Variables	(N)	%
<b>Consumption of sweets between meals:</b>		
Low	31	22
Average	54	38,3
Important	56	39,7
<b>Brushing</b>		
Yes	106	75,2
No	35	24,8
<b>Brushing frequency</b>		
Once a day	27	25,5
Twice a day	22	20,8
3 times a day	8	7,5
Irregular	49	46,2

**Table 3:** Visually impaired children’s perception of the dentist.

Variables	(N)	%
A friend to children	74	52,5
No idea	33	23,4
Person who causes pain	26	18,5
Tooth doctor	7	5
Tooth extractors	1	0,7
Total	141	100

**Table 4:** Oral health status.

Variables	(N)	%
<b>Level of hygiene</b>		
Good	63	46,7
Average	42	31,1
Deficient	30	22,2
<b>Dental problems</b>		
Yes	85	60,3
No	56	39,7

**Discussion**

Visual impairment is a functional limitation that prevents individuals from obtaining information from their environment by means of sight. According to the WHO (2010), approximately 285 million people are visually impaired, including 19 million children [1,9,18].

The child who is born or who becomes visually impaired at an early age is deprived of a considerable amount of information from his environment and surroundings, whether spatial, morphoscopic, geometric, symbolic, emotional... the visual pathway is one of the senses most solicited in the psychomotor and emotional development of the child [5].

These functional problems can be at the origin of difficulties in learning and applying good oral hygiene methods, and therefore of oral problems.

The oral health of blind and visually impaired children has been the subject of a number of studies around the world, assessing the oral status and oral hygiene knowledge of these special needs children.

The analysis and processing of the results of this study undertaken in the OAPAM institute of Casablanca, allowed us to evaluate the oral problems presented by visually impaired children attending this institution.

The oral health of these children is defective, this could be explained by the absence of regular oral care, especially since 23.4% had no idea about the dentist and 18.5% reported that the dentist is a person who causes a pain.

Regarding the level of oral hygiene, our study noted that 46.7% of children presented good level. More satisfactory results were reported in the study conducted by Ashish Jain et al in 2013 in visually impaired children aged 6 to 18; showed that 58% had good level, 37% average level and 5% poor level [3].

The study conducted in Chennai, Tamil Nadu among 404 people aged 15-30 years, showed that 42% had correct oral,

33% had good level, and 25% had poor level, which agrees with the results of our study [10].

Our study found that 75.2% of students brushed their teeth, of which 20.8% brushed twice a day, and only 7.5% brushed 3 times a day.

Better results were obtained in the study conducted by A.N. AZRINA, G. NORZULINA and R. SAUB, among visually impaired adolescents in SMPK (School for the Visually Impaired in Malaysia), in 2007, which showed that 100% of the students brushed their teeth, and 50% of the students brushed 2 times a day [4].

In addition, the study conducted by ST Prashanth, et al, in 2011 in visually impaired children aged 8 to 13 years reported that 37.65% brushed twice/day, and 62.35% once a day [11].

The study conducted in Chennai, Tamil Nadu among 404 people aged 15-30 years, also showed relatively equivalent values, 30% brushed twice/day, and 69% did so once a day [10].

These values are higher than those found in our study.

According to our study, it is important to note that the prevalence of dental caries was 87.94% with a DMF index of 4.38. These values could be explained by poor Dietary habits represented by excessive consumption of sweets, combined with a low level of oral hygiene (46.2% of children brushed their teeth irregularly). This could probably be the result of a lack of knowledge about the importance of oral health, especially in this population of children with special needs.

On the other hand, it is also important to note that only 9.9% of children reported feeling at ease visiting the dentist, which could be a barrier to consulting a dentist, especially as this category of children requires special care in specialized structures.

Regarding dental caries, our study noted the importance of caries pathology with a prevalence of 87.94%, and a DMF index of  $4.38 \pm 3.1$ . These values can be explained by the lack of knowledge of the interest of oral hygiene practices, the important consumption of sweets and the neglect of oral health in these children.

The study conducted by Purohit BM et al in 2010 in southern India indicated a caries prevalence of 89.1% [12].

Values that are largely superior, to those of the study carried out by REDDY KVKK and SHARMA A. in 2011, with a prevalence of caries in visually impaired that was equal to 40% [13].

Finally, the study conducted at the Al-Nour Institute for the Visually Impaired in Khartoum State, Sudan, showed a DMF index of  $0.4 \pm 0.7$  (age  $\geq 12$  years) et DMF de  $1.9 \pm 2.8$  (age  $< 12$  years) [16].

A value significantly lower than the value obtained in our study ( $4.38 \pm 3.1$ ).

## Conclusion

Due to the high prevalence of caries, the difficulty of psychological and therapeutic approach in these children and probably a lack of knowledge about oral and dietary hygiene, prevention is a very important.

In this context, we were able to set up and evaluate a prevention program to raise awareness among these children of the importance of dietary of oral hygiene for better oral health. Through the development of information media adapted to

these children, which aims to facilitate the transmission of the educational message to visually impaired children. The results of this latest study will be published at a later date.

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