

# Profile of Medically Compromised Children Attending the Pediatric Dentistry Department of the Casablanca Dental Consultation and Treatment Center

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**Abstract:** Advances in pediatric medicine and medical technology have led to a spectacular reduction in morbidity and mortality among medically compromised children. As a result, dentists are facing the challenge of treating and managing more children with systemic conditions meeting affecting the dental treatment. *Objective:* To evaluate the medical profile of medically compromised children followed in the Pediatric Dentistry Department of the Casablanca Dental Consultation and Treatment Center and to assess their oral health. *Materials and methods:* This is a cross-sectional study conducted with 529 children treated in the pediatric dentistry department between 16 November 2016 and 16 January 2017. The general condition status, oral hygiene and dental condition were collected based on the anamnesis and oral examination. *Results:* From the 529 children included in the study, 1/3 of them have one or more systemic conditions. Patients with special needs represent 27.2% of the total of medically compromised children. The DMFT and dmft index were respectively of 6.42 and 3.44. The average plaque index was 1.04. *Conclusion:* The oral status of medically compromised children is alarming with a large number of decayed teeth and few treated teeth. This is related to the quality of oral hygiene measures introduced by children and their parents, as well as the impact of the medical condition.

**Keywords:** Medically Compromised Children, Dental Consultation, Oral Health

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## 1. Introduction

A poor oral health can have a considerable impact on the general health status and quality of life of otherwise healthy children, their effect on those with chronic and acute illnesses can be much more serious. In some cases it might lead to increased risks of life-threatening complications [1]. In addition, dental pain and infections can further compromise the quality of life of children with mental, developmental or physical disabilities [1].

Medically compromised children have a higher risk to develop oral disease, because the disease itself may include oral manifestations [2, 3]. Furthermore, the treatment or medication prescribed may lead to a decreased in host resistance and side effects in the oral cavity. Untreated dental

disease in medically compromised children can significantly affect their general health and quality of life. Indeed, in some conditions an acute dental infection can be fatal [4-6].

The evaluation of the medical profile of children consulting at university hospitals is of great importance at the global level. In fact, several studies have been conducted in this direction, most of which are focusing on the medical profile of adult patients [4, 5, 7-10]. However, few studies have addressed the subject of the medical profile of children consulting for dental care [1, 11, 12]. The situation is similar in Morocco. Very few studies have examined the medical profile of children consulting for dental care.

The main objective of this study is to evaluate the medical profile of children consulting and following up in the pediatric dentistry department of the Casablanca Dental Consultation

and Treatment Center, and to assess their oral health.

## 2. Participants and Methods

This is a cross-sectional study conducted in the pediatric dentistry department of the Dental Consultation and Treatment Center in Casablanca. The study covered 529 patients managed at the pediatric dentistry department from 15 November 2016 to 16 January 2017.

The Institutional ethical committee approved this research and parental consent of all patients was obtained before conducting the study.

Data collection was carried out using a questionnaire consisting of four successive parts: the patient identification, the patient's medical profile, the children's dietary habits and oral hygiene practices and the patient oral health status.

Patient identification included information on age, sex and socioeconomic status.

Child's general condition was determined by the presence or absence of a general pathology. Medically compromised conditions were classified into 12 categories: hematological and oncological diseases, cardiovascular diseases, endocrine disorders, infectious diseases, nervous system disorders, respiratory diseases, gastric diseases, dermatological diseases, multi-systemic diseases, autoimmune diseases, patients with special needs and others.

According to the compromised medical condition, the modified ASA classification for dentistry was used to determine risk during dental treatment [13].

Other information on current medication and chief complaint were obtained.

Dietary habits and oral hygiene practices were also assessed in the questionnaire; type of diet, sweetened beverages/snacks and their frequency, number of meals and dental brushing.

Then, all subjects were examined for dental caries, and oral hygiene status. Caries status was evaluated using the decayed, extracted and filled primary teeth (dft) index and decayed, missing, or filled (DMFT) permanent teeth (1997) [14]. The SILNESS and LOE plaque index (1964) used to ascertain oral hygiene status, which is recorded as excellent, good, fair or poor [15, 16].

The results were analyzed at the Laboratory of Epidemiology and Bio-statistics of the Faculty of Dentistry of Casablanca.

## 3. Results

Of the 529 pediatric patients included in this study, 240

(45.4%) were female and 289 (54.6%) were male. The patients had an age range of 2-16 years with a mean age of  $8.46 \pm 3.04$  years.

In this sample, 180 patients (34%) were afflicted with one or more medically compromised conditions and 349 (66 %) were categorized as healthy (no medical conditions reported). Prevalence of medication use in medically compromised children was 66.7%.

In the present study, the most frequently encountered medical condition category was patients with special needs followed in descending order by, multisystemic diseases, hematological and oncological diseases, cardiovascular diseases, respiratory diseases, others, nervous system disorders, dermatological diseases, endocrine disorders, autoimmune diseases, infectious diseases and gastric diseases, respectively (Table 1).

Table 2 gives the distribution of patients with specific needs by type of disability.

The percentage of patients medically compromised in each ASA category was: ASA II 46.7% (84), ASA III 20.6% (37), and ASA IV 32.8% (59).

The chief complaint has been classified into two types: either the patient is referred by his attending physician, or he consults for his own interest for either an emergency or an oral rehabilitation (Table 3).

Regarding previous dental visits, 94 (52.2%) of medically compromised children have never consulted a dentist, and 86 (47.8%) of children have already visited a dentist, but (56.98%) of them have been referred directly to the Pediatric Dentistry Department without any prior treatment.

Data of dietary habits of medically compromised children showed that the number of meals was more than four meals per day for 111 (61.7%) children, and 55% of children consume sweetened drinks, outside meals (Table 4).

Concerning oral hygiene practices, approximately 76,7% (138) of subjects reported regularly brushing their teeth less than 2 times/day for 63.8% and greater than 2 times/day for 36.2%. No dental brushing was reported in 23.3% (42) of children (Table 5).

The mean DMFT index of medically compromised children was  $6.42 \pm 5.29$  with a number of decayed teeth (1.78), and the mean dmft index was  $3.44 \pm 4.09$  with a number of decayed teeth (3.92).

The mean plaque index value of the examined children was  $1.04 \pm 0.43$  and the oral hygiene was qualified as good in 37.1%, fair in 58.4% and poor in 4.5%.

*Table 1. Disease categories and frequency of diseases.*

Disease category	N	%	Type of diseases
Hematological and oncological diseases	35	19,4 %	Thalassemia, Sickle cell disease, Hemophilia A and B, Purpura, Iron deficiency anemia and Hypochrome, Thrombocytopenia, Pancytopenia, Leukemia, lymphomas, Neuroblastoma, Nephroblastoma, Medulloblastoma...
Cardiovascular diseases	13	7,2 %	Congenital heart disease, Valve stenosis, Acute rheumatic fever, Bicuspidy of the aortic valve...
Endocrine disorders	5	2,8%	Insulin-dependent diabetes, Non-insulin-dependent diabetes, Growth retardation....
Infectious diseases	2	1,1%	Tuberculosis-meningeal, Sinusitis.....
Nervous system disorders	8	4,4%	Epilepsy, Hydrocephaly.....
Respiratory diseases	10	5,6%	Asthma, Severe bronchitis, Chronic nasal obstruction.....
Gastric diseases	0	0%	Gastritis.....

Disease category	N	%	Type of diseases
Dermatological diseases	7	3.9%	Congenital ichthyosis, Epidermolysis bullosa, Ectodermal dysplasia, Cutaneous allergy....
Multisystemic diseases	37	20.6%	Patient with more than one systemic pathology
Autoimmune diseases	4	2.2%	Immune deficiency, juvenile arthritis, rheumatoid arthritis.....
Patients with specific needs	49	27.2%	Mental retardation, Down's syndrome, Deaf and dumb, Autism, cerebral palsy...
Others	10	5.56%	Renal diseases, Allergy to dust, Behavioral disorders, G6PD deficiency.....

**Table 2.** Distribution of patients with specific needs by type of disability.

Patients with specific needs	No	%
Autism	12	24.49%
Cerebral palsy	16	32.65%
Mental retardation	11	22.45%
Psychomotor deficiency	5	10.20%
Deaf and dumb	1	2.04%
Trisomy 21	4	8.16%
Total	49	100%

**Table 3.** Chief Complaint of Medically Compromised Patients.

	No	%
Addressed by the treating physician	107	59.4%
Dental emergencies	36	20.0%
Rehabilitation of the oral cavity	37	20.6%
Total	180	100%

**Table 4.** Dietary Habits of Medically Compromised Patients.

	No	%
Meals per day		
≤ 4 times / day	69	38.3%
>4 times / day	111	61.7%
Sweet drinks		
Yes	99	55.0%
No	81	45.0%

**Table 5.** Oral Hygiene Practices of Medically Compromised Patients.

	No	%
Dental brushing		
Yes	138	76.7%
No	42	23.3%
Brushing frequency		
<2 times/day	88	63.8%
≥ 2 times/day	55	36.2%

## 4. Discussion

In dentistry, the patient “at risk” is patient that present one or more diagnosed or suspected medical conditions, treated or not. The interactions between oral health and general health are multiple and bidirectional. Dental management of the medically compromised patient requires acquisition of a complete health history of the patient [4]. Because, some medical situations require precautions or even therapeutic abstention, and even if dental treatment has been perfectly carried out, recurrences and/or complications may occur due to the patient's general state [4, 5].

The prevalence of the medically compromised children in this study was 34%. This value is significantly lower than those reported in other studies. It was 66% in Boston [12] and 54.66% in Saudi Arabia [1]. This difference can be explained by geo-demographic, ethnic and socio-economic

differences [10].

In the present study, the most frequently encountered disease category was that of patients with special needs (27.2%) with a predominance of children with cerebral palsy (32.65%), followed by the category of multi-systemic diseases (20.6%). The prevalence of category of hematological and oncological diseases was (19.4%), which could be explained by the close collaboration between the pediatric dentistry department and the hematology and pediatric oncology department. The other categories of cardiovascular diseases (7.2%), respiratory diseases (5.6%), nervous system diseases (4.4%), and dermatological diseases (3.9%) had a low prevalence.

The increasing prevalence of chronic diseases in this study has also led to a growing demand for medications, with 66.7% of medically compromised children taking one or more drugs. The concomitant use of a variety of drugs by patients requires a perfect knowledge of drugs by dentists to avoid drug interactions during prescriptions and to anticipate the undesirable effects of some drugs [4].

The ASA 2 score was obtained for 46.7% of children, ASA 3 for 20.6%, and ASA 4 for 32.8%. This classification allows the dentist to identify patients who can be treated safely during dental care, as well as those whose treatment involves a higher risk [7, 6, 13].

In the present study, 59.4% of medically compromised children are referred by their attending physicians for comprehensive care, 20.6% of these children for oral cavity rehabilitation, and 20% who consult for an emergency. No patient has consulted just for a routine examination or systematic visit, regardless of their socio-economic level. The study carried out in the University of Hacettepe [11], reports that the systematic visit or routine examination was the first chief complaint of their patients (46.4%).

This may be explained by the fact that dental care for medically compromised children is often neglected. The preoccupation of parents about the principal medical condition often leads to neglect of other aspects of the child's overall health [11, 17].

This situation remains alarming.

Serious work must be done with attending physicians as part of collaboration between dentists and physicians to encourage regular oral check up, and facilitate referral of at risk children to pediatric dental services [2, 11]. Children with chronic childhood diseases are more prone to developing oral diseases [3], they should have a dental examination every 3 to 6 months, even if they have no dental problems. This systematic visit would raise parents' awareness of the importance of oral hygiene and the impact of poor oral health on systemic diseases. Furthermore, those children

should receive the highest priority for comprehensive preventive dental care from an early age [2, 11].

In this study, 61.7% of medically compromised children consume more than four meals a day. This high meal consumption could be explained by the attitude of parents who try to compensate their children's illness with treats and also to solve the problem of stature-weight slowdown that affects many of these patients.

Sugars are most important cause of dental caries. Frequent consumption of carbohydrate containing snacks between meals is known to increase the amount of dental caries [18]. Despite the knowledge of the relationship between sugar abuse and the appearance of dental decay, the average consumption of sweetened drinks remains relatively high in our sample 55%. The UFSBD "French Union for Oral Health" recommends that children should not exceed four meals a day without any intake of sweetened drinks or soda even "light" in order to maintain a good oral health [18].

The role of tooth brushing in prevention of dental diseases has been well established [11, 19]. Unfortunately, 50% of the children examined reported that they did not brush their teeth, while the others had the habit of brushing their teeth irregularly. These results can be explained by the lack of awareness among these children and lack of knowledge from parents about the risks of poor oral hygiene on their overall health.

In this study, 52.2% of children with medical condition have never seen a dentist, and 56.98% of children who have already consulted a dentist are not cared for. Studies have shown that many general dental practitioners were quite reluctant to treat patients with chronic diseases [3, 14].

This study reported a DMFT index of 6.42 (with a component "D" = 1.78) and a dmft index = 3.44 (with a component "d" = 3.92). This value is higher than that found in the study conducted in Hacettepe [11]. This underlines, once again, that the oral state of the Moroccan medically compromised child is alarming with a large number of decayed teeth and few treated teeth.

## 5. Conclusion

Dentists are increasingly treating more medically complex patients who require complex services with more challenging dental treatment planning.

Knowing about systemic diseases and medications will help dental practitioners to be aware of life-threatening situations that may occur during dental treatment.

## 6. Recommendations

The general pediatrician plays an important role in educating medically compromised children and their families about the importance of good dental health, encouraging attendance and facilitating their referral to pediatric dental services.

Medical and dental professionals who treat medically compromised children need to work together as a team, and adopt a multidisciplinary approach in order to optimally contribute to the child's quality of life.

A regular dental check-up should be included in treatment protocols to eliminate possible sources of infection. It is also very important to educate parents/patients about oral hygiene procedures.

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