

Assessment of the Clinical Activities of Emergency Consultation of the Pediatric Odontology Clinic of Dakar

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Abstract

Introduction: Emergency in pediatric dentistry is defined as the occurrence of a diagnostic and therapeutic problem in a child whose examination cannot be postponed and which requires an immediate decision. In order to improve the management of this dental emergency, this study proposes to take stock of the clinical activities of emergency consultations.

Materiels and methods: A retrospective study was carried out on the clinical records of children aged 2 to 15 years who consulted in emergency from 2012 to 2017 at the pediatric dentistry clinic in Dakar. Several variables of interest were analyzed: socio-demographic characteristics, year of consultation, nature of emergency, causal tooth, diagnosis and treatment undertaken.

Results: A total of 1035 files were selected, of which 124 concerned the emergency consultation, 12%. Girls represented 51% (63 children) of the sample and boys 49% (61 children). The average age was 9 years old. The age group 6 to 12 was the most represented (65%). The annual emergency 2016-2017 rate was predominantly 18%. The most frequent emergency diagnoses are related to a caries event. Endodontic treatments were the most performed acts 85%.

Discussion: The low prevalence of emergency consultations is linked to a late start of dental care and a mode of operation dependent on the academic year. Continuity of care throughout the year could improve the management of emergency consultations.

Keywords: Assessment; clinical activities; emergencies; pediatric dentistry; Dakar

Introduction

The word “emergency” comes from the Latin *urgere* and means to press. An emergency in medicine is defined by a medical situation that cannot or can only wait for care. Pediatric dentistry emergencies are defined as the occurrence of a diagnostic and therapeutic problem in a child whose examination cannot be postponed and which requires an immediate decision. It is particular and remains motivated by pain, which is subjective. Indeed, pain in children is physiological and psychological, linked to anxiety, which implies the clinical picture. It is certain that pain is still the main reason for emergency consultation in paediatric dentistry, regardless of the age and type of tooth concerned: temporary or permanent immature. This pain was associated with a carious, traumatic, periodontal lesion or an eruption problem [1, 2]. However, this oral emergency requires rapid and child-friendly treatment, especially when it is accompanied by a painful picture [3]. Indeed, studies carried out in developed countries had shown a high prevalence of emergency consultations and that the majority of children seeking emergency consultations came for an infectious or traumatic problem [1, 4].

In Africa, retrospective studies of emergency consultations among children in university hospitals had shown a disparity in emergency rates [1, 5].

In Senegal, specific pediatric dentistry emergency services do not yet exist, and public services that take care of children’s oral conditions only operate during the day, which can hinder continuity of care for emergency requests. Thus, in order to improve the management of these oral emergencies, our study had the following objectives:

- To make an assessment of the clinical activities of emergency consultations at the Odontology Clinic of Dakar.
- Describe the sociodemographic characteristics of young patients attending emergency departments.
- Determine the frequency of emergency visits.
- Identify the most common pathologies.
- Define the type of treatment given based on the nature of the emergency.

Method

Type of setting and study population

This is a retrospective study based on the clinical records of all children aged 2 to 15 years brought to emergency consultations from 2012 to 2017 in the pediatric dentistry clinic of the Institute of Dentistry of the Faculty of Medicine, Pharmacy and Dentistry of the Cheikh Anta DIOP University of Dakar. Clinical activities take place on average 6 to 7 months of the year and are closed during public holidays, university holidays and exam sessions. Each week includes three four-hour shifts, i.e. 12 hours per week. Emergency patients are welcomed by Master 2 students, supervised by teachers.

Selection criteria

Included:

All clinical records of children aged 2 to 15 years consulting for a true emergency requiring immediate and specific action, namely:

- Pain not relieved by self-medication and radiating,
- Serous cellulitis, circumscribed or diffuse,
- Trauma: dental fractures, alveolar fractures, oral cavity wounds,
- Oral bleeding: bleeding after tooth extraction, brace injury.
- Orthodontic pain.

Unusable files were not taken into account, as were the files of children over 15 years of age.

Data collection procedure and variables studied

We conducted an exhaustive collection of all patients' clinical records from 2012 to 2017. All selected clinical records were ranked by academic year. These files filled in during the treatment included data relating to the patient's characteristics, the reason for the consultation, the diagnosis, as well as the treatment carried out. All this information was collected with the help of a survey sheet and well analyzed.

The variables of interest are:

- The age of the patients, classified into three brackets: 2-5 years, 6-12 years, 13-15 years, corresponding to the different stages of development of the dentition: temporary dentition, mixed dentition, young adult dentition
- Sex of patients (boys, girls).
- The year of the consultation.
- The reason for the emergency consultation: we have classified emergencies into five main families: the emergency related to a caries event, the traumatic emergency, the infectious emergency, the periodontal emergency and the hemorrhagic emergency.
- The diagnosis made in relation to the nature of the emergency. Thus, for emergencies related to a caries process, we can mention septum syndrome, irreversible pulpitis, acute apical periodontitis. The infectious emergency category concerned cellulitis, pericoronitis, abscesses. The traumatic category included fracture, expulsion, dislocation, intrusion of the tooth. The periodontal category referred to involvement of the soft tissues, the tissues supporting the tooth, the periodontium and the mucous membranes.
- The treatment undertaken may be endodontic treatment, dental avulsion, soft surgery or others.

Statistical analysis

The data collected was entered using Microsoft Office Excel 2016. The data analysis was done by Microsoft Office Professional Plus 2016 (Excel 2016 and Word 2016). Qualitative variables were described by their number and percentage and quantitative variables by mean and standard deviation. The bivariate comparison was made by the chi2 test for the proportions and the Student's t-test for the means. The tests were significant when the p-value was less than 0.05.

Results

Out of a total of 1035 clinical cases, 124 concerned emergency consultations, i.e. 12% from 2012 to 2017 in the Pediatric Dentistry Clinic in Dakar.

<i>Years</i>	<i>Urgent cases</i>	<i>Non-urgent cases</i>	<i>Total</i>
2012-2013	11	68	79
2013-2014	19	171	190
2014-2015	28	204	232
2015-2016	11	219	230
2016-2017	55	249	304
Total	124	911	1035

Table 1: Distribution of Clinical Records by Year.

Socio-demographic characteristics

Age distribution

The age of the patients ranged from 2 to 15 years. The mean age was 9 years \pm 2.8. The children were divided into three age groups. The age group of 6 to 12 years represented the majority of consultants (65%).

<i>Age range</i>	<i>Actual</i>	<i>Percentage</i>
2-5 years	23	19
6-12 years old	80	65
13-15 years old	21	17
Total	124	100

Table 2: Distribution of children by age group.

Gender distribution

Of the 124 emergency cases, 63 were female (51 per cent) and 61 were male (49 per cent). The sex ratio was 1.03

Clinical Data

Type of consultation

Emergency consultations accounted for 12% and non-urgent consultations for 88%.

<i>Type of emergency</i>	<i>Actual</i>	<i>Percentage</i>
In case of emergency	124	12%
Non-urgent cases	911	88%

Table 3: Distribution of the type of emergency.

Reappearance of emergency rooms depending on the year:

The emergency rate of 2016-2017 was predominant with 18% and that of 2015-2016 the lowest with 5%.

<i>Year</i>	<i>Urgent cases</i>	<i>Cas non urgents</i>	<i>Total</i>	<i>Emergency Rate (%)</i>
2012-2013	11	68	79	14
2013-2014	19	171	190	10
2014-2015	28	204	232	12
2015-2016	11	219	230	5
2016-2017	55	249	304	18
	124	911	1035	

Table 4: Distribution of the Emergency Rate by Year.

Reason for consultation and location

More than half of the emergency consultations concerned dental pain in the mandible, i.e. 69.35% compared to 30.65% for the maxilla.

<i>Reason for consultation and location</i>	<i>Actual</i>	<i>Percentage</i>
Jaw pain	38	30,65
Pain in the mandible	86	69,35
TOTAL	124	100

Table 5: Distribution by reason and location of the consultation.

The emergency related to a caries event accounted for 72% of consultations and the infectious one 22%. Only 7 emergency cases were of traumatic origin, i.e. 6%. This emergency related to a caries event was also the most frequently found according to the year followed by the infectious one. Traumatic emergencies were the least represented over the five years (Figure 1).

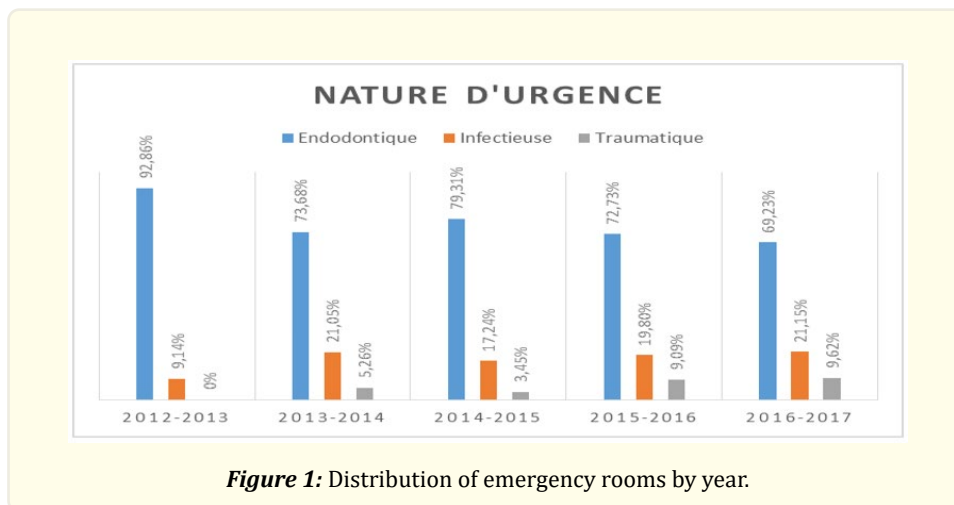


Figure 1: Distribution of emergency rooms by year.

The distribution of the sample according to age, sex and nature of the emergency shows that there is no statistically significant difference between age, sex and the nature of the emergency (chi2 = 9.487, chi2 = 9.991 and p = 0.114, p = 0.765) (Table 6).

Variables		Nature of the emergency			P-value
		Caries event	Infectious	Traumatic	
Age	2-5 years	15	08	00	p=0,114
	6-12 years old	58	18	04	
	13-15 years old	16	02	03	
Sex	Masculine	42	15	04	p=0,765
	Feminine	47	13	03	

Table 6: Distribution of the sample by age, sex and nature of emergency.

Causal tooth

The molar group accounted for 82% of the reasons for emergency consultations, including 57.9% of temporary molars and 42.1% of permanent molars. The incisive-canine group was 18%, of which 40% were temporary incisors and 60% were permanent incisors. The large causal teeth were located in the mandible, i.e. 70% (86 causal teeth).

Type of tooth and nature of the emergency

Teeth with temporary teeth accounted for 56% of the causal teeth, while those with permanent teeth accounted for 44%, for a total of 54 teeth.

The distribution of the sample according to the dentition and the nature of the emergency shows that there is a statistically significant difference (chi2 = 5.991 and p = 0.0003) between the type of dentition and the nature of the emergency, with the temporary teeth being more frequently affected by the infection (Table 8).

<i>Causal tooth/arch</i>		<i>Actual</i>		<i>Percentage (%)</i>
Punchy	Temporary	4	10	40
	Permanent	6		60
Molar	Temporary	66	114	57,9
	Permanent	48		42,1
Maxillary	Temporary	26	38	68,4
	Permanent	12		31,6
Mandible	Temporary	44	86	51,2
	Permanent	42		48,8

Table 7: Distribution of Emergency Department by Causal Tooth.

<i>Variables</i>		<i>Nature of the emergency</i>			
		<i>Caries event</i>	<i>Infectious</i>	<i>Traumatic</i>	<i>P= value</i>
Teeth	Temporary (n)	45	24	01	P=0,0003
	Perms (n)	44	04	06	

Table 8: Distribution of the sample according to the teeth and the nature of the emergency.

Diagnostic

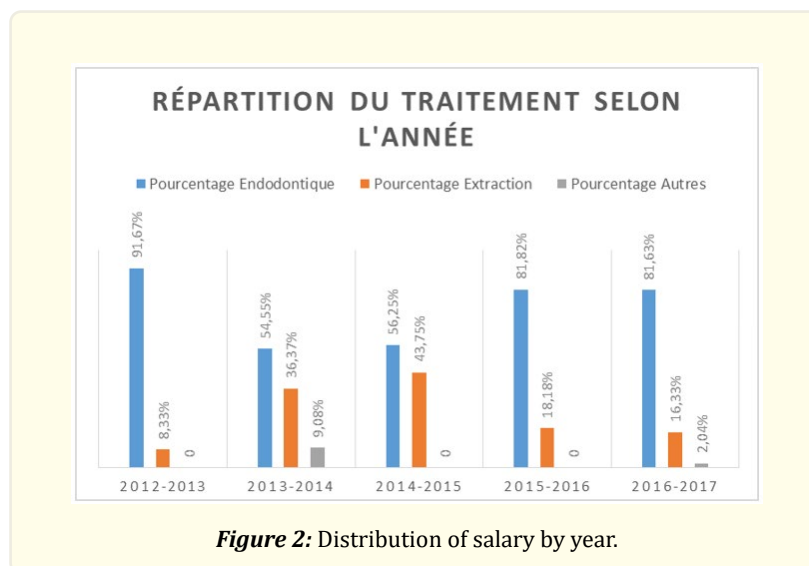
The diagnosis of acute irreversible pulpitis was observed in 27.4% of emergency cases, of which 21.8% concerned permanent teeth and 5.6% temporary teeth. Abscess was noted in 18.5% of cases and pulp necrosis with periodontal involvement in 10% of cases (Table 9).

<i>Diagnostic</i>	<i>Permanent tooth</i>		<i>Temporary tooth</i>	
	<i>Actual</i>	<i>%</i>	<i>Actual</i>	<i>%</i>
Abscess			23	18,5
Pathology of furcation			3	2,4
Pulp necrosis with periodontal involvement	1	2,4	13	10,5
Cellulitis	3	2,4	2	1,6
Extrusion			1	2,4
Fistula	1	0,8		
Complicated coronary fracture	6	4,8	1	0,8
Pulp hyperemia	6	4,8		
Acute Apical Periodontitis	6	4,8		
Acute irreversible pulpitis	27	21,8	7	5,6
The 2014 U.S. Court of Appeals for the 2016 U.	4	3,2		
Syndrome de Septum			20	16,1
Total	54		70	

Table 9: Distribution by Diagnosis.

Treatment

Of the 124 children consulting in emergency, 106 benefited from endodontic treatment (85%), and in 15% extractions were performed. Endodontic treatments were the most common procedures performed in children regardless of the year (Figure 2).



Discussion

Socio-demographic data

The objective of our study was to carry out clinical activities for children consulting in emergency at the Pediatric Dentistry Clinic in Dakar with the aim of improving care.

The study involved 1035 emergency patient files, including 124 children aged 2 to 15 years with an average age of 9 years \pm 2.8. The children were divided into 3 age groups, corresponding to the different stages of development of the teeth. We noted a predominance of children in the 6 to 12 age group, i.e. (65%) of the sample. This critical period of the dentition, which extends from mixed dentition to permanent dentition at a young age where the child acquires his independence, takes care of himself. In addition, there is also an important social activity and it also corresponds to a period when children frequently consult for oral diseases. We find this trend in the studies of El Khammam et al., [5], Chouly [6] who had found respectively 67% and 65% for the same age group, and as well as Zandouche [7]: on the management of dental trauma in children and adolescents in the private and hospital sectors, where the 6-12 age group was majority.

The proportion of girls was in the majority, 51% compared to 49% of boys. This same tendency was found in Songo's study [8]. However, these results are different from those of Bengondo [9], Tenenbaum [10] and Wong [11] For these authors boys were predominant. This distribution had no particular significance because the urgency was not a function of sex.

Clinical data

Emergency room represents 12% of consultations at the Paediatric Odontology Clinic over the last five years. This relatively low rate contrasts with the fact that pain is the main reason for consultation in our societies, as most parents only bring their children in case of pain and some give up continuing treatment once the pain subsides. We could also mention the mode of operation of the pediatric dentistry clinic of the Department of Dentistry of the Faculty of Medicine, Pharmacy and Dentistry of the Cheikh Anta Diop University, which operates during the academic year, with the addition of an often late start of care. The duration of oral health care, which only lasts six to seven months each year, leads to a disaffection of patients who migrate to the public or private sectors for further care. These results are similar to those of Sakai et al. [12], (19.37%) and Agostini et al., [1] (15.3%). However, other studies such as those by Shqair et al. [13], Meryem [14], reported a rate of 60%; similarly, Murshid [15] reported a 44.7% rate of emergency consultations for patients presenting for the first time.

More than half of the patients consulted were due to dental pain of mandibular origin, i.e. 69%. These results are consistent with the findings of Shqair et al., [13], regarding their retrospective study of emergency room visits in children in hospitals. This could be explained by the fact that mandibular teeth (temporary and permanent immature) by their position, and their complex anatomical and physiological characteristics favor the retention of food and its fermentation by cariogenic bacteria; It should be added that overall, they erupt before those of the maxilla, exposing them more to chemical or bacterial aggressions. The involvement of the permanent mandibular molars can be linked by their position to a lack of notary hygiene in all the children we meet, making them more susceptible to tooth decay.

The emergency related to cavities and its complications was in the majority, i.e. 72% compared to 6% of traumatic origin. These data are included in the averages found in the literature. Indeed, authors such as Shqair et al., [13] and Wong et al., [11] had found similar results with 79% and 75% respectively. According to Beatriz Ferras [16] and Martens [17], cavities and its complications were one of the main reasons for emergency consultations. These results could be explained by early tooth damage by cavities in children with poor oral hygiene. However, our results are contradictory to those found by Chia-Pei Jung [18], Popescu et al., [19], Sakai et al., [12]. Indeed, for these authors, traumatic emergencies were in the majority.

Analysis of the distribution of the sample according to age, sex and nature of the emergency shows that there are no statistically significant differences ($p=0.114$, $p=0.765$). These results are in agreement with those of Maro D [20], but differ from those of Popescu et al., [19] who included in his study patients whose age ranged from (1 to 60 years).

The study made it possible to highlight the location and identification of the causal tooth. The results show a predominance of teeth in the molar group with 82% compared to 8% for those in the incisive-canine group, for both types of teeth. The teeth of the posterior sector in particular, the molars were the most affected and the mandible was more affected than the maxilla. The results are consistent with data from the literature where caries involvement was associated with temporary molars, Shqair et al., [12], Von Kaenel et al., [21]. The position and anatomical and physiological characteristics of the mandibular molars make them more susceptible to decay.

Other authors, including Sari et al., [22], Orlando et al., [23] have reported a majority of the anterior teeth, particularly the upper central incisors, in the context of the study of traumatic emergencies in children in a hospital setting.

Among the children, 56% were in temporary dentition while those in permanent dentition represented 44%. Only 19% of the children were in the 2-5 age group. This could be explained by the appearance of much earlier caries affections; Indeed, tooth decay exists in children in all countries of the world, regardless of their level of economic development, from the age of 1 to 2 years [24, 25].

Ismail et al., [26], reported that young children can develop cavities as early as the second year, as well as trauma with learning to walk.

Analysis of the distribution of the sample according to the teeth and the nature of the emergency shows that there is a statistically significant difference ($\chi^2= 5.991$ and $p=0.0003$).

The classification of pediatric emergencies according to diagnosis showed that acute irreversible pulpitis was the majority condition with 27.4% of cases, of which 21.8% concerned permanent teeth. The abscess was 18.5%. Septum syndrome 16.1% and pulp necrosis with periodontal involvement 10.5%. The results are in agreement with those of Tenenbaum [10] and SAVI DE TOVE [27]. The throbbing and paroxysmal nature of pulp pain prompts the young child to consult urgently, while the pulpitis in temporary teeth is fleeting and yields to analgesics, which can push the child to postpone the consultation. Thus the tooth quickly passes into a state of pulp necrosis, which means that the dental abscess is more numerous than in temporary dentition.

As for the management, all the patients benefited from emergency treatment (symptomatic) during the session for a reduction in pain and were later seen for further care. Thus, we obtained 85% of patients who benefited from endodontic treatment, while dental avulsions concerned 15% of the sample. Pulpectomy was by far the most performed treatment, in fact in the literature endodontic treatment was considered for a long time as the reference treatment for the management of pain related to the irreversible inflamma-

tion of dental pulpitis.

From these results, the following recommendations follow:

Enable an effective start of clinical activities at the beginning of the academic year.

Ensure continuity of dental care throughout the year to avoid disaffection.

To provide the Department of Dentistry with new premises and dental equipment.

Create a dedicated emergency room to deduce the waiting time for patients.

Provide public services with specific emergency reception structures that operate 24 hours a day.

Conclusion

The study showed a low rate of emergency consultations over the past five years. Pain remains the main reason for consultation, the diagnosis related to a caries event is the most frequent and endodontic treatment is the most performed procedure. The results obtained in this study show the interest of a continuous consultation throughout the year, to prevent cavities and its consequences in order to avoid pain and oral infections, in order to better manage these emergencies but also to ensure the follow-up of treatments.

References

1. Agostini FG, Flaitz CM and Hicks MJ. "Dental emergencies in a university-based pediatric dentistry postgraduate outpatient clinic: a retrospective study". *ASDC J Dent Child* 68.5-6 (2001): 316-321, 300-1.
2. Oliva MG, Kenny DJ and Ratnapalan S. "Nontraumatic dental complaints in a pediatric emergency department". *Paediatr Emerg Care* 24.11 (2008): 757-760.
3. Berthet A., et al. Understanding and evaluating pain and anxiety. In: Berthet A, Droz D, Maniere MC, Nauli-IFI C, Tardieu C. Treatment of pain and anxiety in children. Paris: Quintessence International (2006): 9-26.
4. Andreasen JO. "Traumatic dental injuries in children". *Int J Pediatr Dent* 10.3 (2000): 181.
5. EL Khammal H., et al. "Report of emergency consultations in paediatric dentistry at the Rabat Dental Consultation and Treatment Centre". *Web J Dent* 8.1 (2013): 9-15.
6. Chouly Achraf. "Evaluation of the root canal treatment of temporary teeth at the OP Clinic of the Odontology Department of UCAD". Thesis Chir Dent, Dakar UCAD 29 (2017): 69.
7. Zandouche C. "The management of dental trauma in children and adolescents: Private sector, hospital sector, attitudes of dental surgeons". Thesis Chir Dent., Metz (Moselle) 3853 (2012): 113.
8. Songo BF, et al. "Reasons for consultation in Pediatric Dentistry in Kinshasa in the Democratic Republic of Congo". *Ann. Afr. Med* 3.4 (2010): 574-581.
9. Bengondo MC., et al. "Pediatric odonto-stomatology emergencies at the University Hospital Center of Yaounde, Cameroon". *Clinics in Mother and Child Health* 3.1 (2006): 465-468.
10. A Tenenbaum., et al. "Children's consultations for dental emergency. Retrospective study in Île-de-France". *Rev Epidemiol Sante Publique* 68 (2020): 17-24.
11. Wong NH and Yang Zeng. Emergency Department Jonathan M. Mitchell, DMD, PhDAust *Dent J* 57.2 (2012): 132-7.
12. Sakai VT., et al. "Urgency treatment profile of 0 to 15 year-old children assisted at urgency dental service from Bauru Dental School, University of São Paulo". *Appl Oral Sci* 13.4 (2005): 340-344.
13. Shqair AQ, Gomes GB and Oliveira A. "Dental emergencies in a university pediatric dentistry clinic: a retrospective study". *Braz Oral Res* 26.1 (2012): 50-56.
14. Meryem Z. "Evaluation and management of dental pain in children at the C.C.T.D of Casablanca". Thesis Chir Dent, Casablanca 89/15 (2015).

15. Murshid EZ. "Children's ages and reasons for receiving their first dental visit in a Saudi community". *Saudi Dent J* 28.3 (2016): 142-147.
16. Beatriz Ferras Dos Santos and Basma Dabbagh. "A10 years retrospective study of paediatric of emergency department visits for dental conditions in Montreal, Canada". *Int J Paediatr Dent* 30.6 (2020): 741-748.
17. LC Martens, S Rajasekharan and W Jacquet. "Paediatric dental emergencies: a retrospective study and a proposal for definition and guidelines including pain management". *European Archives of Paediatric Dentistry* 19 (2018): 245-253.
18. Chia-Pei Jung. "A 2-year retrospective study of pediatric dental emergency visits at a hospital emergency center in Taiwan". *Bio-medical Journal* 39.3 (2016): 207-213.
19. Popescu LD, Agai and Popescu MA. "The management of dental emergencies in the Métropole Savoie hospital after one year of operation of an on-call line". *Med Buccale Chir Buccale* 21.4 (2015): 211-218.
20. Maro D., et al. "Previous toothache, dental visits and caries presence among primary school children in Dar es Salaam".
21. Von Kaenel D., et al. "Social factors associated with pediatric emergency department visits for caries-related dental pain". *Pediatr Dent* 23.1 (2001): 56-60.
22. Sari ME., et al. "A retrospective evaluation of traumatic dental injury in children who applied to the dental hospital, Turkey". *Niger J Clin Pract* 17.5 (2014): 644-648.
23. Orlando Guirre Guedes., et al. "A retrospective study of traumatic dental injuries in a Brazilian dental urgency service". *Braz Dent J* 21.2 (2010): 153-7.
24. Douglass JM., et al. "Dental caries patterns and oral health behaviors in Arizona infants and toddlers". *Community Dent Oral Epidemiol* 29.1 (2001): 14-22.
25. Erckson PR and Nickman JD. "Early childhood caries: ethiology, risk assessment and prevention". *Northw Dent* 78.6 (1999): 27-32.
26. Ismail AJ and Sohn W. "A systemic review of clinical diagnostic criteria of early childhood caries". *Public Health* 59.3 (1999): 171-191.
27. Savvy DE., et al. "Stomatologic pain in children; Investigation of consultation and odonto-stomatological treatments in Abidjan". *Rev. Col. Odonto-Stomatol. Afr. Chir. Maxillo-fac* 19.2 (2012): 35-39.