Original Article

A retrospective study of nontraumatic dental condition-related visits to dental hospital emergency service

Mustafa Erhan Sari[1*], Alp Erdin Koyuturk[1], Leman Tomak[2], Bilal Ozmen[1], Ugur Tokay[3]

Departments of [1]Pediatric Dentistry, Faculty of Dentistry, [2]Medicine and Biostatistics and Medical Informatics, Ondokuz Mayis University, Samsun, Turkey, [3]Department of Pediatric Dentistry, Faculty of Dentistry, Ishik University, Erbil, Iraq

ABSTRACT

This study aims to evaluate patients with nontraumatic dental condition-related visits to the dental hospital emergency service as well as the associate factors. Between June 2007 and June 2011, automation-system based data from 147.840 patients 62.4% were males, 37.6% were females who were admitted to Samsun Dental Hospital Emergency Service in Turkey with nontraumatic dental conditions were retrospectively analyzed. Demographic characteristics of the patients, date and time of admission to the emergency service, the International Classification of Diseases-9 codes and treatment administered to the patients on admission were recorded. The most common complaints on admission were pulpal and periapical tissue diseases in 29.377 patients (74.0%). A total of 45.5% were admitted in out-of-hours emergencies, while 26% were admitted in working hours and 28.5% were admitted on weekends. Patients in the 19-30 age groups had the highest rate for admission in out-of-hours emergencies on weekdays. There was no significant difference in monthly admission rates among the patients. The number of patients who were admitted to emergency service was significantly lower. Our study results indicate that there is an insufficient demand for dental care in Turkish population. We suggest that the number of patients who are admitted to the dental hospital emergency service may be reduced by increased awareness of oral and dental care.

Key words: Dental Care, Emergency Service, Nontraumatic Dental Condition

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INTRODUCTION

Teeth and supporting tissues are the main subjects of dentistry. Previous studies have shown that patients with dental or periodontal conditions tend to visit a physician and an emergency service of faculty of medicine in a university hospital.[1-4] These adult patients unlikely receive a specific treatment for nontraumatic dental conditions, whereas minor dental conditions can be managed in medical hospitals. Although short-term treatments with analgesics and antibiotics are usually administered by treating physician, dental conditions cannot be thoroughly handled in these hospitals.[5-11] Such patients should be assessed by a dentist; however, most of the dentists work in private clinics.

Recently, the number of patients visiting a physician due to nontraumatic dental conditions has been increasing in The United States of America. However, medical data of such patients cannot be recorded accurately in medical hospitals.[3,12]

On the other hand, the majority of dental hospitals are open between 08:00 a.m. and 05:00 p.m. on weekdays. Patients who experience dental conditions may have difficulty to receive specific treatment, if they are admitted in out-of-hours emergencies. With the introduction of dental facilities working 24 h a day in recent years in Turkey, there is an increasing trend in favor of admission to these hospitals with complaints of dental and periodontal conditions. The main advantages of these facilities are that dentists are on-call 24 h a day and

***Address for correspondence**

Dr. Mustafa Erhan Sari, Department of Pediatric Dentistry, Faculty of Dentistry, Ondokuz Mayis University, 55139, Kurupelit, Samsun, Turkey.

E-mail: dterhansari@hotmail.com

registration of the patient files using an automation system is possible.

Schoenfeld and McKay[13] reported that most of the patients were admitted to the emergency service of medical hospitals with nonemergency visits on weekends rather than weekdays. It is of utmost importance that assessment of patient records of different days and times with nontraumatic dental conditions to emergency services of medical hospitals to identify patient needs and establish recommendations to meet these needs.

In this study, therefore, we aimed to perform a comprehensive evaluation of patients with nontraumatic dental condition-related visits to the Dental Hospital Emergency Service, Samsun, Turkey.

MATERIALS AND METHODS

This retrospective study included a total of 147.840 patients of 360.000 patients who were admitted to / in Turkey with nontraumatic dental and periodontal conditions between June 2007 and June 2011. The mean number of patients visiting the hospital was 90.000/year. Patient data were extracted from the automation system. Demographic characteristics of the patients, date and time of admission to the emergency service, definitive diagnosis, and financing of care were recorded using the emergency registry system and patient files. The International Classification of Diseases (ICD-9) was used to encode the nature of the disease [Table 1]. Patients with traumatic dental conditions were excluded.

Admission times to the emergency service with dental conditions were divided into two groups based on the working hours of the dentists as in-hours emergencies and out-of-hours emergencies. In-hours was defined as a working period of 08:00 a.m. and 05:00 p.m., whereas out-of-hours was defined as a working period of 05:00 p.m. and 08:00 a.m. on weekdays (Monday, Tuesday, Wednesday, Thursday and Friday) and weekends (Saturday and Sunday).

Statistical analysis

Statistical analyses were performed using SPSS version 17.0. All data were shown as frequency and percentage. Chi-square tests and log-linear statistics were used to evaluate of data. $P < 0.05$ was accepted as statistically significant in comparisons.

Table 1: ICD-9 codes used in the study and diagnosis

ICD-9 code	Diseases
521.0-522.9	Diseases of hard tissues of teeth
522.0-522.9	Diseases of pulp and periapical tissues
523.0-523.9	Gingival and periodontal diseases
525.0-525.9	Other diseases and conditions of the teeth and supporting structures

ICD: International Classification of Diseases

Ethical approval

The research protocol was approved by the Ondokuz Mayis University Medical Research Ethics Commission (2011/852) and Samsun Oral Health Care Centre.

RESULTS

A total number of 360.000 patients were admitted to Samsun Dental Hospital Emergency service during the study period of them, 147.840 (41%) suffered from nontraumatic dental conditions. A total of 37.6% were females, while 62.4% were males. Variables in this study are shown in Table 2. There was a statistically significant association with admission time and sex, disease and residency ($P < 0.001$).

All age groups had a similar trend in terms of admission time in three time periods. Of nearly all age groups, 45% patients were admitted in out-of-hours emergencies. There was no significant difference in monthly admission rates among the patients ($P > 0.05$).

Of patients, 41.388 (38.3%) were in 19-30 age group. The most common complaints on admission were pulpal and periapical tissue diseases in 29.377 patients (74.0%).

A total of 38.400 patients (26%) were admitted in working hours on weekdays, 67.200 patients (45.5%) were admitted in out-of-hours emergencies on weekdays, and 42.240 (28.5%) were admitted on weekends. There was a statistically significant association between admission time and disease ($P < 0.001$).

A statistically significant association was also observed between the financial resource of care and admission time ($P < 0.001$). In addition, we found a statistically significant relationship between the residency of the patients including urban or rural areas and admission time ($P < 0.001$).

DISCUSSION

In the current study, the ratio of the patients who were admitted to Samsun Dental Hospital Emergency Service with nontraumatic dental conditions to the total number of subjects was 41%, indicating that a very high number of patients with nontraumatic dental conditions were admitted to a dental hospital. This can be attributed to the increasing number of dental hospitals and availability of on-call dentists in these facilities.

Table 2: Variables in this study

Groups	Working hours (weekday 8 am-5 pm)	Nonworking hours (weekday 17 am-8 pm)	Weekend	*P**
	n (%)	*n* (%)	*n* (%)	
Age group (years)				
0-5	1910 (25.8)	3360 (45.6)	2106 (28.6)	>0.05
6-12	5770 (26.1)	9980 (45.2)	6342 (28.7)	
13-18	8448 (25.9)	14,884 (45.6)	9300 (28.5)	
19-30	10,730 (25.9)	18,816 (45.5)	11,842 (28.6)	
31-42	6144 (25.9)	10,756 (45.4)	6780 (28.6)	
43-54	2710 (26.2)	4700 (45.3)	2960 (28.5)	
55-66	1540 (25.6)	2790 (46.3)	1690 (28.1)	
67 over	1148 (26.8)	1914 (44.7)	1220 (28.5)	
Gender				
Male	23,110 (25.1)	41,680 (45.1)	27,462 (29.8)	<0.001
Female	15,290 (27.5)	25,520 (45.9)	14,778 (26.6)	
Months				
January	4611 (26.0)	8042 (45.4)	5064 (28.6)	>0.05
February	3837 (25.8)	6742 (45.2)	4324 (29.0)	
March	3056 (25.9)	5280 (44.6)	3480 (29.5)	
April	3070 (26.0)	5472 (46.3)	3280 (27.7)	
May	3100 (25.9)	5370 (44.9)	3480 (29.2)	
June	3059 (26.0)	5382 (45.7)	3330 (28.3)	
July	2317 (26.0)	4011 (45.0)	2584 (29.0)	
August	2294 (25.9)	4053 (45.7)	2514 (28.4)	
September	3072 (25.9)	5376 (45.4)	3400 (28.7)	
October	3840 (26.2)	6720 (45.7)	4124 (28.1)	
November	3005 (26.4)	5277 (46.4)	3100 (27.2)	
December	3139 (25.8)	5475 (45.0)	3560 (29.2)	
Diseases				
Diseases of hard tissues of teeth	1528 (32.0)	1997 (41.8)	1257 (26.2)	<0.001
Diseases of pulp and periapical tissues	27,900 (25.5)	49,767 (45.5)	31,710 (29.0)	
Gingival and periodontal diseases	2798 (24.3)	5350 (46.5)	3363 (29.2)	
Other diseases and conditions of the teeth and supporting structures	6164 (27.8)	10,086 (45.5)	5910 (26.7)	
Payer type				
General health coverage	37,632 (26.7)	63,840 (45.4)	39,283 (27.9)	<0.001
Private insurance	0 (0.0)	2016 (70.5)	845 (29.5)	
Self-pay	768 (18.2)	1344 (31.8)	2112 (50.0)	
Localization				
City center	36,898 (26.0)	65,896 (46.4)	39,200 (27.6)	<0.001
Upstate	1502 (25.7)	1304 (22.3)	3040 (52.0)	
Total	38,400 (26.0)	67,200 (45.5)	42,240 (28.5)	

*Chi-square test

Okunseri *et al*.[6] reported 40-50% of patients were admitted in out-of-hours emergencies on weekdays, 20% were admitted on weekends and 20-30% were admitted in-hours. The majority of the patients attending in out-of-hours emergencies were in 19-33 age group and had private health insurance. In another study, Lewis *et al*.[14] demonstrated that 39.3% of the patients were admitted in out-of-hours emergencies on weekdays, when dentists working in private clinics were not available. The authors also reported that 36.2% of the patients were admitted in out-of-hours on weekends. Similarly, in our study, we found that 45.5% were admitted in out-of-hours emergencies, while 26% were admitted in working hours and 28.5% were admitted on weekends.

Furthermore, we observed that patients in the 19-30 age group had the highest rate for admission in out-of-hours emergencies on weekdays. In addition, the ratio of males to females (male-to-female ratio) for admission was higher. These findings, unsurprisingly, suggest that the number of men who have to work is higher than women in Turkey, as evidenced by the low rate of admission of men in working hours, since they unlikely visit a dentist while working.

In a study published in 2003, Cohen *et al.*[15] reported that the most common diagnoses were abscess and caries (67%), according to the ICD-9 codes. In another study of the authors published in 2002, they[16] reported that the most common reason for admission was nonspecific dental conditions. Similarly, Ma *et al.*[17] also found that the most common diagnoses based on the ICD-9 codes were cellulitis and abscess for dental pain. In our study, we observed that the most common complaints on admission were pulpal and periapical tissue diseases.

Although no significant difference in monthly admission rates was found among the patients, we observed a relatively increasing trend for dental condition-related visits in January and February. Among admitted patients, the number of individuals residing in rural areas was extremely low. This may be explained by increasing number of dental facilities in most cities as well as many provinces. On the other hand, the number of patients with private health insurance as a financial resource of care and self-payers were significantly low. This can be attributed to the fact that a total of 93% have general health coverage and individuals aged 18 years and below have the right to benefit from public health services free of charge. Also, inadequate implementation of private health insurance in Turkey might contribute to these results.

CONCLUSION

Our study results indicate that there is an insufficient demand for dental care in Turkey, and patients usually avoid visiting a dentist until they experience pain. We suggest, thus, that the number of patients who are admitted to dental hospitals emergency services may be reduced by increased awareness of oral and dental care.

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