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Pattern of oro-dental disease in dental clinic of a tertiary care center

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Abstract

Introduction: The oro-dental diseases are major public health problem throughout the population in Nepal and other countries of the world. It affects people throughout their lifetime. Unhealthy lifestyles, environment and oral health related behavior are the primary causes of oro-dental diseases. We aimed to study the descriptive variables related to oro-dental dental diseases amongst patients attending tertiary care center.

Method: A three-year data (April 2019 to April 2022) of patients registered for the treatment of oro-dental diseases in the record book of dental department of Patan Hospital were collected retrospectively. The collected data were entered in Microsoft Excel, and statistical analysis was carried out by using Statistical Package for the Social Science (SPSS) version 16.

Result: In the study, 15,879 patients were included; among them 8,652(54.49%) were female and 7,227(45.51%) were male. The most prevalent oro-dental disease was gingivitis/periodontitis 5,076(31.96%) followed by dental caries 5,028(31.66%), abrasion 3,525(22.2%), malocclusion 951(5.99%), impaction 585(3.68%), pulpitis 384(2.42%) and edentulous 330(2.08%). In male, majority 1,800(24.9 %) belonged to 60 years and above age group, in female, majority 1,749 (20.21 %) belonged to 20-29 y.

Conclusion: The most prevalent oro-dental diseases was gingivitis/periodontitis followed by dental caries, abrasion, malocclusion, impaction, pulpitis and edentulous. The female patients had more oro-dental problems than males.

Keywords: dental caries, dental diseases, gingivitis, periodontitis, tertiary care center

Introduction

Oral dental health includes the ability to speak, smile, smell, taste, chew, swallow, and also convey a range of emotions through facial expressions with confidence and without pain, discomfort, and disease of the craniofacial complex.¹ Diseases and conditions that threaten oral health may be considered a 'silent epidemic' affecting the most vulnerable citizens in society.² Nearly 3.5 billion people worldwide suffer from oral diseases. It affects people throughout their lifetime, causing pain, discomfort, disfigurement, and even death.³ According to the World Health Organization (WHO) 2012⁴, almost 100% of adults and 60-90% of school children worldwide have dental caries. Severe periodontal disease is found in 15-20% of adults aged 35-44 years. About 30% of people aged 65-74 years have no natural teeth.⁴

A study conducted in India concluded that the most common disease was dental caries followed by gingivitis, abrasion, malocclusion, pericoronitis, and jaw fracture.⁵ While the study done in Saudi Arabia showed that bad breath, tooth cavities, difficulty in biting hard food, tooth sensitivity, and bleeding gums were common oral problems.⁶ A study done in Nepal showed that the major dental problems in patients were dental pain and swelling requiring endodontic consultation.⁷ Oral health is essential to general health.⁸ Thus, the objective of the study was to find out the oro-dental disease pattern of patients, which has been recorded at the dental department of Patan Hospital. The study will be valuable for identifying patterns of oro-dental diseases in a tertiary care center.

Method

This was a retrospective, descriptive, cross-sectional study. Detail data relating to age, sex, and diagnosis (pattern of oral and dental diseases) among 15,879 patients who had visited the dental department of Patan Hospital for the treatment of oro-dental problems were collected retrospectively from

record book of the dental department for the period of 3 years (from 14 April 2019 to 13 April 2022). The primary diagnosed diseases were only taken into consideration, though they had multiple co-morbid oro-dental diseases. Those patients who came to the dental Outpatient Department (OPD) just for inquiry and data that were not completely recorded were excluded from the study. Ethical approval was obtained from the Institutional Review Committee (IRC) of the Patan Academy of Health Sciences (PAHS) prior to the commencement of the study. No direct contact with patients was required for the study and all patients' identifiers were removed from the raw data. The collected data were entered in Microsoft Excel, and further statistical analysis was carried out by using Statistical Package for the Social Sciences (SPSS) version 16. The distribution of patients according to age, gender, and diagnosis was calculated.

The following definition was taken into consideration for study purposes as per the findings in the record:

Oro-dental disease: Diseases relating to the mouth (mainly involvement of alveolar bone and gingival tissue) and teeth. Dental caries: An infectious condition that deteriorates the structure of teeth. Gingivitis: An inflammation of the gums caused by a bacterial infection. Periodontitis: Untreated gingivitis can become a serious infection known as periodontitis. Pulpitis: Inflammation of the dental pulp resulting from untreated caries or trauma. Impaction: The tooth remains stuck in gum tissue or bone for various reasons. Abrasion: Teeth are physically worn down by an external force. Malocclusion: Incorrect relation between teeth. Edentulous: An area of the mouth that no longer has (or was always missing) teeth.

Result

A total of 15879 patients were included in the study, in gender distribution, the female patients were 8,652(54.49%) and male

patients were 7,227(45.51%). The most commonly seen oro-dental disease in patients visiting dental OPD was gingivitis/periodontitis 5,076(31.96%) followed by dental caries 5,028(31.66%), abrasion 3,525(22.20%), malocclusion 951(5.99%), impaction 585(3.68%), pulpitis 384(2.42%) and edentulous 330(2.08%). In females, gingivitis/periodontitis 2673(16.83%), dental caries 2580(16.25%), abrasion 2040(12.85%), malocclusion 618(3.90%), pulpitis 231(1.45%) and edentulous 210(1.32%) were more compared to males whereas impaction was nearly same in both genders, female 300(1.89%) and male 285(1.79%), Table 1.

Among the total male patients, 1,800(24.9%) belonged to ≥60 y of age group followed by 1608(22.25%) ≤19 y, 1,242(17.18%) between 20-29 y, 876(12.12%) between 40-49 y, and 867(11.99%) between 50-59 y, while a minimum number 834(11.54%) patients belonged to 30-39 y. The oro-dental disease pattern among different age groups in male patients attending dental OPD showed dental caries 993(13.74%) to be the most commonly seen-dental disease in the ≤19 y age group followed by malocclusion 213(2.95%) whereas gingivitis/periodontitis 861(11.91%) and abrasion 441(6.10%) in ≥60 y age group and impaction 99(1.37 %) in 20-29 y age group, Table 2.

Table 1. Association of oro-dental diseases with gender

Dental Diseases	Gender		Total N(%)	p-value
	Male N(%)	Female N(%)		
Dental caries	2448(15.42%)	2580(16.25%)	5028(31.66%)	0.0000
Gingivitis/Periodontitis	2403(15.13%)	2673(16.83%)	5076(31.96%)	0.0089
Pulpitis	153(0.96%)	231(1.45%)	384(2.42%)	0.0257
Impaction	285(1.79%)	300(1.89%)	585(3.68%)	0.1195
Abrasion	1485(9.35%)	2040(12.85%)	3525(22.2%)	0.0000
Malocclusion	333(2.1%)	618(3.9%)	951(5.99%)	0.0000
Edentulous	120(0.75%)	210(1.32%)	330(2.08%)	0.0008
Total	7227(45.51%)	8652(54.49%)	15879(100.0%)	

Table 2. Association of oro-dental diseases with different age groups in male patients

Dental Diseases	Male (Age in years)						Total N(%)
	≤19 N(%)	20-29 N(%)	30-39 N(%)	40-49 N(%)	50-59 N(%)	≥ 60 N(%)	
Dental Caries	993 (13.7%)	357 (4.9%)	225 (3.11%)	201 (2.78%)	312 (4.3%)	360 (4.98%)	2448 (33.87%)
Gingivitis/Periodontitis	147 (2.03%)	423 (5.85%)	324 (4.48%)	339 (4.69%)	309 (4.27%)	861 (11.9%)	2403 (33.25%)
Pulpitis	21 (0.29%)	51 (0.7%)	27 (0.37%)	12 (0.17%)	9 (0.12%)	33 (0.46%)	153 (2.11%)
Impaction	36 (0.5%)	99 (1.37%)	51 (0.7%)	27 (0.37%)	30 (0.41%)	42 (0.58%)	285 (3.94%)
Abrasion	177 (2.45%)	186 (2.57%)	192 (2.66%)	282 (3.9%)	207 (2.86%)	441 (6.1%)	1485 (20.54%)
Malocclusion	213 (2.95%)	114 (1.58%)	3 (0.04%)	3 (0.04%)	0	0	333 (4.60%)
Edentulous	21 (0.29%)	12 (0.17%)	12 (0.17%)	12 (0.17%)	0	63 (0.87%)	120 (1.66%)
Total	1608 (22.25%)	1242 (17.18%)	834 (11.54%)	876 (12.12%)	867 (11.99%)	1800 (24.9%)	7227 (100.0%)

Table 3. Association of oro-dental diseases with different age groups in female patients

Dental Disease	Female(Age in years)						Total N(%)
	≤19 N(%)	20-29 N(%)	30-39 N(%)	40-49 N(%)	50-59 N(%)	≥ 60 N(%)	
Dental caries	810 (9.36%)	441 (5.1%)	393 (4.54%)	360 (4.16%)	312 (3.6%)	264 (3.05%)	2580 (29.82%)
Gingivitis/Periodontitis	186 (2.15%)	537 (6.2%)	408 (4.71%)	399 (4.61%)	372 (4.3%)	771 (8.91%)	2673 (30.89%)
Pulpitis	48 (0.55%)	30 (0.35%)	54 (0.62%)	42 (0.48%)	36 (0.42%)	21 (0.24%)	231 (2.67%)
Impaction	15 (0.17%)	129 (1.49%)	66 (0.76%)	54 (0.62%)	15 (0.17%)	21 (0.24%)	300 (3.47%)
Abrasion	267 (3.08%)	405 (4.68%)	375 (4.33%)	375 (4.33%)	288 (3.33%)	330 (3.8%)	2040 (23.58%)
Malocclusion	363 (4.2%)	171 (1.98%)	27 (0.31%)	30 (0.35%)	21 (0.24%)	6 (0.07%)	618 (7.14%)
Edentulous	18 (0.21%)	36 (0.42%)	45 (0.52%)	42 (0.48%)	24 (0.28%)	45 (0.52%)	210 (2.43%)
Total	1707 (19.73%)	1749 (20.21%)	1368 (15.81%)	1302 (15.05%)	1068 (12.34%)	1458 (16.85%)	8652 (100.0%)

Mostly female patients, 1749(20.21%), belonged to 20-29 y age group followed by ≤19 y 1707(19.73%), ≥60 y 1458(16.85%), 30-39 y 1368(15.81%), and 40-49 y 1302(15.05%), while least number 1068(12.34%) of patients belonged to 50-59 y of age. The oro-dental disease pattern among different age groups in female patients attending dental OPD showed that 890(9.36%) had dental caries, 363(4.19%) had malocclusion in ≤19 y age group, whereas gingivitis/periodontitis 771(8.91%) in ≥60 y age group, abrasion 405(4.68%) and impaction 129(1.49%) in 20-29 y age group, Table 3.

Discussion

This study showed the pattern of oro-dental disease in patients who visited the dental department of Patan Hospital for treatment of oro-dental problems. In this study, the most common oro-dental disease was gingivitis/ periodontitis 5,076(31.96%), followed by dental caries 5,028(31.66%). A similar German-based dental survey showed the prevalence of periodontitis was much higher (70.9%).⁹ In contrast with this study, two different studies done on children at Jorpati, Kathmandu, Nepal, in 2014 and 2013

showed a higher prevalence of dental caries i.e., (58.3%)¹⁰ and (80.6%)¹¹ than other dental problems. Another study on primary school children of Kathmandu also revealed a higher prevalence of dental caries (62%) than other dental diseases.¹² Similarly, a study done at Dhulikhel Hospital, Kathmandu found that the pattern of tooth loss due to dental caries was more followed by periodontal disease.¹³ A study done in eastern Nepal showed the commonest prevalence of dental caries followed by periodontitis.¹⁴ A hospital-based study done in 8928 patients at a government hospital, in Haldwani, India, showed dental caries (54.54%) was the most common oro-dental disease, followed by gingivitis (37.62%).⁵ Another study done in Kolkata, India also showed that 68.9% of the patients had dental caries followed by gingivitis.¹⁵ The study of dental disease patterns done in pediatric patients in Bangladesh also found that dental caries (85%) was the most common followed by gingivitis.¹⁶ Another study done among students at a primary school in Zimbabwe found a high prevalence of dental caries in both urban (59.5%) and rural (40.8%) regions.¹⁷ In another study done in Katsina, Northwest Nigeria, most of the patients were diagnosed with dental caries (73.1%) followed by periodontal disease.¹⁸ In

all these studies dental caries was the most common dental disease which is contrary to the present study where gingivitis/periodontitis was the most common disease. This could be one of the reasons that these studies were done in younger age groups or limited age groups whereas, in the present study, all ages were considered.

In this study, abrasion 3,525(22.2%) was the third most common oro-dental disease followed by malocclusion 951(5.99%), impaction 585(3.68%), pulpitis 384(2.42%) and edentulous 330(2.08%). A study done at Gandaki Medical College showed that the prevalence of malocclusion 219(7.18%) and edentulous 74(2.42%) were nearly the same as the present study whereas impaction 200(6.55%) were nearly double.¹⁹ Another study done at Governmental Hospital, Haldwani showed the prevalence of abrasion (3.82%) and malocclusion (3.05%)⁵ different than the present study.

The results of the present study showed that among a total of 15876 patients, female patients (54.49%) were more in number than male patients (45.51%). This study is in accordance with the other studies.^{10,14,20-24} But other studies showed contrary to the present study.^{6,7,11,18,19,25-27} In this study, the most common oro-dental disease among male was dental caries 2,448(33.87%) followed by gingivitis/periodontitis 2403(33.25%) whereas the most common oro-dental disease in female was gingivitis/periodontitis 2,673(30.89%), followed by dental caries 2580(33.25%). Similar to the present study, a study done at a pediatric hospital in Bangladesh showed more males presented with caries (54.68%) than females (45.32%).¹⁶ On the contrary a study showed more females presented with caries (62.7%) than the males (53.4%).¹⁰ Similarly another study also showed the prevalence of dental caries was significantly higher in the female population (56.91%).¹⁹ In the present study, the male patients presented with more gingivitis/periodontitis (33.25%) than the females (30.89%). In line with this study, a study based on a German dental survey

showed prevalence of periodontitis was significantly higher in males.⁹ Abrasion was the third most prevalent disease; in total female patients it was 2040(23.58%) whereas in total male patients it was 1485(20.58%). Prevalence was higher in females in the age group 60 years and above which resembles the study which showed abrasion was most common among patients of 60 years and above.⁵ Edentulous was the least prevalent oro-dental disease in total male patients 120(1.66%) and in total female patients 210(2.43%). A study done at Gandaki Medical College also showed that edentulous was 2.42% of total patients.¹⁹

The most common oro-dental diseases (24.9%) were found among the 60 years and above age group in males whereas in females it was in the 20–29 year age group. It might reveal that the younger age group of female patients was not taking proper care of their oral health whereas in males it was the older age group. On the contrary, a study done in a tertiary care hospital in Kolkata, India observed that a maximum number of patients presenting with dental problems were in the age group of 30-39 and 40-49 years (24.6% and 20.2% respectively).¹⁵ Another study showed the dental diseases were more common in the age group of 9-40 years.¹⁴ The high incidence of oro-dental diseases in developing countries may be related to inadequate oral hygiene.²⁸ Oral hygiene plays an important role in the initiation and progression of dental caries and periodontal diseases.^{29, 30}

The frequency of dental caries was higher in the lower (≤ 19 years) age group of males and females, which was respectively 993(13.7%) and 810(9.36%), which is in accordance with a study that reveals dental caries remains the most common chronic disease of aged 6 to 19 years.³¹ A report by the Surgeon General on Oral Health in America also showed dental caries to be the single most common chronic childhood disease.⁸ This is in accordance with the present study. However a study done at Governmental Hospital, Haldwani showed dental caries (23.7%) was most commonly

seen among the 30-39 years age group, which was contrary to the present study.⁵ Other studies found that the percentage of patients suffering from dental caries was highest in the age group of 10 to 39 years.¹⁵ A study done on children in Kathmandu Valley showed that the maximum percentage of patients with dental caries (67.8%) belonged to the 12-year-old age group.¹⁰ The present study showed that dental caries was a disease of young people. It was seen more in males of the younger group than in females, whereas in contrary a different study showed dental caries was seen more in females of younger age group than in males.¹³ Dental caries was least seen (2.78%) in the 40-49 years age group in male patients whereas in females it was 264(3.05%) in the 60 years and above age group. It reveals that the percentage of patients suffering from dental caries decreases with an increase in age. It could be due to improper diet like; more sweet, sticky food and more frequent intake of diet, in the younger age group than in the older age group.

Gingivitis/periodontitis was the most common 861(11.9%) and 771(8.91%) oro-dental diseases in older age groups (60 years and above) in males and females respectively. Whereas the lowest, (2.03%) and (2.15%) were found respectively in males and females of the age group 19 years and below. It reveals that the percentage of patients suffering from gingivitis/periodontitis increases with age. It might be due to not maintaining good oral hygiene or improper brushing technique. In contrast with the present study, another study reveals gingivitis (29.71%) was most commonly seen among 30-39 years of age group.⁵ Study done at Dhulikhel Hospital, Nepal, also showed the prevalence of periodontal disease was higher in the 41-70 years age group.¹³ In other age groups, in male patients, frequency varied from 4.27% to 5.85% and in females from 4.3% to 6.2%.

The present study comprises of few limitations, as it is a single hospital-based study, so the findings of this study do not represent the prevalence of oro-dental disease in all the dental hospitals of Nepal or

of the entire Nepalese population. Multi-centric studies with ethnic specificity could provide the national prevalence of oro-dental diseases.

Conclusion

The most commonly seen oro-dental diseases in patients visiting dental OPD were gingivitis/periodontitis followed by dental caries. Both these diseases were more common in females than males. In female patients, gingivitis/periodontitis was more common than dental caries whereas in male patients, dental caries was more common than gingivitis/periodontitis. The highest prevalence of oro-dental disease in male patients visiting dental OPD was among the 60-year-old and above age group whereas in females it was 20-29 years age group. The lowest occurrence of oro-dental diseases was among the 30-39 years age group in male patients whereas the 50-59 years age group in females. In both genders, the most commonly seen oro-dental disease was gingivitis/periodontitis in the 60 years and above age group and dental caries in the 19 years and below age group.

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Conflict of Interest

None

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Reference

1. Glick M, Williams DM, Kleinman DV, Vujicic M, Watt RG, Weyant RJ. A new definition of oral health developed by the FDI World Dental Federation opens the door to a universal definition of oral health. *J Am Dent Assoc.* 2016 Dec;147(12):915-7. | [DOI](#) | [PubMed](#) | [Google Scholar](#) | [Full text](#) | [Weblink](#) |

2. Benzian H, Holmgren C, Yee R, Monse B, Barnard JT, Helderman WP, et al. Political priority of global oral health: an analysis of reasons for international neglect. *Int Dental J.* 2011 Jun 1;61(3):124-30. | [DOI](#) | [PubMed](#) | [Google Scholar](#) | [Full text](#) |
3. World Health Organization. [Internet]. Geneva: World Health Organization; Oral Health; 2023 Mar 14; [about 6 screens]. | [Weblink](#) |
4. OHSONline.com [Internet]. WHO Releases Fact Sheet on Oral Health; 2012 Apr 21; [about 2 screens]. | [Weblink](#) |
5. Garkoti PD, Rawat CM, Singh R, Rawat V, Bartwal J, Goyal N. Pattern of dental diseases among patients attending outpatient department of dental: a hospital-based cross-sectional study. *Nat J Med Res.* 2015 Jun 30;5(2):112-5. | [Google Scholar](#) | [Full text](#) | [Weblink](#) |
6. AlTuraiki AM, Jaemal HM, Alamer AA, Alghwainem AA, Althabit TA, Alamri A et al. Oral health and patterns of dental visits among diabetic patients in the Eastern Province of Saudi Arabia. *Clinical, Cosmetic and Investigational Dentistry.* 2021 Dec 4;13:513-20. | [DOI](#) | [PubMed](#) | [Google Scholar](#) | [Full text](#) | [Weblink](#) |
7. Dixit PB, Dixit S, Dahal S, Poudel P, Roy D, Manandhar N. Pattern of dental problems among patients visiting a dental hospital during covid-19 pandemic. *Kathmandu University Medical Journal.* 2020 Nov 19;18(2):58-61. | [PubMed](#) | [Google Scholar](#) | [Full text](#) | [Weblink](#) |
8. US Department of Health and Human Services. Oral health in America: a report of the Surgeon General. NIH publication. 2000:155-88. | [PubMed](#) | [Google Scholar](#) | [Full text](#) | [Weblink](#) |
9. Holtfreter B, Kocher T, Hoffmann T, Desvarieux M, Micheelis W. Prevalence of periodontal disease and treatment demands based on a German dental survey (DMS IV). *J Clin Periodontol.* 2010 Mar;37(3):211-9. | [DOI](#) | [PubMed](#) | [Google Scholar](#) | [Full text](#) | [Weblink](#) |
10. Khanal S, Acharya J. Dental caries status and oral health practice among 12-15 year old children in Jorpati, Kathmandu. *Nepal Med Coll J.* 2014 Sep 1;16(1):84-7. | [PubMed](#) | [Google Scholar](#) | [Full text](#) |
11. Khanal S, Acharya J, Gautam S, Malla M. Pattern of distribution of oral diseases among children in Jorpati, Kathmandu. *J Nep Dent Assoc.* 2013;13(2):26-30. | [Google Scholar](#) | [Full text](#) | [Weblink](#) |
12. Khanal S, Bhattarai R, Rao GN, Shrestha S. Prevalence of Dental Caries among Primary School Children of Kathmandu District-A Pilot Study. *Journal of College of Medical Sciences-Nepal.* 2017 Jul 17;13(2):275-8. | [DOI](#) | [Full text](#) | [Weblink](#) |
13. Upadhyaya C, Humagain M. The pattern of tooth loss due to dental caries and periodontal disease among patients attending dental department (OPD), Dhulikhel Hospital, Kathmandu University Teaching Hospital (KUTH), Nepal. *Kathmandu University Medical Journal (KUMJ).* 2009 Jan 1;7(25):59-62. | [DOI](#) | [PubMed](#) | [Google Scholar](#) | [Full text](#) |
14. Rauniar GP, Shahanas MS, Das BP, Naga Rani MA. A prospective study of dental disease pattern and drug utilization at the dental department of a tertiary care teaching hospital in eastern Nepal. *J Nepal Med Assoc.* 2001;40(137):6-11. | [DOI](#) | [Google Scholar](#) | [Full text](#) | [Weblink](#) |
15. Dasgupta U, Mallik S, Naskar S, Choudhury K, Paria B, Bhattacharya SK. Dental problems and its epidemiological factors-a study on adolescent and adult patients attending dental OPD of a tertiary care hospital in Kolkata, India. *J Dent Med Sci.* 2013;5:1-7. | [DOI](#) | [Full text](#) |
16. Sharmin S, Alam MK. Presentation Pattern for Common Oro-Dental Disease Trend among Children Attending a Selected Pediatric Hospital: A Cross Sectional Study. *Int Med J.* 2021 Apr 1;28(2):258-61. | [Google Scholar](#) | [Full text](#) | [Weblink](#) |
17. Mafuvadze BT, Mahachi L, Mafuvadze B. Dental caries and oral health practice among 12 year old school children from low socio-economic status background in Zimbabwe. *The Pan AfriMedi J.* 2013 Apr 29;14:164. | [DOI](#) | [PubMed](#) | [Google Scholar](#) | [Full text](#) | [Weblink](#) |
18. Taiwo OA, Soyele OO, Ndubizu GU. Pattern of utilization of dental services at federal medical centre, Katsina, Northwest Nigeria. *Sahel Med J.* 2014 Jul 1;17(3):108. | [DOI](#) | [Google Scholar](#) | [Full text](#) | [Weblink](#) |
19. Tuladhar SL, Parajuli U, Manandhar P, Subedi N, Kunwar D. Distribution of Dental Diseases and Treatment Delivered amongst Patients Visiting Dental Outpatient Department at Gandaki Medical College, Nepal. *Journal of Gandaki Medical College-Nepal.* 2018 Aug 17;11(1):29-32. | [DOI](#) | [Google Scholar](#) | [Weblink](#) |
20. Folaranmi N, Akaji E, Onyejaka N. Pattern of presentation of oral health conditions by

- children at University of Nigeria Teaching Hospital, Enugu: A retrospective study. Nigerian Journal of Clinical Practice. 2014;17(1):47-50. | [DOI](#) | [PubMed](#) | [Google Scholar](#) | [Full Text](#) |
21. Eigbobo JO, Onyeaso CO, Okolo NI. Pattern of presentation of oral health conditions among children at the University of Port Harcourt Teaching Hospital (UPTH), Port Harcourt, Nigeria. Pesquisa Brasileira em Odontopediatria e Clínica Integrada. 2011;11(1):105-9. | [Google Scholar](#) | [Full Text](#) | [Weblink](#) |
 22. Denloye OO, Bankole OO, Onyeaso CO. Dental health service utilization by children seen at the University College Hospital-an update. Odonto-stomatologie tropicale= Tropical dental journal. 2004 Dec 1;27(108):29-32. | [PubMed](#) | [Google Scholar](#) | [Weblink](#) |
 23. Onyejaka NK, Lawal BN, Okechukwu RA, Osayande MO, Alamba IC. Pattern of patients' attendance to the dental clinic of federal college of dental technology and therapy, Enugu, Nigeria. Pan African Medical Journal. 2018;29(1):1-8. | [DOI](#) | [PubMed](#) | [Google Scholar](#) | [Full Text](#) | [Weblink](#) |
 24. Farsi JM. Dental visit patterns and periodontal treatment needs among Saudi students. EMHJ-Eastern Mediterranean Health Journal. 2010 Jul;16(7):801-6. | [PubMed](#) | [Google Scholar](#) | [Full Text](#) | [Weblink](#) |
 25. Alonaizan FA, Almas K, Nazir MA, Almazrou D, Alzamil M, Alolyani MA. Medical conditions, oral health practices, and barriers to treatment among patients visiting a teaching dental hospital in Eastern Saudi Arabia. The Scientific World Journal. 2022 Feb 4;2022. | [DOI](#) | [PubMed](#) | [Google Scholar](#) | [Full Text](#) | [Weblink](#) |
 26. Al Zarea BK. Dental and oral problem patterns and treatment seeking behaviour of geriatric population. The open dentistry journal. 2017 Apr 28;11:230-6. | [DOI](#) | [PubMed](#) | [Google Scholar](#) | [Full Text](#) | [Weblink](#) |
 27. Limbu S, Dikshit P, Malla M, Verma L, Khapung A. Pediatric Dental Emergency Pattern and Dental Care Provided during COVID-19 Pandemic Lockdown at a Tertiary Care Center in Kathmandu, Nepal. Journal of Nepalese Association of Pediatric Dentistry. 2021 Dec 31;2(1):3-11. | [DOI](#) | [Google Scholar](#) | [Weblink](#) |
 28. Miura H, Araki Y, Haraguchi K, Arai Y, Umenai T. Socioeconomic factors and dental caries in developing countries: a cross-national study. Social science & medicine. 1997 Jan 1;44(2):269-72. | [DOI](#) | [PubMed](#) | [Google Scholar](#) |
 29. Sheiham A, Watt RG. The common risk factor approach: a rational basis for promoting oral health. Community Dentistry and Oral Epidemiology: Commentary. 2000 Dec;28(6):399-406. | [PubMed](#) | [Google Scholar](#) | [Full Text](#) |
 30. Watt RG. Emerging theories into the social determinants of health: implications for oral health promotion. Community dentistry and oral epidemiology. 2002 Aug;30(4):241-7. | [DOI](#) | [PubMed](#) | [Google Scholar](#) |
 31. Centers for Disease Control and Prevention. Nature's Way: A Guide to Native Landscaping with Native Plants [PDF]. Atlanta (GA): Centers for Disease Control and Prevention; [date unknown]. | [Full text](#) | [Weblink](#) |