ISSN 2717-4913

Vol. 4 No. 2 Issue 7 Jul - Dec 2023

JKDC

Journal of Kantipur Dental College

Biannual

Peer reviewed

Open access

www.kantipurdental.edu.np

An Official Publication of Kantipur Dental College

Affiliated to Kathmandu University, Recognized by Nepal Medical Council

ISSN 2717-4913

Vol. 4 No. 2 Issue 7 Jul - Dec 2023

JKDC

Journal of Kantipur Dental College

Biannual

Peer reviewed

Open access

The Journal of Kantipur Dental College is a peer reviewed open access journal published biannually. The journal deals with the applied and theoretical researches in the field of dentistry and other health sciences.

The ideas and opinions expressed by authors represents the views of the authors and do not necessarily represent the official views of the Kantipur Dental College and Editorial Board of the Journal, unless so specified.

The journal does not charge article processing or submission fees.

In case of any conflict of opinion or disagreement, decision of the Chief Editor will be the final.

Kantipur Dental College Teaching Hospital & Research Center

Address : Basundhara Ring Road (Near Police Bit), Kathmandu-3, Nepal

Tel No. : 977-01-4985910, 4985911 (Hospital)
: 977-0-14366242 (College)

Toll Free No. : 16600171111

Fax : 977-01-4985912

Email : kdchktm@gmail.com

Website : www.kantipurdental.edu.np

Manuscript Submission Email : jkdcjournal@gmail.com

Journal Website : www.kantipurdental.edu.np/journal

Design Kirti Keshav Joshi
Dream Vision Media Tech Pvt. Ltd.
www.dreamvision.com.np

An Official Publication of Kantipur Dental College

Affiliated to Kathmandu University, Recognized by Nepal Medical Council

Contents

Editorial

Artificial Intelligence in Dental Science 5
Dr. Sujita Shrestha

Research Article

Oral Health Status and Severity of Early Childhood Caries among Preschool Children in Kathmandu City 6
Dr. Sunita Khanal, Dr. Sujita Shrestha

Oral Conditions among Geriatric Population of Rupandehi District: A Cross Sectional Study 9
Dr. Siddharth Gupta, Dr. Deepak Yadav, Dr. Ashish Lamsal, Dr. Vaibhav Rai

Odontogenic Infection in Patients Visiting Tertiary Health Care Center 14
Dr. Mamata Shakya, Dr. Bhoj Raj Adhikari, Dr. Nitesh Chaurasia, Dr. Chandan Upadhyaya, Dr. Dilip Prasad Rauniyar, Munnu Dhakal

Cephalometric Assessment of Soft Tissue Profile Thickness in Orthodontic Patients with Different Vertical Skeletal Relations 18
Dr. Amita Lama, Dr. Rabindra Man Shrestha, Dr. Jyoti Dhakal, Dr. Alka Gupta

Study on Quality of Life and its associated factors of Tuberculosis patient of Kathmandu Metropolitan City 23
Karishma Lamsal, Damanta Dhakal, Princy Bhatta, Sunil Kumar Thapa, Ramchandra Sinha

Case Report

Management of Oral Pyogenic Granuloma during Pregnancy- A Case Report 28
Dr. Gunja Jaiswal, Dr. Dipika Gautam

Unlocking the Oral Clues: A Case Report on Detecting Acute Myeloid Leukemia through Oral Manifestations 31
Dr. Pratikchhya Shrestha, Dr. Shelden Sherpa, Dr. Sushma Adhikari, Dr. Ankit Saha, Dr. Parmila Poudel

Author Guideline 35

Artificial Intelligence in Dental Science

Dr Sujita Shrestha
Editor

Artificial intelligence (AI) is the ability of machine to perform task which requires human intelligence. The concept of AI was applied in computer science by John McCarthy in 1956. In the past two decades AI applications have been adopted in all sectors and have provided convenience to the human life. In healthcare AI is used in diagnosis and treatment planning; which can identify the disease or anomalies from patient's symptoms, vitals, and medical records and subsequently suggest the treatment options. AI is also used for observation and examination of the patient, collection of patient information, interpretation of the obtained information, maintain and track medical records, documentation in health insurance and in research process, enabling evidence-based medical practice.

Similarly, new technologies are developed and adopted rapidly in the field of dental science. AI has been adopted in all dental disciplines; it can be a supplemental tool to reduce workload, improve precision and accuracy in diagnosis, decision making, treatment planning, prediction of treatment outcomes and disease prognosis for dental practitioners. In dentistry, artificial intelligence can be used for dental imaging, diagnosis and treatment planning in oral medicine, orthodontics, prosthodontics, periodontics, endodontics, oral pathology, oral maxillofacial surgery, oral implantology and forensic dentistry. Many studies have been published and many are underway on the applications of AI in dentistry. AI can be used to analyse data, identify patterns, gain new knowledge to understand the nature and pathology of disease, and ultimately develop new treatment options.

Artificial intelligence is making significant impact in dentistry transforming both clinical practice and patient care. The use of AI in the interpretation of two-dimentional or three-dimentional imaging/ cephalometry, design of aligner therapy are the common practice in orthodontics. Its application in planning of dental implant, orthognathic surgery and robotic cranio-maxillofacial surgeries are getting popular in recent years.

AI systems can be used as an alternative tool to support dentists and other health care professionals, rather than replacing them. Artificial intelligence can be a valuable tool that enables decision making efficiently and accurately in clinical practice, helps to improve quality of life of the practitioner and provide better health to the patients.

However the application of AI has certain disadvantages or drawbacks, mainly the ethical concern regarding accountability of healthcare, human emotion in providing health care, customer service, patient's privacy, dependency on technology, lack of critical thinking and analyzing. It is important to consider these potential drawbacks and mitigate adverse effects in the development and implementation of AI systems in dental profession.

REFERENCES

1. Tandon D, Rajawat J. Present and future of artificial intelligence in dentistry. J Oral Biol Craniofac Res. 2020;10(4):391-96. doi:10.1016/j.jobcr.2020.07.015.
2. Schwendicke F, Blatz M, Uribe S, Cheung W, Verma M, Linton J, KimYJ. Artificial Intelligence for dentistry. FDI Artificial Intelligence working group. https://www.fdiworlddental.org/sites/default/files/2023
3. Schwendicke F, Samek, W, Krois J. Artificial Intelligence in Dentistry: Chances and Challenges. J Dent Res. 2020;99. 002203452091571. 10.1177/0022034520915714.
4. Vodanovic M, Subasic M, Milosevic D, Pavicin IS. Artificial Intelligence in Medicine and Dentistry. Acta Stomatol Croat. 2023 Mar;57(1):70–84. doi: 10.15644/asc57/1/8.
5. Ding H,Wu J, Zhao W, Matinlinna JP, Burrow MF, Tsoi JKH. Artificial intelligence in dentistry-A review. Front. Dent. Med. 2023;4. https://doi.org/10.3389/fdmed.2023.1085251.

Oral Health Status and Severity of Early Childhood Caries among Preschool Children in Kathmandu City

Dr. Sunita Khanal[1], Dr. Sujita Shrestha[2]

[1]Assistant professor, [2]Lecturer,
Department of Community and Public Health Dentistry, Kantipur Dental College

Corresponding Author
Dr. Sunita Khanal
Email: khanal.sunita729@gmail.com

Citation
Khanal S, Shrestha S. Oral health status and severity of early childhood caries among preschool children in Kathmandu city. J Kantipur Dent Coll. 2023;4(2): 6-8

ABSTRACT

Introduction: Dental caries is the most common chronic infectious disease of childhood which is preventable. Early childhood caries is a burden on the economy and public health and it affects children. The factors causing dental caries in preschool children are: diet, oral hygiene practices, and infant feeding practices.

Objective: To assess the oral health status and severity of early childhood caries among preschool children in Kathmandu city

Materials and Method: An analytical cross sectional study was conducted for four months among the preschool children of Kathmandu city after taking ethical approval from institutional review committee of Kantipur Dental college. Consent was taken from the school authorities as well before the study. Convenience sampling technique was carried out. Inclusion criteria was children of 2-5 years. Children who did not allow for oral examination was not be included in the study. A standard questionnaire was used for the data collection. The collected data was entered in Microsoft excel and analyzed using SPSS version 21 software. P value <0.05 was considered statistically significant.

Result: A total of 306 participants were included in the study among which 155(50.7%) were male and 151(49.3%) were female. The mean age of the participants was 4.75±1.21. According to AAPD criteria, the ECC was severe in all the age groups i.e. three, four and five years. The prevalence of dental caries was 73.5%. The mean dfs score was 6.68±9.95 among the study participants. The plaque score was good among 144(47.1%) and fair among 113(36.9%)participants.

Conclusion: The prevalence of dental caries was high among the preschool children and early childhood caries was severe in them. Therefore, oral health awareness program is very necessary to the parents as well as caretakers of preschool children.

Keywords: Early Childhood Caries; oral health status; preschool children

INTRODUCTION

Worldwide, dental caries is a major public health problem affecting the children mostly.[1] Early childhood caries is a burden on economy and public health since it affects children.[2] Any dental caries of deciduous teeth that occur in children ≤71 months, including one or more lesions (with or without formation of cavities), or leading to missing teeth, or leading to fillings on the tooth surface is known as early childhood caries(ECC).[3] Parents behavior especially mothers behavior plays an important role in the oral health care as well as overall development of the child.[4] If oral disease is left untreated. Children will have serious general health problems, significant pain, interference with eating, and lost school time.[5] Early Childhood Caries has a high medical, social, and economic costs and is a global public health burden.[6] There is a major role of health of the mouth and dentition through facilitating nutritional intake, providing a non-verbal means of expressing happiness and sadness and allowing for vocal communication. Therefore the goal for all children should be healthy mouth with a full complement of teeth.[7]

Since no study have been done in Nepal in the past particularly on the topic oral health status of preschool children, this study will provide a baseline information for planning further programs in the preschool children in future. So, the aim of the study was to assess the severity of early childhood caries and oral health status of Preschool children in Kathmandu city.

MATERIALS AND METHOD

An analytical cross sectional study was conducted from August–November 2023 among preschool children of three governments and three private schools of Kathmandu city after taking ethical approval from institutional review committee of Kantipur Dental College. Prior permission

was taken from the principal of each schools before the study. Convenience sampling technique was used. All the students belonging to age 2-5 years were included in the study. The students who were not willing to participate in the study were not included in the study. A standard questionnaire was used for data collection purpose. A single examiner was used for the data collection purpose. The first part of the questionnaire consisted of demographic details and second part had dfs index, plaque index (full mouth index) and severity of early childhood caries (ECC).

The collected data was compiled and entered in Microsoft excel and analyzed using the SPSS version 20. Descriptive statistics like percentage and mean were calculated and p value <0.05 was considered statistically significant. Chi square tests and independent T test was used to test the statistically significant differences between the variables.

RESULT

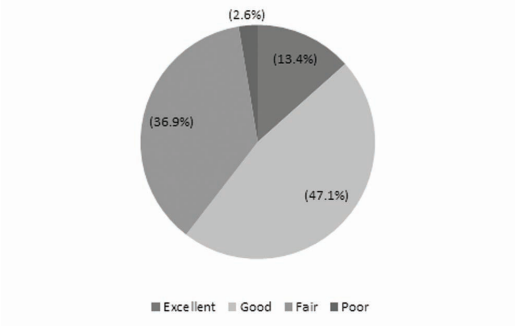
Altogether 306 participants were there out of which 155 (50.7%) were male and 151 (49.3%) were female. The prevalence of dental caries was 225(73.5%). The mean age of the participants was 4.73±1.21 years.(Table 1)

Table1. Showing the demographic details of the participants

Socio Demographic variables	N(%)
Total participants (in government school)	
Male	36(43.9%)
Female	46(56.1%)
Total	82(100%)
Total participants (in private school)	
Male	119(53.13%)
Female	105(46.875%)
Total	224(100%)
Mean age	4.73±1.21

A full mouth plaque index given by Silness J and Loe H. was taken and it was found that majority of the participants had good plaque score 144(47.1%) (Fig1.)

Figure 1. Showing the distribution of plaque scores among the participants



The severity of dental caries was classified as severe among all the examined age groups i.e. 3-5 years (Table 2).

Table 2. Showing the severity of Early Childhood Caries

Age group	dmfs	Grading
3 years	5.16±5.86	Severe
4 years	6.63±8.46	Severe
5 years	6.87±13.27	Severe
Mean dmfs score =6.68±9.96		

Gender wise comparison of plaque index and dfs was done which showed no association among the variables (Table 3) (Table 4).

Table 3. Comparison of Plaque Index among genders (T-test)

Gender	Excellent	Good	Fair	Poor	p value
Male	19	68	66	2	0.121 NS
Female	22	76	47	6	

NS= Not Significant

Table 4. Comparison of dfs Index among genders (chi square test)

Gender	Mean dfs score	p value
Male	7.0387±7.69	0.627 NS
Female	6.3245±11.85	

NS= Not Significant

DISCUSSION

The present study reported high prevalence and severity of Early Childhood caries among the preschool children. These findings are in accordance to other studies.[3,5,9] but in contrast to other studies.[10–12] The high prevalence and severity of dental caries may be due to the fact that we don't have strong oral health care system in delivering accessible preventive and curative dental services to preschool children and there is misconceptions among the parents regarding the importance of primary dentition. Maximum decayed component and very negligible filled component was observed in the participants.

In the present study, majority of the participants 144(47.1%) had good plaque score. These findings are in contrast to studies done by Zhang et al[9] and Khan et al[13]. Oral hygiene has a significant impact on children's oral health and consequently on other systemic diseases throughout their life. Therefore, it is highly recommended that implementation of interventional programs by authorities is required to enhance the children's oral hygiene. Gender wise comparison of plaque score and dfs

was statistically insignificant. This finding is in accordance to the study done by Zhang et al.[9] This may be because of the fact that there is no any evidence showing the difference in composition of the saliva nor there are any differences in tooth structure between boys and girls.

Since convenience sampling technique was used for data collection, findings cannot be generalized to whole country. Only the prevalence of Early Childhood Caries has been assessed in this study which was found to be severe. Further studies can be planned in the future for studying the etiology of early childhood caries as well as the reason for its severity in the preschool children.

CONCLUSION

Based on the findings of this study, we have concluded that the Early Childhood Caries was found to be severe and prevalence of dental caries was high. Therefore, oral health awareness programs should be planned for them as well as their family and school personnel.

Acknowledgement

I would like to thank all the school authorities as well as school children for participating in this study

REFERENCES

1. Petersen PE, Lennon MA. Effective use of fluorides for the prevention of dental caries in the 21st century: The WHO approach. Community Dent Oral Epidemiol. 2004;32(5):319–21.
2. Smith SR, Kroon J, Schwarzer R, Hamilton K. Parental social-cognitive correlates of preschoolers' oral hygiene behavior: A systematic review and meta-analysis. Soc Sci Med. 2020;264:113322.
3. Li J, Fan W, Zhou Y, Wu L, Liu W, Huang S. The status and associated factors of early childhood caries among 3- To 5-year-old children in Guangdong, Southern China: A provincial cross-sectional survey. BMC Oral Health. 2020;20(1):1–8.
4. Van den Branden S, Van den Broucke S, Leroy R, Declerck D, Hoppenbrouwers K. Measuring determinants of oral health behaviour in parents of preschool children. Community Dent Health. 2013;30(1):19–25.
5. Soumya SG, Shashibhushan KK, Pradeep MC, Babaji P, Reddy VR. Evaluation of oral health status among 5-15-year-old school children in Shimoga city, Karnataka, India: A cross-sectional study. J Clin Diagnostic Res. 2017;11(7):ZC42–7.
6. Phantumvanit P, Makino Y, Ogawa H, Rugg-Gunn A, Moynihan P, Petersen PE, et al. WHO Global Consultation on Public Health Intervention against Early Childhood Caries. Community Dent Oral Epidemiol. 2018;46(3):280–7.
7. Bennadi D, Reddy CVK, Sunitha S, Kshetrimayum N. Oral Health status of 3-6 year old children and their mother's oral health related knowledge, attitude and practices in Mysore City, India. Asian J Med Sci. 2014;6(2):66–71.
8. American Academy of Pediatric Dentistry. Policy on early childhood caries (ECC): classifications, consequences, and preventive strategies. 2020;79–81.
9. Zhang S, Liu J, Lo ECM, Chu CH. Dental caries status of Dai preschool children in Yunnan Province, China. BMC Oral Health. 2014;14(1):2–7.
10. Jones CM, Davies GM, Monaghan N, Morgan MZ, Neville JS, Pitts NB. The caries experience of 5 year-old children in Scotland in 2013-2014, and in England and wales in 2014-2015. Reports of cross-sectional dental surveys using BASCD criteria. Community Dent Health. 2017;34(3):157–62.
11. Chu CH, Ho PL, Lo ECM. Oral health status and behaviours of preschool children in Hong Kong. BMC Public Health. 2012;12(1):767–74.
12. Mahmoud Shalan H, Mahmoud Abo Bakr R. Oral Health Status of Preschool Children in Egypt. Acta Sci Dent Sci. 2018;2(5):67–72.
13. Khan IM, Mani SA, Doss JG, Danaee M, Kong LYL. Pre-schoolers' tooth brushing behaviour and association with their oral health: a cross sectional study. BMC Oral Health [Internet]. 2021;21(1):1–12.

Oral Conditions among Geriatric Population of Rupandehi District: A Cross Sectional Study

Dr. Siddharth Gupta,[1] Dr. Deepak Yadav,[2] Dr. Ashish Lamsal,[3] Dr. Vaibhav Rai[4]

[1]Professor, [2,4]Assoc. Prof, Department of Oral Medicine, Diagnosis & Radiology, UCMS, Bhairahawa
[3]Lecturer, Department of Pharmacy/ Pharmacology, UCMS, Bhairahawa

Corresponding Author
Dr. Siddharth Gupta
Email: sidhca13@gmail.com

Citation
Gupta S, Yadav D, Lamsal A, Rai V. Oral conditions among geriatric population of Rupandehi District: A cross sectional study. J Kantipur Dent Coll. 2023;4(2): 9-13.

ABSTRACT

Introduction: Geriatrics is one of the most recent and least developed specialties in Nepal. Geriatric dentistry is almost non-existent. There is an increasing demand for geriatric oral healthcare in Nepal.

Objective: To investigate oral health conditions and treatment needs of elderly population aged 60 to 80 years of the Rupandehi District, Lumbini Province, Nepal.

Materials and Method: A cross sectional study of oral health status was done from October 2022 to September 2023 among 404 participants between the ages of 60-80 years. The oral health status of patients was assessed at Dental Out-Patient Department of Oral Medicine Diagnosis & Radiology, Universal College of Medical Sciences (UCMS). Extra-oral information, temporomandibular joint assessment, intra-oral mucosal conditions and Community Periodontal Index data were used. The data were evaluated with chi square test, with $p<0.05$ as the significance cut off.

Result: Results showed that 6.4% patients exhibited symptoms and 3.0% showed signs on TMJ assessment. Oral mucosal conditions were observed in 63.61% of patients out of which 38.86% lesions were variations of normal mucosa. Community periodontal index (CPI) score and clinical attachment loss (CAL) were higher because of high rate of edentulousness, both complete and partial.

Conclusion: The oral health status of the elderly population in Rupandehi District is poor. The results of this study may help to plan health actions, as the mobility of these age groups will be limited and could not travel to secondary and tertiary health care facilities for treatment. Therefore, oral health professionals should go to rural areas to provide dental services for the upliftment of oral health of geriatric population.

Keywords: Dental health surveys, Geriatrics, Oral health

INTRODUCTION

Poor oral health among old-age people is an important public health issue and growing burden to countries worldwide. Geriatrics is one of the most recent, least developed specialties in Nepal and Geriatric dentistry is almost non-existent.[1]

According to World Health Organization (WHO), epidemiological oral health studies help in determining the extension of oral health treatments in relation to its demand, nature and extension of the preventive, curative and restoring services.[2] With oral health being considered an indicator of quality of life in geriatric patients and oral diseases being complex progressive and cumulative; it is important to maintain and improve oral health. In addition, improved oral health allows geriatric persons to gain self-confidence, increase social networking, and restores one's physical and mental ability. Common oral health problems in elderly populations include periodontal diseases, dental caries, edentulism, xerostomia, and wasting diseases.[3] Recently oral health status in general older population has been addressed, but the oral health of institutionalized older people and under-privileged population continues to be a neglected issue. Studies have been reported from the United States, Australia, Canada, India, Italy, Greece, Croatia, Fiji Islands, Hong Kong and Singapore; indicating that the dental status of institutionalized older people is generally poor.[4] The prevalence of severe dysfunction was extremely low, the degree of dental wear increased with

age but severe wear of teeth was less commom in women.[5] Precancerous lesions such as leukoplakia, actinic cheilitis, squamous carcinoma were common in old people.[6] There is an increasing demand for geriatric oral healthcare in Nepal. This study aims to assess the oral health conditions of the elderly population aged 60 to 80 years of Rupandehi District of Lumbini Province.

MATERIALS AND METHOD

Across sectional study was carried out in the Department of Oral Medicine & Radiology of UCMS College of Dental surgery, from the month of October 2022 to September 2023. Ethical approval was taken from the Institutional Research Committee and Ethical Committee of UCMS Ethical Board. Older patient with oral healthcare issues need treatment (both male and female) reported to the Department outpatient age group of 60 to 80 years were included in the study.

Required data was collected from the departmental records. The oral health status of patients was assessed along with general information like name, age, gender, occupation, ethnic groups by using WHO 2013 oral health survey criteria. Extra-oral information, temporomandibular joint assessment, oral mucosal conditions, Community Periodontal Index (CPI) and intra-oral lesion and there sites were assessed.

The data were tabulated and analyzed in Microsoft Office Excel worksheet (version 2007) and Statistical Package for Social Sciences version 19.0. Frequency of Oral-mucosal lesions and conditions, Temporo-mandibular joint assessment, Community Periodontal index and intra-oral lesion and there sites were evaluated with chi square test, with $p<0.05$ considered as statistical significance.

RESULT

Male participants represented more and majority of the patients were in 6th decade (60-64 years) and least number of patients were oldest age group of 75-80 years (Table 1). Majority of elderly were non-working, dependant pensioners (69.1%) while 12.1% of the populations were farmers (Table 2).

Table 1: Frequency and percentage of different age groups and gender

Gender	60-64years	65-69years	70-74years	75-80years	Total
Male	113(27.97%)	62(15.34%)	47(11.63%)	35(08.6%)	257(63.6%)
Female	82(20.3%)	40(9.90%)	20(4.95%)	5(1.23%)	147(36.4%)
Total	195(48.26%)	102(25.24%)	67(16.58%)	40(09.9%)	404(100%)

Table 2: Frequency and percentage of different occupation groups

Type	Frequency	Percentage
Farming	49	12.1%
Non-farming	76	18.8%
Home bound/Pensioners	279	69.1%
Total	404	100%

On extra oral clinical assessment three hundred and seventy (91.6%) patients had normal extra-oral appearance. One female patient (0.2%) had ulceration, sores, erosions and fissures in the region of vermilion border, the least affected region. Nine patients (2.2%) had ulcerations, sores, erosions, fissures (commissures). Twenty patients (5%) had enlarged lymph nodes of head and neck.

The majority of patients - three hundred and seventy eight (93.6%), did not have any symptoms of extra oral lesions while twenty six (6.4%) patients exhibited symptoms. Three hundred and ninety two patients (97%) did not show any signs on TMJ assessment. Only one elderly female between 65-69 years, exhibited tenderness on palpation of TMJ and reduced jaw mobility.

Oral mucosal lesions were more common in males. Leukoplakia was the most common oral mucosal lesion while Oral Lichen Planus (OLP) was more common in females while One hundred and fifty seven (38.9%) patients showed variations of normal mucosa. Majority of the cases fell in the age group of 60-64 years (Table 3).

Table 3: Frequency and percentage of oral mucosal lesions and conditions among different age groups and gender

Age in years	60-64		65-69		70-74		75-80		Total
Gender	M	F	M	F	M	F	M	F	
Condition									
0=No abnormal condition	47 (11.6)	68 (16.8)	32 (7.9)	32 (7.2)	25 (6.1)	17 (4.2)	20 (4.9)	5 (1.2)	246 (60.8)
1=Malignant tumour(oral cancer)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)	0 (0.0)	1 (0.2)
2=Leukoplakia	27 (6.6)	4 (0.9)	15 (3.7)	0 (0.0)	10 (2.4)	0 (0.0)	2 (0.4)	0 (0.0)	65 (16.1)
3=Lichen planus	1 (0.2)	3 (0.7)	0 (0.0)	1 (0.2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	5 (1.2)
4=Ulceration(aphthous, herpetic, traumatic)	6 (01.4)	4 (0.9)	4 (0.9)	0 (0.0)	1 (0.2)	1 (0.2)	1 (0.2)	0 (0.0)	17 (4.2)
6=Candidiasis	4 (0.9)	1 (0.24)	0 (0.0)	0 (0.0)	1 (0.2)	0 (0.0)	2 (0.49)	0 (0.0)	8 (1.9)
7 = Abscess	0 (0.0)	1 (0.3)	2 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)	0 (0.0)	4 (0.9)
8=Other condition	65 (16)	8 (1.6)	33 (8.1)	8 (1.9)	26 (6.4)	2 (0.4)	15 (3.7)	0 (0.0)	157 (38.8)

Values in the parentheses indicates %

Buccal mucosa was the most commonly affected location followed by the hard and/or soft palate. Majority of those affected participants were male and were between 60-64 years except, vermillion border which was affected more in age group 65-69 years. The least affected location was the floor of the mouth followed by the vermillion border. (Table 4)

Table 4: Frequency and percentage of oral mucosal lesion code categories among age groups and gender in different intraoral site

Age in years	60-64		65-69		70-74		75-80		Total
Gender	M	F	M	F	M	F	M	F	
Condition (Location)									
0 = Vermilion border	0 (0.0)	1 (0.2)	3 (0.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (0.9)
1=Commissure	7 (1.7)	1 (0.2)	4 (0.9)	1 (0.2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	13 (3.2)
2 = Lips	3 (0.7)	3 (0.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	6 (1.4)
3 = Sulci	3 (0.7)	1 (0.2)	1 (0.2)	1 (0.2)	3 (0.7)	0 (0.0)	1 (0.2)	0 (0.0)	10 (2.4)
4 = Buccal Mucosa	43 (10.6)	6 (1.4)	25 (6.1)	3 (0.7)	16 (3.9)	1 (0.2)	7 (1.7)	0 (0.0)	101 (25.0)
5 = Floor of mouth	1 (0.2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)	0 (0.0)	2 (0.4)
6 = Tongue	3 (0.7)	2 (0.4)	1 (0.2)	1 (0.2)	2 (0.4)	1 (0.2)	2 (0.4)	0 (0.0)	12 (2.9)
7 = Hard and/or soft palate	46 (11.3)	3 (0.7)	20 (4.9)	2 (0.4)	14 (3.4)	0 (0.0)	11 (2.7)	0 (0.0)	96 (23.8)
8=Alveolar ridges/ gingiva	4 (0.9)	6 (1.4)	3 (0.7)	1 (0.2)	3 (0.7)	1 (0.2)	1 (0.2)	0 (0.0)	19 (4.7)

Values in the parentheses indicates %

In relation to the periodontal conditions, majority of the sextants were excluded from the study for not presenting minimum of two teeth without indication of extraction. The results revealed significant loss of teeth. Among the examined sextants, 0.5% individuals had healthy periodontal condition, 2.8% individuals with bleeding, 21.6% of individuals with calculus and 4-5 mm pockets, 53.7% individuals with 6 mm or more pockets. The present study revealed that gum bleeding (4.8%) and pocket depth 4-5 mm (27.7%) was higher among women, although the presence of calculus (23.0%) and pocket 6 mm or more (57.0%) was more among male participants. The difference, showed slight statistical significance (p=0.454). The result indicated that periodontal conditions of men were worse. Only one (0.7%) male elderly in the age group of 65-69 years presented with healthy sextant. (Table 5)

Table 5: Frequency and percentage of periodontal conditions among different age groups

	Age group in years				Total
Community Periodontal Index	60-64	65-69	70-74	75-80	
0 = Healthy	0 (0.0)	1 (1.9)	0 (0.0)	0 (0.0)	1 (0.5)
1 = Bleeding	3 (2.6)	1 (1.9)	1 (2.9)	1 (6.3)	6 (2.8)
2 = Calculus	27 (23.7)	10 (18.9)	8 (22.9)	2 (12.5)	47 (21.6)
3 = Pocket 4-5 mm (black band on probe partially visible)	28 (24.6)	10 (18.9)	6 (17.1)	3 (18.8)	47 (21.6)
4 = Pocket 6 mm or more (black band on probe partially visible)	56 (49.1)	31 (58.5)	20 (57.1)	10 (62.5)	117 (53.7%)

Values in the parentheses indicates %

DISCUSSION

The total population of Nepal, as of the census day (25 November 2021) is 29,164,578, of which the number of males is 14,253,551 (48.87 %) and the number of females is 14,911,027 (51.13 %) and sex ratio is 95.59 males per 100 females. The total population on was 26,494,504 with sex ratio of 94.16 males per 100 females in 2011.[1,2] In the present study there were more number of males as compared to females. A descriptive cross-sectional study by Shrivastav et al showed 117 subjects aged 50 years and above 61.5% were males and 38.5% were females similar to the present study.[4] Conversely, study conducted by Khan et al study had more number of females.[3] In the present study 6.4% patients showed symptoms, 3.0% showed signs and 0.2% exhibited reduced jaw mobility on Temporomandibular Joint (TMJ) assessment. The findings were low in number and percentage in the elderly population. According to Salonen et al and Osterberg T et al symptoms of craniomandibular dysfunction were reported less with increasing age, especially in men.[5,6] Oral mucosal lesions have not been frequently found in older people except in those with pernicious habits. Smoking was predominant harmful habit, contributing to leukoplakic manifestation in the buccal mucosa. Tobacco chewing was second most frequent habit. Oral mucosal conditions were observed in 63.6% in present study among which 38.8% lesions were variations of normal mucosa. Similar findings were reported by Jorge J et al, study observed oral mucosal alterations in 60% of Brazilian elderly population from single institution.[7] Ali et al found two cases of oral cancer among 486 elderly study subjects (0.4%), higher than present study (0.24%).[8]

Corrêa et al revealed lichen planus affected patients were 61.3%,in over 60 years, higher than the present study.[9] Dundar N, Ilhan Kal[10] found lower percentage of elderly exhibiting oral mucosal lesions as compared to the present study. According to Greenberg M et al, epidemiological data of 2008; prevalence of oral leukoplakia ranged from 0.7 to 24.8%, conforming to our study.[11] Ferreira et al; cross-sectional study found 646 oral mucosal alterations in 267 elderly population and 59.1% were variations of the normal oral mucosa, similar to the present study.[12] CB, Thakkar K and Patel H found that Oral Leukoplakia was more prevalent in age group of 60-64 years similar to current study.[13] Bhardwaj found that prevalence of oral lichen planus in older people ranges from 1.1% to 6.6%,[14] similar to present study and Rani et al of Chennai, found prevalence of oral ulcers 5.2%.[15]

The number of sextants available for assessment of community periodontal index (CPI) was less because of high rate of edentulousness, both complete and partial. As the age advances, frequency of occurrence of community periodontal index becomes less due to further loss of teeth. This shows that as age advanced both in males and females, teeth will continue falling in absence of adequate delivery

of oral health care. Epidemiological data on periodontal health conditions of developing countries are scarce.[16] According to Slade GD and Spencer AJ[17] and Brown LJ et al,[18] periodontal destruction is frequent among elderly, similar to the present study. According to Ogawa et al[19] smoking habit and baseline attachment level of 6 mm or more may be considered risk factors for further attachment loss among healthy elderly people and in the present study 24% of the people presented insertion loss between 6 mm and 8 mm, probable indication of considerable threat to periodontal health among elderly. Dye et al found that clinical attachment loss (CAL) was 13.2% in 50 - 64 years age group, suggesting increasing tendency with age which was consistent with present study.[20] According to Ünlüer Ş et al, Community Periodontal Index (CPI); score '0' was present in very less participants, similar to our study only nine elderly participants had healthy sextants with score '0'.[21] Thaweboon et al found that almost all of the elderly hill tribe residents of Thailand had moderate gingival inflammation, similar to present study.[22]

CONCLUSION

The study shows that the older population has a high prevalence of various dental diseases. For these age groups, health care delivery needs to reach physically and one cannot expect them to come for treatment to secondary and tertiary health care centers. General health can be achieved by providing complete oral health care through village adoption program to our senior citizens. The community needs special task force of dentists, ready to go to rural areas for dental care delivery and transport facilities for bringing rural people to secondary and tertiary health care centers. The study was carried among Nepali population mostly from the area of Rupandehi District, Lumbini Province and demographic representation of present study signifies the rural population of the region.

REFERENCES

1. Nadig RR, Usha G, Kumar V, Rao R, and Bugalia A. Geriatric restorative care - the need, the demand and the challenges. J Conserv Dent. 2011;4:208-14.
2. World Health Organization. Oral health surveys: basic methods. 4th ed. Geneva: ORH/EPID; 1997.
3. Khan K, Ravishankar T and Nikhath F. Dental Health Status and Treatment Need of Institutionalized Geriatric Population: An Indian Scenario. J Indian Acad Geriatr. 2011;7:154-8.
4. Shrivastav A, Bhambal A, Reddy V and Jain M. Dental prosthetic status and needs of the residents of geriatric homes in Madhya Pradesh, India. J Int Oral Health. 2011;3:9-13.
5. Salonen L, Hellden L and Carlsson G. Prevalence of signs and symptoms of dysfunction in the masticatory system: an epidemiologic study in an adult Swedish population. J Craniomandib Disord. 1990;4:241-50.
6. Osterberg T, Carlsson GE, Wedel A and Johansson U. A cross-sectional and longitudinal study of craniomandibular dysfunction in an elderly population. J Craniomandib Disord. 1992;6:237-45.
7. Jorge J Jr, Almeida OP, Bozzo L, Scully C, Graner E. Oral mucosal health and disease in institutionalized elderly in Brazil. Community Dent Oral Epidemiol. 1991;19:173-5.
8. Ali TBT, Razak LA, Latifah RJR and Zain RB. An epidemiological survey of oral mucosal lesions among elderly Malaysians. Gerodontology.1995; 12:37-40.
9. Corrêa L, Frigerio MLMA, de Sousa SCOM and Novelli MD. Oral lesions in elderly population: a biopsy survey using 2250 histopathological records. Gerodontology.2006;23:48-54.
10. Dundar N and Ilhan Kal B. Oral Mucosal Conditions and Risk Factors among Elderly in a Turkish School of Dentistry. Gerontology. 2007;53:165-72.
11. McCartan BE and Healy CM. The reported prevalence of oral lichen planus: a review and critique. Journal of Oral Path & Med. 2008;37:447-53.
12. Ferreira RC, Magalhães C and Moreira AN. Oral mucosal alterations among the institutionalized elderly in Brazil. Braz Oral Res.2010; 24:296-302.
13. More CB, Thakkar K and Patel H. Oral Leukoplakia – A hospital based study. J Int Oral Health. 2011; 3:23-30.
14. Bhardwaj VK. Gerodontology - Orodental care for elderly. Eur J Gen Dent. 2012;1:15-9.
15. Rani MA, G Palani. Morbidity profile of elders in old age homes. Nat J of Commun Med. 2012;3:458-64.
16. Petersen P.E, Kandelman D, Arpin S and Ogawa H . Global oral health of older people – Call for public health action. Commun Dent Health. 2010; 27:257-68.
17. Slade GD and Spencer AJ. Periodontal attachment loss among adults aged 60 + in South Australia. Commun Dent and Oral Epidemiol.1995;23:237-42.
18. Brown LJ, Brunelle JA and Kingman A. Periodontal status in the United States. 1988–91: Prevalence, extent, and demographic variation. J Dent Research.1996;75 (Spec Iss):672-83.
19. Ogawa H, Yoshihara A, Hirotomi T, Ando Y, Miyazaki H. Risk factors for periodontal disease progression among elderly people. J Clin Periodontol. 2002;29:592-7.
20. Dye BA, Tan S, Smith V, Lewis BG. Trends in oral health status: United States, 1988-1994 and 1999-2004. Vital Health Stat. 2007; 11:1-92.
21. Ünlüer Ş, Gökalp S and Doğan BG. Oral health status of the elderly in a residential home in Turkey. Gerodontology. 2007; 24:22-9.
22. Thaweboon S, Thaweboon B, Nakazawa F, Dechkunakorn S, Suddhasthira T and Fujita M. Oral Health Status among Elderly Hill Tribe Villagers in Mae Sot, Thailand. Asia J Public Health. 2010;1:11-5.

Odontogenic Infection in Patients Visiting Tertiary Health Care Center

Dr. Mamata Shakya[1], Dr. Bhoj Raj Adhikari[2], Dr. Nitesh Chaurasia[3], Dr. Chandan Upadhyaya[4], Dr. Dilip Prasad Rauniyar[5], Munnu Dhakal[6]

[1,5]Lecturer, [3]Assistant Professor, [4]Professor, Department of Oral and Maxillofacial Surgery, [2]Lecturer, Department of Oral Medicine and Maxillofacial Pathology, [6]Final Year Student, Department of Dental Surgery, Kathmandu University School of Medical Sciences, Dhulikhel, Kavre, Nepal

Corresponding Author
Dr. Mamata Shakya
Email: mamata@kusms.edu.np

Citation
Shakya M, Adhikari BR, Chaurasia N, Upadhyaya C, Rauniyar DP, Dhakal M. Odontogenic infection in patients visiting tertiary health care center. J Kantipur Dent Coll. 2023;4(2): 14-7.

ABSTRACT

Introduction: Odontogenic infections are the infections that originates from the embryonic odontogenic apparatus and can spread through the bone marrow, cortical bone and periosteum to structures distant from the oral cavity.

Objective: The aim of this study was to identify the characteristics, explore the common etiology, presenting signs and symptoms, and treatment modality of odontogenic infections in patients visiting a tertiary health care center in Nepal.

Materials and Method: This cross-sectional descriptive study was carried out among the patient, diagnosed as odontogenic infections, visiting the Department of Oral Medicine, Pathology, and Oral and Maxillofacial Surgery, DH-KUSMS from 15th September 2023 to 14th November 2023. Descriptive statistical analysis, and chi square test to evaluate differences in odontogenic infection between the gender, were performed.

Result: A total of 206 (11.15%) presented with odontogenic infections among 1847 patients visiting the dental OPD. The age was ranging from 16 to 80 years and a mean age of 43.57 years (±16.90 years). Out of 206 patients, 122 were female and 84 male patients. Pain and/or swelling were the major complaint. The most common modality of treatment was extraction in combination with incision and drainage supported by a combination of amoxicillin, clavulanic acid and metronidazole antibiotics. Fifty-three (25.73%) patients required hospital admission, and the average duration of stay in hospital was 5.1 days.

Conclusion: This study presented the characteristics, etiology and treatment modality of odontogenic infections among patients in a tertiary health care center.

Keywords: Infection; Odontogenic; Pain; Swelling; Teeth

INTRODUCTION

Odontogenic infections (OI) are the infections that originate from the dental pulp, periodontium and jawbones and can spread through the bone marrow, cortical bone and periosteum to structures distant from the oral cavity.[1] OI are characterized as polymicrobial, endogenous, opportunistic, dynamical and mixed bacterial infection.[2] The patients with odontogenic infections are mainly characterized by pain, swelling and abscess.[3,4] OI can spread along the contiguous facial planes leading to life threatening conditions.[5,6] OI being one of the most common diseases, accounts for majority of the reason for dental consultation.[7] Dental extractions, incision and drainage of infected spaces usually supported by antibiotics and root canal therapy are the measures to improve patients' defense.[3,4,8] A limited number of studies have been conducted regarding the maxillofacial infections in Nepal, but have not clearly characterized the lesions of odontogenic origin.[9-11] To the best of our knowledge, odontogenic infection in Nepali adults has been explored to a very less extent. The aim of this study was to identify the characteristics, explore the common etiology, presenting signs and symptoms and treatment modality of odontogenic infections in patients visiting Dental OPD, emergency department and dental surgery ward in Dhulikhel Hospital - Kathmandu University School of Medical Sciences (DH-KUSMS).

MATERIAL AND METHODS

This cross-sectional descriptive study was carried out in the Department of Oral Medicine, Pathology, and Oral and Maxillofacial Surgery, DH-KUSMS from 15th September 2023 to 14th November 2023. Ethical approval was obtained from the Institutional Review Committee of the same institute (IRC-KUSMS Approval No: 23/021).

Informants visiting Dental OPD, emergency department and admitted in dental surgery ward who gave informed consent were included in this study. Patients diagnosed clinically and/or histopathologically as odontogenic infection during the period of study were taken as the study population. A convenience sampling method was used. The sample size was calculated using the following formula: $N = Z^2pq/e^2$(where, Z = 1.96 at 95% Confidence Interval (CI),p = prevalence taken as 50% for maximum sample size calculation, q =1-p, e = margin of error, 7%). N = 196. The minimum sample size was 196, however, 206 samples were included.

The inclusion criteria in this study were the patient visiting DH-KUSMS and diagnosed clinically and/or histopathologically as infections arising from odontogenic sources. Infections of non-odontogenic origin of the oral cavity, salivary gland, and non-odontogenic cysts were excluded. After obtaining informed and written consents from the participants, name, gender and age were recorded. At the time of examination, medical and dental histories of the participants were reviewed. Radiographic and histopathological examination was conducted to reach the final diagnosis where-ever needed. The clinical and laboratory parameters included in the study were age, gender, site, clinical presentations, etiopathogenesis relating to the disease, and histopathological reports of the lesion.

All the available information were entered in Microsoft Excel and analyzed using statistical software (IBM SPSS Statistical tool Version 23; SPSS Inc, USA). Descriptive statistical analysis, and chi square test to evaluate differences in odontogenic infection between the gender were performed. Point estimate and 95% confidence interval (CI) were calculated, statistical significance was set at p value of 0.05.

RESULTS

A total of 1847 patients visited to the dental OPD during the study period, out of which 991 were male and 856 were female. Out of this total, the patient presented with odontogenic infection were included in the present study, and was counted to be 206 (11.15%) with an age ranging from 16 to 80 years and a mean age of 43.57 years (±16.90 years). Out of 206 participants, 84(40.78%) of them were male and the remaining 122(59.22%) were female. Chief complaint of the patient at the time of presentation is tabulated (Table 1). Majority of the patients presented with a complaint of pain and/or swelling of the maxilla or mandible. Among 206 participants; 99 (48.06%) of the patient complaint of isolated pain and 59 (28.64%) presented with isolated swelling without pain. Remaining 39 (18.93%) of them had both pain and swelling at the time of presenting to the clinicians. Mean duration of pain prior to seeking dental care was eight days and swelling was five days. Among the 197 participants who complaint of either pain, swelling or decayed teeth, the origin of symptoms were related to middle third of the face (maxillary arch, maxillary teeth, upper lip and oronasal structures) in 115 (55.82%) patients and the lower thirdof the face (mandibular arch, mandibular teeth, lower lip and floor of the mouth) in 82 (39.80%) patients.

Table1: Chief complaint of the patient at the time of presentation

Presenting signs and symptoms	Number of participants - n(%)
Pain	99 (48.06%)
Swelling	59 (28.64%)
Pain and swelling	39 (18.93%)
Trismus	5 (2.43%)
Decayed teeth	4 (1.94%)

Diagnosis of the patients was finalized based on the clinical, radiographic and histopathological findings (Table 2). Seventy-four (35.92%) patients were diagnosed to have maxillofacial space infection followed by 66 (32.04%) with infected odontogenic cysts. Among the infected odontogenic cysts, 44 of them were having radicular cyst, 15 of them infected dentigerous cyst and the remaining 7 were having infected odontogenic keratocyst. Abscess was seen in 32 (15.53%) patients, and cellulitis in six (2.91%) of the patients. Remaining 28 (13.6%) patients presented with various other infections including periapical granuloma, infected dental follicle, and healing sinus tracts and fistula. Majority of patients, 192 (93.20%) received a combination of amoxicillin, clavulanic acid and metronidazole coverage. The most common modality of treatment was extraction in combination with incision and drainage in 175 (84.95%) followed by root canal treatment in 31 (15.05%). Fifty-three (25.73%) of them required hospital admission, and the average duration of stay in hospital was 5.1 days.

Table 2: Diagnosis of the patient

Diagnosis	Number of participants - n (%)
Space Infection	74 (35.92%)
Infected Odontogenic Cysts	66 (32.04%)
Abscess	32 (15.53%)
Cellulitis	6 (2.91%)
Others	28 (13.6%)
Total	206 (100%)

Descriptive analysis was performed to evaluate the distribution of nature and type of infections. Chi-square

test was employed to test the association between gender and presence of infection. Chi-square test was calculated on the total population screened. The chi-square test revealed that females experienced higher rates of odontogenic infections compared to males. Result showed statistically significant association ($p<0.05$) between gender and odontogenic infection status (Table 3).

Table 3: Association between gender and odontogenic infection

Gender	Infection present n (%)	Infection absent n (%)	Chi-square value	p value
Female	122 (14.25%)	734 (85.75%)	15.463	<0.05*
Male	84 (8.48%)	907 (91.52%)		

* Statistically significant

DISCUSSION

The result of the present study showed that there was a high prevalence of odontogenic infection in patients visiting dental OPD and wards in our center. OI accounted for 11.15% of all the patient visiting department of Oral Medicine, Pathology, and Oral and Maxillofacial Surgery in DH-KUSMS during the study period. Females were more commonly affected and the result was in consistent with similar studies conducted in Nepal.[10,11] Our findings indicated a higher prevalence of odontogenic infections in females compared to males, aligning with trends observed in similar studies conducted in Nepal. This suggested that gender may play a role in the susceptibility to odontogenic infections, warranting further investigation into the underlying factors. Dental caries being the most common bacterial disease of oral cavity can lead to periapical infection and accounts for the majority of the OI. Untreated dental caries was the most common etiological factor of OI in the present study and is in accordance to previous studies conducted in same country or other part of the world.[3,9,12,13] Pericoronitis secondary to erupting third molars, periodontal pockets as a consequence of poor oral hygiene and alveolar osteitis secondary to exodontia are the other etiological factors that contribute to OI.[1] Majority of patient in our center visited with an infected odontogenic cyst (radicular cyst). Predominance of radicular cyst has been explained as this cyst is a very common sequel to dental caries. Acute dental abscess, usually secondary to dental caries, is a frequent and sometimes underestimated disease of the oral cavity. Abscess formation occurs when the bacteria and their toxic products breach into the periapical tissues through the apical foramen and induce acute inflammation and pus formation. The main signs and symptoms of the acute dental abscess are pain, swelling, erythema, and suppuration usually localized to the affected tooth. Pain and swelling, either independently or in association with each other were the most important presenting signs and symptoms of odontogenic infection in our study. These symptoms often occur together, but can also manifest independently, reflecting the underlying inflammatory processes associated with dental infections. Trismus usually occurs as a result of involvement of muscles in the maxillofacial region. Trismus was presented in a few numbers of patients, and this might be attributed to insufficient time period available to involve the muscle plane in our study population. Dental extractions and incision and drainage of infected spaces or root canal therapy are usually supported by antibiotics and other measures to improve patients' defense.[3,4,8] Dental extraction followed by incision and drainage and supported by antibiotics was the main line of management adopted in our practice.

Odontogenic infections are very common among the population in developing countries.[14] Delay or inadequacy in the treatment can give rise to serious complications leading to morbidity.[15-18] OI are the infections of the tissues derived from embryonic odontogenic origin. OI originate mainly from pulpal or periodontal pathology and can spread through the alveolar bone to bone marrow, cortical bone and periosteum and structures distant from the oral cavity.[19] OI being one of the most common diseases, accounts for majority of the reason for dental consultation.[7,19] Early recognition and management of maxillofacial infections is mandatory. The majority of maxillofacial infections spread along the contiguous facial planes, leading to severe infections.[5] Treatment of these infections is challenging and needs attention because potentially fatal complications such as sepsis, airway obstruction, cavernous sinus thrombosis, necrotizing fasciitis, and mediastinitis can occur.[20] The treatment is governed by several factors such as the size, location of the lesion, and involvement of adjacent anatomical structures and is mainly surgical aiming at removal of the source. These lesions are of importance because of their direct concern with patients' facial aesthetics, masticatory function, and overall quality of life, therefore, early diagnosis of these lesions may prevent unfortunate surgical intervention.

CONCLUSION

In conclusion, this study presents the prevalence of odontogenic infections (OI) among patients at our dental center, with a notable higher incidence in females compared to males. The predominant causes of OI, such as dental caries leading to periapical infections and complications from erupting third molars or poor oral hygiene, highlight the critical need for timely intervention. The majority of patients involved infected odontogenic cysts, emphasizing the importance of early detection and management to

avoid severe complications. The findings align with existing literature on the commonality and potential severity of OI, particularly in developing regions. Thus, prioritizing early diagnosis and prompt treatment of OI is crucial for maintaining patients' oral health, facial aesthetics, and overall quality of life.

REFERENCES

1. Goncalves L, Lauriti L, Yamamoto MK, Luz JGC. Characteristics and management of patients requiring hospitalization for treatment of odontogenic infections. J Craniofac Surg. 2013;24(5):e458-462.
2. Maestre-Vera JR. Treatment options in odontogenic infection. Med Oral Patol Oral Cir Bucal. 2004;9 Suppl:25–31;19–24.
3. Jose G, Ruben M, Dionelys B, Andrea M, Bricelys P. A fifteen year retrospective study of odontogenic maxillofacial infection in a Venezuelan public hospital. Res Rep Oral Maxillofac Surg. 2020;4(1):1–6.
4. Sahibzada S, Khan A, Sardar T, Aurangzeb U, Afridi N, Amanat I. Characteristics and Pattern of Odontogenic Infections with its Treatment Modalities. Pak J Med Sci. 2022;16(09):798–798.
5. Heimdahl A, Nord CE. Treatment of orofacial infections of odontogenic origin. Scand J Infect Dis Suppl. 1985;46:101–5.
6. Sato FRL, Hajala FAC, Filho FWVF, Moreira RWF, Moraes M de. Eight-Year Retrospective Study of Odontogenic Origin Infections in a Postgraduation Program on Oral and Maxillofacial Surgery. J Oral Maxillofac Surg. 2009;67(5):1092–7.
7. Topazian RG, Goldberg MH, Hupp JR. Oral and maxillofacial infections. 4th ed. Philadelphia: W.B. Saunders; 2002.
8. Wang J, Ahani A, Pogrel MA. A five-year retrospective study of odontogenic maxillofacial infections in a large urban public hospital. Int J Oral Maxillofac Surg. 2005 Sep;34(6):646–9.
9. Khanal B, Dulal S. Assessment of clinical pattern and management of maxillofacial space infection in children visiting a tertiary health care centre in Kavre, Nepal. J Nepal Dent Assoc. 2020;20(31):68–72.
10. Maharjan S, Joshi R, Rijal A, Dhungana A, Shrestha K. Pattern of deep neck space infections at a tertiary hospital, Kathmandu, Nepal. Nepal Med Coll J. 2020;22(1–2):44–8.
11. Yadav K, Prakash S. Antibiogram profiles against polymicrobial pathogens among dental caries patients at Janaki Medical College teaching hospital, Nepal. Int J Appl Dent Sci. 2015;1:156–62.
12. Al-Malik M, Al-Sarheed M. Pattern of management of oro-facial infection in children: A retrospective. Saudi J Biol Sci. 2017;24(6):1375–9.
13. Zhang C, Tang Y, Zheng M, Yang J, Zhu G, Zhou H, et al. Maxillofacial space infection experience in West China: a retrospective study of 212 cases. Int J Infect Dis. 2010;14(5):e414–7.
14. Shakya N, Sharma D, Newaskar V, Agrawal D, Shrivastava S, Yadav R. Epidemiology, Microbiology and Antibiotic Sensitivity of Odontogenic Space Infections in Central India. J Maxillofac Oral Surg. 2018 Sep;17(3):324–31.
15. Bascones Martínez A, Aguirre Urízar JM, Bermejo Fenoll A, Blanco Carrión A, Gay-Escoda C, González-Moles MA, et al. Consensus statement on antimicrobial treatment of odontogenic bacterial infections. Med Oral Patol Oral Cir Bucal. 2004 Dec;9(5):369–76;363–9.
16. Carter LM, Layton S. Cervicofacial infection of dental origin presenting to maxillofacial surgery units in the United Kingdom: a national audit. Br Dent J. 2009 Jan 24;206(2):73–8.
17. Huang TT, Tseng FY, Liu TC, Hsu CJ, Chen YS. Deep neck infection in diabetic patients: comparison of clinical picture and outcomes with nondiabetic patients. Otolaryngol Head Neck Surg. 2005 Jun;132(6):943–7.
18. Haug RH, Prather J, Indresano AT. An epidemiologic survey of facial fractures and concomitant injuries. J Oral Maxillofac Surg. 1990 Sep;48(9):926–32.
19. Monasterio R, Henriquez SG. Prevalence and characterization of Odontogenic Infections in the Public Assistance Emergency Hospital between the Months of July to September of the Year 2015: Prospective Study. In 2018.
20. Bali P, Sanaka SR, Anand R, Hiremath A, Gulia SK, Mohan S. Strategies in management of maxillofacial space infections. J Adv Med Dent Scie Res. 2020;8(9):60r62.

Cephalometric Assessment of Soft Tissue Profile Thickness in Orthodontic Patients with Different Vertical Skeletal Relations

Dr. Amita Lama,[1] Dr. Rabindra Man Shrestha,[2] Dr. Jyoti Dhakal,[3] Dr. Alka Gupta[4]

[1]PG Resident, [2]Professor, [3]Associate Professor, [4]Assistant Professor, Dept. of Orthodontics, Kantipur Dental College, Kathmandu University, Kathmandu, Nepal

Corresponding Author
Dr. Amita Lama
Email: lamaanita2054@gmail.com

Citation
Lama A, Shrestha RM, Dhakal J, Gupta A. Cephalometric assessment of soft tissue profile thickness in orthodontic patients with different vertical skeletal relations. J Kantipur Dent Coll. 2023;4(2): 18-22.

ABSTRACT

Introduction: One of the objective of orthodontic treatment is to achieve and conserve the facial beauty. Variations in soft tissue thickness, length, and tonicity influence the position and relationship of facial structures, ultimately affecting the facial aesthetics. Soft tissue thickness varies among sagittal and vertical relations. There are scarce literatures regarding the relationship of soft tissue thickness and growth pattern among Nepali sample.

Objectives: To evaluate the soft tissue profile thickness among orthodontic patients with different vertical skeletal relations.

Materials and methods: This is a cross-sectional comparative study including 75 subjects of the age range 10-29 years. The lateral cephalograms from the pretreatment records of patients visiting the Department of Orthodontics, Kantipur Dental College and Hospital, Kathmandu were selected as per the inclusion criteria. The samples were divided into horizontal, normal and vertical growth patterns according to Steiner's mandibular plane angle. Soft tissue profile thickness was measured and compared among various growth pattern groups using one way ANOVA. Independent sample t-test was performed to determine the gender variation.

Results: Statistical significant difference were found at points 'nasion', 'subnasale' and 'menton', among various growth patterns. Soft tissue thickness was greater for male than female with significant difference at points 'prosthion' and 'submentale'.

Conclusions: Soft tissue profile thickness varies considerably among vertical skeletal relations and between the gender.

Keywords: Orthodontic patients; Soft tissue profile thickness; Vertical skeletal relations.

INTRODUCTION

The goals of modern orthodontic and orthognathic therapy, are a harmonious and balanced face with optimal functional occlusion.Various facial structures including hard and soft tissues must be proportioned to one another to achieve the esthetically pleasing face.[1]

The nose-lip-chin relationships are crucial in determining facial esthetics. It was assumed that the soft tissue profile follows the underlying hard tissue. However, subsequent research revealed that the soft tissue had independent growth potential. Variations in soft tissue thickness, length, and tonicity influence the position and relationship of facial structures, ultimately affecting the facial aesthetics.[3,4]

Excellent facial aesthetics are intimately related to vertical facial dimensions. Vertical skeletal relation is classified as horizontal, normal, and vertical growth pattern in the orthodontic literature. One of the most commonly used measurement to assess growth pattern is the Steiner's mandibular plane angle.[2-4]

Several studies have found racial/ethnic variations, sexual dimorphism and variations among sagittal malocclusion for facial soft tissue thickness.[4-6] This study was aimed to obtain facial soft tissue profile thickness data of Nepali population and evaluate variations among various growth patterns and gender.

MATERIALS AND METHOD

A cross-sectional comparative study was conducted using lateral cephalogram from the pre-vtreatment records of 75 patients of the age range 10-29 years, visiting Department of Orthodontics, Kantipur Dental College and Hospital,

Kathmandu as per the inclusion criteria. The exclusion criteria were patients with history of craniofacial trauma, craniofacial neoplasm, craniofacial deformity, interventions like prosthetic rehabilitations, previous orthodontic treatment and orthognathic surgeries and cephalometric x-ray films with major deficiencies. The study was conducted during November to December 2022. Ethical clearance was obtained from the Institutional Review Committee (IRC Ref. No 26/022).

The sample size was calculated using the data from the study done by Mashhadany et al.,[1] using the formula: $N=2(Z\alpha + Z\beta)^2 \times (SD)^2 / (d)^2$
[Where, $Z\alpha = 1.96$ $Z\beta = 0.84$ (Power= 80%), d = Mean difference, SD = Standard deviation]

The calculated sample size was 25. Thus, 25 samples each for normal, horizontal and vertical growth patterns were taken with the total sample size of 75.

Secondary data were obtained from the departmental records. Manual tracing of the films was done on matte acetate tracing paper using transilluminated light and measurements were recorded in the data collection sheet after proper calibration. The samples were divided into horizontal, normal and vertical growth patterns according to Steiner's mandibular plane angle (Figure-1).[4,5]

The linear measurements were, G-g, N-n, Rh, A-sn, Pr-ls, Sto-U1, Id-li, B-sm, Pog-pog, Me-me, which were the perpendicular distance from the intersection of hard tissue landmark to their respective soft tissue landmarks (Figure- 2).[1]

SPSS V21 was used for data analysis. Shapiro Wilk test was done to check the normality of the data distribution. One way ANOVA followed by post-hoc Tukey test was used to compare the mean of various growth patterns. Independent sample t-test was performed to compare between male and female. p Value <0.05 was considered statistically significant.

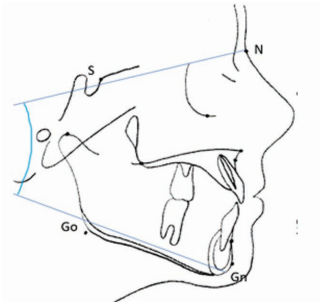


Figure1: Angular measurement for determining Steiner's mandibular plane angle

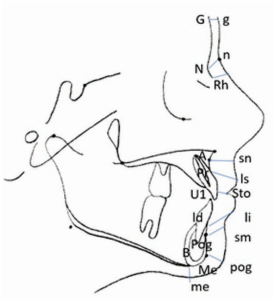


Figure 2: Linear measurements for determining soft tissue profile thickness

RESULTS

The sample size of the study was 75 including 25 samples each for horizontal, normal and vertical growth patterns. The descriptive statistics with one way ANOVA results are presented in Table 1. The mean value of soft tissue thickness at points 'Nasion' (7.100±1.6708), 'point A' (14.740±2.0922), and 'Menton' (8.240±1.4586) were increased significantly in horizontal growers compared to normal and vertical grower.

The result obtained from one-way ANOVA test was statistically significant which was followed by post hoc test, is presented in Table 2.

The mean value of soft tissue thickness was increased in males at points, 'prosthion' (14.013±2.6949) and 'submentale' (12.638±1.6251) compared to female as presented in Table 3.

Table 1: Descriptive statistics and one way ANOVA for determining association among linear parameters

Parameter	Group	Mean	Std. Deviation	p value
G-g	Horizontal	5.600	1.1637	0.796
	Normal	5.400	1.0508	
	vertical	5.420	1.2305	
N-N	Horizontal	7.100	1.6708	0.001*
	Normal	5.600	1.7078	
	vertical	5.440	1.3410	
Rn	Horizontal	2.960	1.3611	0.727
	Normal	3.180	1.0496	
	vertical	2.960	0.9120	

A-Sn	Horizontal	14.740	2.0922	0.000*
	Normal	12.980	2.2336	
	vertical	11.560	2.7360	
Pr-ls	Horizontal	13.500	2.9297	0.611
	Normal	12.740	2.9760	
	vertical	13.180	2.1305	
Sto-UI	Horizontal	5.760	3.8191	0.404
	Normal	4.680	3.5469	
	vertical	4.440	3.6324	
Ld-li	Horizontal	13.960	2.8574	0.066
	Normal	12.320	2.9752	
	vertical	12.480	2.1577	
B-sm	Horizontal	12.200	1.8819	0.992
	Normal	12.200	2.0666	
	vertical	12.140	1.6988	
Pg-pg	Horizontal	8.700	2.4537	0.158
	Normal	8.020	2.1040	
	vertical	7.420	2.4138	
Me-Me	Horizontal	8.240	1.4586	0.000*
	Normal	6.320	1.5671	
	vertical	5.260	1.1467	

Statistically significant

Table 2: Post hoc test for multiple comparisons in various growth patterns

Parameter	Comparison group	p value of pair wise comparison
N-N	Horizontal vs. Normal	0.004*
	Horizontal vs. vertical	0.001*
	Normal vs. vertical	0.932
A-Sn	Horizontal vs. Normal	0.028*
	Horizontal vs. vertical	0.000*
	Normal vs. vertical	0.093
Me-Me	Horizontal vs. Normal	0.000*
	Horizontal vs. vertical	0.000*
	Normal vs. vertical	0.025*

Statistically significant

Table 3: Comparison of mean soft tissue thickness and Independent sample t-test in gender group

Parameters	Gender	Mean	t- test	p value
G-g	Male	5.700	1.874	0.065
	Female	5.214		
N-N	Male	6.088	0.217	0.829
	Female	6.000		
Rn	Male	2.975	-0.474	0.631
	Female	3.100		
A-Sn	Male	13.363	0.953	0.344
	Female	12.786		
Pr-ls	Male	14.013	3.185	0.002*
	Female	12.143		
Sto-UI	Male	5.250	0.730	0.467
	Female	4.629		
ld-li	Male	13.038	0.393	0.696
	Female	12.786		
B-sm	Male	12.638	2.341	0.022*
	Female	11.657		
Pg-pg	Male	7.663	-1.522	0.132
	Female	8.486		
Me-Me	Male	6.513	-0.467	0.642
	Female	6.714		

Statistically significant

DISCUSSION

This study showed significant difference in facial profile soft tissue thickness among various growth patterns with greater thickness in horizontal growth pattern at points nasion, subnasale and menton. In a similar study of Mashhadany et al.[1], the soft tissue thickness at menton was thicker in low angle group than the normal and high angle groups which is in accordance with findings of Feres e.al.[5] and Macari et al.[3] and disagreed with the study of Celikoglu et al.[6] who reported a significant difference at point pogonion. This may be attributed to the difference in sample size selection and variation in ethnic group.

Singh et al.[17] observed and stated that the thickness of soft tissue chin differs with each facial type. Thickness of soft tissue chin was greater in brachyfacial type than in the dolicofacials where the direction of facial growth is forward just reverse to the high angle which is backward.

Mahto et al.[16] also found significant differences at points Rhinion, Subnasale, Labrale superius and Stomion in males and at Subnasale, Labrale superius, Stomion and Labrale inferius in females when compared among three different saggital skeletal classes among Nepali sample.

Variations in soft tissue thickness with growth pattern in various studies suggest a tendency towards increased soft tissue thickness in horizontal growth pattern with few exceptions.[1-5,7,8]

Soft tissue growth has a substantial impact on an individual's growth pattern. All parts of the soft tissue profile do not directly follow the underlying skeletal profile. Some areas were found to diverge from the underlying skeletal structures, while other areas showed a strong tendency to follow skeletal changes directly.[3-5]

Soft tissues form a layer of unequal thickness along the facial

profile. This shapes the configuration of basic dental and skeletal structures. The variability of soft tissue thickness affects the normal configuration of these structures.[4-5]

The upper facial landmarks did not show considerable differences compared to middle and lower facial landmarks, suggesting that there is no variation in the soft tissue depth when it is tightly adherent to the bone.[1,3-5]

The result also indicated that the soft tissue thickness is higher in males than in females. The testosterone effect facilitates the synthesis of collagen that provide males with a thick skin. The estrogen hormone in females facilitates the synthesis of hyaluronic acid in addition to the decreasing in the synthesis of collagen making their skin thinner.[1]

Previously only hard tissue parameters were emphasized more. Soft tissue parameters were limited. The shift in the diagnosis and treatment planning to establish soft tissue balance has necessitated the importance of measuring the soft tissue parameters in detail.[8,9]

The study was conducted in a limited sample, which does not represent a whole range of population. This study relied on manual tracings of cephalogram to obtain soft tissue thickness. Further exploration can be done using digital platforms or using CBCT for measurement for more accuracy.

CONCLUSION

The relation of facial soft tissue profile thickness with different growth patterns varies significantly among horizontal, normal and vertical growth patterns. Similarly, males had thicker soft tissues than females in Nepali sample. Thus, the soft tissue examination should be considered in patients for the orthodontic/orthognathic diagnosis and treatment planning.

ACKNOWLEDGEMENT

Special thanks to Dr Sujita Shrestha, faculty, Department of Community & Public Health Dentistry for her support and kind cooperation in the statistical analysis of the data. Also, humble gratitude to Dr Ujjwal Pyakurel and Dr Asal Acharya, faculties of Department of Orthodontics, for their guidance.

REFERENCES

1. Al-Mashhadany SM, Al-Chalabi HM, Nahidh M. Evaluation of facial soft tissue thickness in normal adults with different vertical discrepancies. Int J Sci Res. 2017;6(2):938-42.
2. Cezairli NS. Comparisons of soft tissue thickness measurements in adult patients with various vertical patterns. Meandros Med Dent J. 2017;18(2):120-5.
3. Macari AT, Hanna AE. Comparisons of soft tissue chin thickness in adult patients with various mandibular divergence patterns. Angle Orthod. 2014;84(4):708-14.
4. Ghadir Abdulal BD, Aly Osman BD, Ahmed Abyad BD. Evaluation of Facial Soft-Tissue Morphology among Different Vertical Skeletal Profile. Eur Sci J. 2022.18(11);117-25.
5. Feres MF, Hitos SF, Sousa HI, Matsumoto MA. Comparison of soft tissue size between different facial patterns. Dent. Press J Orthod. 2010;15(2):84-93.
6. Celikoglu M, Buyuk SK, Ekizer A, Sekerci AE, Sisman Y. Assessment of the soft tissue thickness at the lower anterior face in adult patients with different skeletal vertical patterns using cone-beam computed tomography. Angle Orthod. 2015;85(2):211-7.
7. Arnett GW, Bergman RT. Facial keys to orthodontic diagnosis and treatment planning. Part I. Am J Orthod Dentofac Orthop. 1993;103(4):299-312.
8. Subtelny JD. A longitudinal study of soft tissue facial structures and their profile characteristics, defined in relation to underlying skeletal structures. Am J Orthod Dentofac Orthop. 1959;45(7):481-507.
9. Burstone CJ. Lip posture and its significance in treatment planning. Am J Orthod Dentofac Orthop. 1967;53(4):262-84.
10. Cha KS. Soft-tissue thickness of South Korean adults with normal facial profiles. The korean J Orthod. 2013;43(4):178-85.
11. Hillesund E, Fjeld D, Zachrisson BU. Reliability of soft-tissue profile in cephalometrics. Am J Orthod Dentofac Orthop.1978;74(5):537-50.
12. Ahmed M, Shaikh A, Fida M. Diagnostic performance of various cephalometric parameters for the assessment of vertical growth pattern. Dent Press J. Orthod. 2016;21(1):41-9.
13. Rizwan M, Mascarenhas R, Hussain A. Reliability of the existing vertical dysplasia indicators in assessing a definitive growth pattern. Rev Latinoam Ortod Odontopediatría. 2011;12(1)1-7.
14. Turley PK. Evolution of esthetic considerations in orthodontics. Am J Orthod Dentofac Orthop. 2015;148(3):374-9.
15. Spyropoulos MN, Halazonetis DJ. Significance of the soft tissue profile on facial esthetics. Am J Orthod Dentofac Orthop. 2001;119(5):464-71.
16. Mahto RK, Kafle D, Singh PK, Khanal S, Khanal S.Variation of Facial Soft Tissue Thickness in Nepalese Adult Orthodontic Subjects. Orthod J Nepal.2018;31;8(2):22-8.
17. RN. Singh. Changes in the Soft Tissue Chin after Orthodontic Treatment. Am J Orthod Dentofac Orthop.1990;98(1):41-6.

Study on Quality of Life and its associated factors of Tuberculosis patient of Kathmandu Metropolitan City

Karishma Lamsal[1], Damanta Dhakal[2], Princy Bhatta[3], Sunil Kumar Thapa[4], Ramchandra Sinha[5]

[1,2]Public Health Officer, Kantipur Dental College Teaching Hospital and Research Center
[3]Nobel College
[4]Field Medical Officer, World Health Organization
[5]Head of the Department, Nobel College

Corresponding Author
Karishma Lamsal
Email: karishmalamsal37@gmail.com

Citation
Lamsal K, Dhakal D, Bhatta P, Thapa S.K, Sinha R. Study on Quality of Life and its associated factors of Tuberculosis patient of Kathmandu Metropolitan City. J Kantipur Dent Coll. 2023;4(2): 23-7.

ABSTRACT

Introduction: Tuberculosis (TB) is an infectious disease usually caused by Mycobacterium Tuberculosis (MTB) bacteria. Sometimes, tuberculosis infections are not caused by Mycobacterium tuberculosis instead, they are caused by organisms called atypical Mycobacterium. In Nepal, Tuberculosis is the most common disease both in men and woman. Studies and reports from most of the hospitals have reported Tuberculosis as the most frequent.

Objective: To assess the quality of life and associated factors among patients receiving treatment in NATA (National Anti-Tuberculosis Association) of Kathmandu Metropolitan city.

Materials and Method: A cross sectional descriptive study was conducted among 239 Tuberculosis patients. Standard questionnaire was used. Descriptive statistics and chi square test was used to assess association between quality of life of people living with Tuberculosis in Kathmandu metropolitan city.

Result: The mean age of the participants was 36.93 and standard deviation was ±18.27. Most of the participants were between 18-38 years and only 3.3% (143) of the patient were at 78-98 years. Majority of the participants have good quality of life (60.7%).

Conclusion: It was found that more than half of the respondents had good quality of life. Proper medication was provided by the government of Nepal and more than half of the total respondents have good quality of life.

Keywords: Quality of life, Tuberculosis, Tuberculosis patients

INTRODUCTION

Tuberculosis (TB) is an infectious disease usually caused by Mycobacterium Tuberculosis (MTB) bacteria.[1] Sometimes, tuberculosis infections are not caused by Mycobacterium tuberculosis. Instead, they are caused by organisms called atypical Mycobacterium. These include the Mycobacterium avium complex, Mycobacterium kansasii and Mycobacterium fortiutum.[2] Tuberculosis generally affects the lungs, but it can also affect other parts of the body. Most infections show no symptoms, known as latent tuberculosis.[3] Around 10% of latent infections progress to active disease; if left untreated, leads to death of an individual.[4] Typical symptoms of TB include: persistent cough that lasts more than 3 weeks and usually brings up phlegm, which may be bloody, weight loss, night sweats, high temperature, tiredness and fatigue, loss of appetite, swellings in the neck.[5] Some people develop TB disease soon after becoming infected (within weeks) before their immune system can fight the TB bacteria. Overall, about 5 to 10% of infected persons who do not receive treatment for latent TB infection will develop TB disease at some time in their lives. For persons whose immune systems are weak, especially those with HIV infection, the risk of developing TB disease is much higher than for persons with normal immune systems. Generally, persons at high risk for developing TB disease fall into two categories: Persons who have been recently infected with TB bacteria and Persons with medical conditions that weaken the immune system.[5,6]

Treatment for TB: DOTS Stands for Directly Observed Treatment, Short-course. DOTS is a strategy used to reduce the number of tuberculosis (TB) cases.[6] DOT means that a trained health care worker or other designated individual (excluding a family member) provides the prescribed TB drugs and watches the patient swallow every dose.[6]

Quality of life (QOL) is defined by the World Health Organization as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns". Standard indicators of the quality of life include wealth, employment, environment, physical

and mental health, education, recreation and leisure time, social belonging, religious beliefs, safety, security and freedom.[7] Tuberculosis is considered as one of the illnesses that can seriously undermine QOL. The factors that influenced QOL in patients affected with TB, have been long-term treatment; multi-drug therapy; toxic reactions and side effects of medications; adherence to drug regimen; social impacts; social support; social acceptance of the illness; family; changes in lifestyle; patients' marital status; extent of access to health care services; socioeconomic status; patients' and their family's knowledge of the illness, treatments; as well as complications of tuberculosis. Currently, tuberculosis management strategy is based on preventing mortality and avoiding morbidity. Quality of life monitoring is the best method for achieving this goal.[7,8]

Around, 117,000 (88,000 – 145,000) people with TB disease are living in Nepal. In 2018, around 69, 000 (41,000 – 103,000) people developed TB and burden is much higher, almost 1.6 times higher than previously estimated.[9,10]

In Nepal, Bagmati Province reported the highest proportion of TB cases 24%. Kathmandu valley (Bhaktapur, Kathmandu, Lalitpur) reported around 55% of the TB cases notified from the Bagmati Province. In 2074/75, registered TB cases were 32313, among them 91% were successfully treated (TSR >91%).10 Therefore, this study aims to assess the quality of life and associated factors among patients receiving treatment in NATA (National Anti-Tuberculosis Association) of Kathmandu Metropolitan city.

MATERIALS AND METHOD

A cross sectional descriptive questionnaire based study was conducted among 239 Tuberculosis patients. Convenience sampling method was used. Ethical approval was obtained from Institutional Review Committee, Nobel College. All the Tuberculosis patients who were present in National Anti-Tuberculosis Association (NATA), Kalimati, Kathmandu at the time of data collection period were included in the study. Data was collected by interview method to TB patients of the respective center. Informed verbal consent from the patient and NATA was obtained after explaining the purpose of the study. Structured questionnaires according to the EHO guidelines was used to collect information related to TB. Data was entered into Microsoft Excel and then imported into the Statistical Package for Social Sciences (SPSS) version 20 for statistical analysis. Descriptive statistics and chi square test was used to assess association between quality of life of people living with Tuberculosis in Kathmandu metropolitan city.

RESULT

The mean age of the participants was 36.93 years, most of the participants were between 18-38 years and only 3.3% of the patient were at 78-98 years. Majority of them were Hinduism and were married. It was found that majority of the participants could read and write and some have obtained higher studies. Majority of them were unemployed (Table 1).

Table 1: Distribution of the socio-demographic characteristics of the study population

Variables	Frequency (N=239)	Percentage (%)
Age in years		
18-37	143	59.8
38-57	57	23.8
58-77	31	13.0
78-98	8	3.3
Religion		
Hinduism	204	85.4
Buddhism	28	11.7
Muslim	4	1.7
Christian	3	1.3
Caste		
Brahmin	51	21.3
Chhetri	92	38.5
Janjati/aadhibasi	87	36.4
Others	9	3.8
Marital status		
Unmarried	95	39.7
Married	126	52.7
Divorced	1	0.4
Widow/widower	17	7.1
Education		
Unable to read and write	19	7.9
General read and write	75	31.4
Primary education	9	3.8
Secondary education	42	17.6
Bachelor	71	29.7
Masters and above	23	9.6
Employment status		
Employed	75	31.4
Unemployed	164	68.6
Occupation (if employed)		
Freelancing	1	1.3
Government job	10	13.3
Agriculture	10	13.3
Business	17	22.7
Private job	35	46.7
Others	2	2.7

The study found that majority of the participants were in continuous stage of diagnosis (68.2%). Out of 239 participants 99.2% were receiving treatment from the DOTS. It was found that 45.2% participants does not stay at their own house among them; 95.4% stay at rented house. Similarly, majority of them were receiving help and support from their family and friends 99.6% and 82.4% respectively. About 7.1% of the participants were suffering from other diseases including TB (Table 2).

Table 2: Distribution of personal and social factors of the study population

Variables	Frequency (N=239)	Percentage
Stage of diagnosis		
Initial	76	31.8
Continuous	163	68.2
Type of treatment		
Self-treatment	2	0.8
DOTS	237	99.2
Stay in own house		
Yes	131	54.8
No	108	45.2
If not own house, where do you stay		
Rent	103	95.4
Friends home	5	4.6
Help from friends		
Yes	197	82.4
No	42	17.6
Help from family		
Yes	238	99.6
No	1	0.4
Distance of health center from residence (walking)		
Less than 30 minutes	108	45.2
30-45 minutes	99	41.4
Above 45 minutes	32	13.4
Getting complete service		
Yes	231	96.7
No	8	3.3
Satisfied with health service provider behavoiur		
Yes	228	95.4
Moderate	9	3.8
No	2	0.8
Suffering from other diseases		
Yes	17	7.11
No	222	92.88

Table 3: Distribution of alcohol and substance consumption in a study population

Variables	Frequency (N=239)	Percentage
Consumption of alcohol/alcohol related substances		
Yes	5	2.1
No	234	97.9
Consumption of tobacco/tobacco related products		
Yes	7	2.9
No	232	97.1
If yes, how many times do you consume tobacco in last month		
Once or twice a week	3	42.9
Weekly	3	42.9
Monthly	1	14.3
Daily	0	0
At what time after waking up you consume cigarette		
60+ minutes	1	14.3
31- 60 minutes	3	42.9
5-30 minutes	3	42.9
Less than 5 minutes	0	0
Consumption of cigarettes in a day		
<10	5	71.4
11-20	1	14.3
21-30	1	14.3
>31	0	0

It was found that majority of the participants were not consuming alcohol and alcohol related substances (97.9%). Likewise, majority of the participants were not consuming tobacco related substances (97.1%). So, it was found that majority of the participants were away from addictive substance abuse (Table 3).

Table 4: Association between quality of life and socioeconomic characteristics

Variables	Quality of life		Chi-square	p-value
	Poor (N=94)	Good (N=145)		
Age				
18-37	30(21.0%)	113(79.0%)	68.594	<0.001*
38-57	28(49.1%)	29(50.9%)		
58-77	28(90.3%)	3(9.7%)		
78-98	8(100%)	0		
Religion				
Hinduism	84(41.2%)	120(58.8%)	5.182	0.159
Buddhism	6(21.4%)	22(78.6%)		
Christian	2(50%)	2(50%)		
Muslim	2(66.7%)	1(33.3%)		

Ethnicity				
Brahmin	20 (39.2%)	31(60.8%)	0.201	0.977
Chhetri	37(40.2%)	55(59.8%)		
Janajati/ aadhibasi	33(37.9%)	54(62.1%)		
Others	4(44.4%)	5(55.6%)		
Marital status				
Unmarried	22(23.2%)	73(76.8%)	33.827	<0.001*
Married	56(44.4%)	70(55.6%)		
Divorced	0	1(100%)		
Widow/ widower	16(94.1%)	1(5.9%)		
Education				
Unable to read and write	16(84.2%)	3(15.8%)	75.518	<0.001*
General read and write	50(66.7%)	25(33.3%)		
Primary education	3(33.3%)	6(66.7%)		
Secondary education	5(11.9%)	37(88.1%)		
Bachelor	20(28.2%)	51(71.8%)		
Masters and above	0	23(100%)		
Employment status				
Employed	21(28.0%)	54(72.0%)	5.881	0.015*
Unemployed	73(44.5%)	91(55.5%)		
If employed, occupation				
Government job	0	10(100%)	14.480	0.013*
Agriculture	5(50%)	5(50%)		
Business	5(29.4%)	12(70.6%)		
Private job	8(22.9%)	27(77.1%)		
Others	2(100%)	0		

*Statistically significant

The mean score of good Quality of life was 2.265 and below 2.265 was considered as low Quality of life among the TB patients. It was found that among the total participant's majority of them have good Quality of life (60.7%). There was a significant relationship between the age of the patients and Quality of life (p=0.001). There was not significant relationship between religion and ethnicity p = 0.159 and 0.977 respectively. Similarly, there was a significant relationship between the educational level and marital status and quality of life (p= 0.0001). It was found that there was a significant relationship between employment status and quality of life (p=0.015) (Table 4).

DISCUSSION

Tuberculosis has remained a major public health problem worldwide resulting in increased morbidity and mortality. Due to prolonged therapy and infectious nature of the disease, physical, mental and social distress are common among TB patients leading to poor disease outcomes. Study conducted in Gandaki province showed that 79.7% of the TB patients were living with good quality of life while in present study 60.7% TB patients were living with good quality of life. This high percentage of quality of life was found in the age group 18-37 years. It was seen that as the age is grown up quality of life of TB patients was degraded to some extent.[10,11]

In this study, patients of the age between 18-37 years had utilized good Quality of life whereas people of all castes had utilized their good Quality of life. Patient with good education had good quality of life as compared to patient with lower educational level. It was found that employed patient had good quality of life as compared to the unemployed people as employed people can more easily access their needs and demands at any cost. Thus, to address incidents of these inequalities of life, the government should pay more attention and create policies, operations and enforcement to help prevent the barriers for utilizing the TB service and also helps to control the negative impact on poor and back warding patients. These findings are also well documented in other literature, showing that there are various inequalities in the access to utilization of Quality of life among the TB patients in both high income and low income, rural and urban setting.[11,12] Study reported, everyday thousands of TB patients are living with poor Quality of life.[13] In this study, more than half of the population were living with good Quality of life which is supported by the study conducted by Yadav et al in the Gandaki province of Nepal.[11]

In this study; religion, ethnicity, employment status was not associated with Quality of life among TB patients. This contradicted previous studies which found that difference in ethnicity, religion, employment status significantly influences physical functioning.[14] Hence, this study reported that more than half of the respondents were living good quality of life. Government of Nepal should maintained properly and enhanced by providing better medication facilities and proper arrangement for maintaining the good Quality of life of Tuberculosis patients.

CONCLUSION

About 239 Tuberculosis patients participated from National Anti-Tuberculosis Association (NATA) of Kathmandu Metropolitan city; majority of the respondents were from

18-37 year old. It was found that more than half of the respondents had good Quality of life. It was found that educated and literate patients had good Quality of life as compared to uneducated patients. Likewise, Quality of life of employed patient was good as compared to unemployed patients. It was found that Quality of life was less influenced by ethnicity and religion. Treatment was the main factor associated with the quality of life of tuberculosis patients.

REFERENCES

1. Google. Tuberculosis introduction [Internet]. Available from: https://www.google.com/search.%20Tuberculosis%20introduction
2. Pharm Easy Blog. Tuberculosis: Types, Causes, Treatment and Prevention [Internet]. 2022. Available from: https://pharmelsy.in/blog/tuberculosis-types-causes-treatment-and-prevention/
3. Centers for Disease Control and Prevention (CDC). Tuberculosis (TB) – Basic TB Facts [Internet]. 2019. Available from: https://www.cdc.gov/tb/topic/basics/default.html
4. NHS. Tuberculosis (TB) [Internet]. nhs.uk. 2017. Available from: https://www.nhs.uk/conditions/tuberculosis
5. Centers for Disease Control and Prevention (CDC). TB Risk Factors [Internet]. 2016. Available from: https://www.cdc.gov/tb/topic/basics/risk.html
6. Minnesota Department of Health. Directly Observed Therapy (DOT) for the Treatment of Tuberculosis [Internet]. Available from: https://www.health.state.mn.us/diseases/tb/lph/dot.html
7. Aggarwal AN. Quality of life with tuberculosis. J Clin Tuberc Mycobact Dis. 2019 Sep 20; 17:100121.
8. Health Disparities in Asian People. Centers for Disease Control and Prevention (CDC) (gov).[Internet]. 2023. https://www.cdc.gov/nchhstp/healthdisparities/asians.html.
9. Biermann O, Dixit K, Rai B, Caws M, Lönnroth K, Viney K. Building on facilitators and overcoming barriers to implement active tuberculosis case-finding in Nepal, experiences of community health workers and people with tuberculosis. BMC Health Serv Res. 2021 Apr 1;21(1):295.
10. National Tuberculosis Program Nepal. National TB Control Center. https://nepalntp.gov.np/wp-content/uploads/2020/04/NTP-Annual-Report-2075-76-2018-19.pdf.
11. Yadav RK, Kaphle HP, Yadav DK, Marahatta SB, Shah NP, Baral S, et al. Health related quality of life and associated factors with medication adherence among tuberculosis patients in selected districts of Gandaki Province of Nepal. J Clin Tuberc Mycobact Dis. 2021 May;23:100235.
12. Guo N, Marra F. Marra, CA. Measuring health-related quality of life in tuberculosis: a systematic review. Health Qual Life Outcomes.2009. https://doi.org/10.1186/1477-7525-7-14.
13. Aggarwal AN. Quality of life with tuberculosis. J Clin Tuberc Other Mycobact Dis. 2019 Sep 20;17:100121. doi: 10.1016/j.jctube.2019.100121. PMID: 31788563; PMCID: PMC6880022.
14. Sartika I, Insani WN, Abdulah R. Assessment of health-related quality of life among tuberculosis patients in a public primary care facility in Indonesia. Journal of global infectious diseases. 2019.Jul 1;11(3):102-6.

Management of Oral Pyogenic Granuloma during Pregnancy- A Case Report

Dr. Gunja Jaiswal[1], Dr. Dipika Gautam[2]

[1]Intern, [2]Post Graduate Resident, Department of Oral and Maxillofacial Pathology, Kantipur Dental College, Teaching Hospital & Research Center, Basundhara, Kathmandu, Nepal

Corresponding Author
Dr. Dipika Gautam
Email: deepika.gtm11@gmail.com

Citation
Jaiswal G, Gautam D. Management of Oral Pyogenic Granuloma during Pregnancy- A Case Report. J Kantipur Dent Coll. 2023;4(2): 28-30.

ABSTRACT

Pregnancy tumor commonly known as pyogenic granuloma is one of the inflammatory hyperplasia seen in the oral cavity during pregnancy. It arises in response to various stimuli such as lowgrade local irritation, traumatic injury or hormonal factors. It predominantly occurs in the second decade of life in young females, possibly because of the vascular effects of female hormones. This is a case report of 27-year-old female patient came to the Department of Oral Medicine and Radiology of Kantipur Dental College and Teaching Hospital with the chief complaint of swelling in lower left back region since 3 months. A complete surgical excision was planned. Excisional biopsy procedure was performed and excised specimen was sent for histopathological examination. Histopathological examination with routine Hematoxylin and Eosin (H&E) stain revealed findings suggestive of Pyogenic Granuloma.

INTRODUCTION

Pyogenic granuloma during pregnancy is a benign gingival hyperplasia and cannot be distinguished either clinically or histologically from Pyogenic granuloma occurring in nonpregnant women.[1] It usually appears during the 2nd or 3rd month of pregnancy and overall reported prevalence is 0.5-9.6%.[1,2] Female steroid hormones such as estrogen and progesterone reach the peak levels by the end of third trimester of pregnancy which enhances the expression of various growth factors such as fibroblast growth factors (FGF), transforming growth factors (TGF) and angiogenic factors namely vascular endothelial growth factors (VEGF) in inflamed tissues.[3,4] Hormonal imbalance following pregnancy affects the host response to irritation. Pyogenic Granuloma (PG) of the gingiva develops in about 5% of pregnancies, hence the terms "pregnancy tumor" and "granuloma gravidarum" are often clinically used.[5]

CASE REPORT

A 27-year-old female patient came to the Department of Oral Medicine and Radiology of Kantipur Dental College and Teaching Hospital with the chief complaint of swelling in lower left back region since 3 months. After 15 days of postpartum she visited the hospital. According to the patient, swelling was sudden on onset, continuous, aggravated after brushing which subsequently induced bleeding. It was progressive in nature and associated with pain since 15 days. Pain was sudden on onset, mild, intermittent, throbbing type and relieved on its own. Bleeding was scanty in amount, precipitated on touch and subsided on its own.

On intra-oral examination, gingiva was reddish, soft and edematous. Lobular pedunculated mass on lingual gingiva region wrt 33, 34, 35, 36 was noted. Lesion was approx. 20mm x 15mm in size with irregular surface, pinkish to reddish purple in color; non tender and soft to firm on palpation. (Fig. a&b)

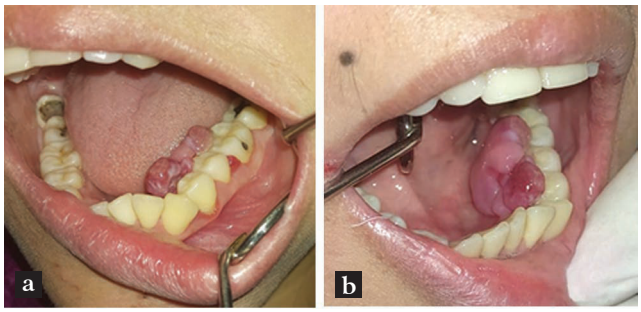


Fig. a & b: lobulated mass present on lingual gingiva region wrt 33, 34, 35, 36

Based on the clinical findings, the clinical provisional diagnosis was made as Pregnancy Tumor/ Pyogenic Granuloma during Pregnancy. A complete surgical excision was planned. Excisional biopsy procedure was performed and excised specimen was sent for histopathological examination. Histopathologic examination of the excised specimen stained with hematoxylin and eosin showed para-keratinized stratified squamous epithelium with

short, thin rete ridges. The underlying connective tissue revealed loosely to densely arranged collagen fibers with proliferating endothelial lined blood vessels having extravasated RBCs and few large blood vessels with dense inflammatory infiltration. Histopathological features were suggestive of Pyogenic Granuloma (capillary phase)(Fig. c). Correlating the clinical findings with microscopic findings, final diagnosis of Pyogenic Granuloma was made.

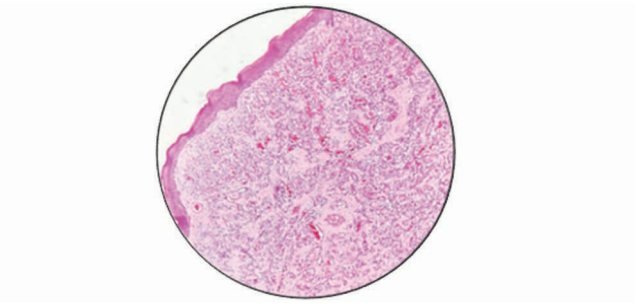


Fig c: Parakeratinized epithelium and underlying connective tissue shows proliferating with extravasated RBCs(10X)

DISCUSSION

Periodontal inflammation has been interlinked with pregnancy for many years. In 1818 Pitcarin for the first time described gingival hyperplasia in pregnancy. Pinard and Pinard in 1877 recorded the first case of pregnancy tumor whereas the term pregnancy tumor was first coined by Blum in 1912.[6] Daley et al.[8] indicated that diagnosis of pregnancy tumor is clinically valid in describing a PG occurring in pregnancy, because it describes a distinct lesion not on the basis of histologic features rather on its etiology, biologic behavior, and treatment protocol. Pregnancy tumor is a particular type of pyogenic granuloma generally, appears in the 2nd-3rd trimester of pregnancy, with a tendency to bleed.[9-12]

Jafarzadeh et al.[4] suggested that the hormonal imbalance coincident with pregnancy heightens an organism's response to irritation, however bacterial plaque and gingival inflammation are necessary for subclinical hormonal alteration, leading to gingivitis. According to Kapoor et al.[13] they reported that pregnancy accentuates the gingival response to plaque. Correlation between gingivitis and amount of plaque was greater postpartum than during pregnancy. Reported incidence of pregnancy tumor according to Maier A W, Orban B in 1949 was 0.2%-9.6%.[14] Ramesh A et al.[15] reported pregnancy itself cannot cause gingivitis, it is bacterial hormonal interaction, which may change composition of plaque leading to gingival inflammation.

During pregnancy, both progesterone and estrogen levels are elevated due to which it influences on the periodontium affecting the microcirculatory system by inducing the following changes: swelling of the endothelial cells and pericytes of the venules, adherence of granulocytes and platelets to vessel walls, formation of microthrombi, disruption of perivascular mast cells, increased vascular permeability and vascular proliferation during pregnancy, and decreasing immunocompetence, thereby increasing the susceptibility to infections.[16,17] Gondivkar et al.[18] explained there is overproduction of Vascular Endothelial Growth Factor (VEGF) and Fibroblast Growth Factor (FGF) and decrease of angiostatin, thrombopsondin-1 and estrogen receptors in Pregnancy tumor. Estrogen enhances Vascular Endothelial Growth Factor (VEGF) production in macrophages, an effect that is antagonized by androgens and which may be related to the development of pregnancy tumor.[19]

During pregnancy, Porphyromonas gingivalis and Prevotella intermedia can activate gingival fibroblasts and keratinocytes, in order to form a tumor against the plaque.[19] Kornman and Loesche in 1980 reported that the subgingival flora changes to more anaerobic flora as pregnancy progresses mainly Prevotella intermedia will predominate associated with elevations in systemic levels of Estrogene and Progesterone, which can substitute for menadion (Vitamin K) essential growth factor for P. Intermedia and coincide with gingival bleeding.[20]

In 1946, Ziskin and Ness et al.[14] compiled a clinical classification of pregnancy gingivitis as follows:
Class I – Characterized by bleeding gingivae with more or less, no other manifestations.
Class II- Characterized by changes in the interdental papilla-edema and swelling with subsequent blunting of interdental papilla.
Class III- Characterized by involvement of the free gum margin, which takes on the color and general appearance of a raspberry.
Class IV– Generalized hypertrophic gingivitis of pregnancy.
Class V – The pregnancy tumor.

Histopathologically, the lesion is usually well localized and may show more of granulation tissue with high vascular proliferation and formation of small and large channels engorged with RBCs occurs.[5,21] Recurrence is rarely seen with these lesions. Tiara et al.[22] in 1992 found recurrence of pregnancy tumor in 16% of cases and was believed to occur due to incomplete excision, failure to remove etiological agents or re-injury to that area. Daley et al.[8] suggested that a pregnancy tumor can partially or completely regress after parturition. Therefore, treatment considerations during pregnancy are dependent on the severity of the symptoms.

For patients with no bleeding lesions or ones that are painless, oral hygiene instructions, clinical observation, follow-up, and oral self-care at home are mandatory.

CONCLUSIONS

Every pregnant woman must maintain oral hygiene. Pregnancy itself cannot cause gingivitis; gingivitis in pregnancy is caused by bacterial plaque, hormonal alteration and local trauma to the tissue. Henceforth, clinicians should have thorough knowledge regarding its clinical presentation, proper diagnosis, prevention, management and treatment plan about pregnancy tumor avoiding unnecessary apprehension among pregnant patients.

REFERENCES

1. Mealey, B. L., & Moritz, A. J. (2003). Hormonal influences: effects of diabetes mellitus and endogenous female sex steroid hormones on the periodontium. Periodontol. 2000;32(1): 59–81.
2. Silk H, Douglass AB, Douglass JM, Silk L. Oral health during pregnancy. American family physician. 2008 Apr 15;77(8):1139-44.
3. Mariotti A. Sex steroid hormones and cell dynamics in the periodontium. Crit Rev Oral Biol Med 1994 Jan;5(1):27-53.
4. Jafarzadeh H, Sanatkhani M, Mohtasham N. Oral pyogenic granuloma: a review. J Oral Sci. 2006;48(4):167-75.
5. Eversole LR. Clinical outline of oral pathology: Diagnosis and treatment. 3rd ed. Hamilton: BC Decker; 2002. p.113-4.
6. Stark MM, Zarka FJ. Gingival tumors of pregnancy; review of pregnancy tumors and a report of two cases. Obstet Gynecol. 1956;8(5):597–600.
7. Terezhalmy GT, Riley CK, Moore WS. Focal epithelial hyperplasia (Heck's disease). Quintessence Int 2001;32(8):664-5.
8. Daley TD, Nartey NO, Wysocki GP. Pregnancy tumor: an analysis. Oral Surg Oral Med Oral Pathol 1991;72:196e9.
9. Wang PH, Chao HT, Lee WL, Yuan CC, Ng HT. Severe bleeding from a pregnancy tumor. A case report. J Reprod Med. 1997;42(6):359-62.
10. Greenberg MS, Glick M, Ship JA. Burket`s Oral Medicine, 11th ed. Hamilton: BC Decker; 2008. p. 133-7.
11. Gondivkar SM, Gadbail A, Chole R. Oral pregnancy tumor. Contemp Clin Dent. 2010;1(3):190-2.
12. Adeyemo WL, Hassan OO, Ajayi OF. Pregnancyassociated pyogenic granuloma of the lip: A case report. Niger J Med. 2011;20(1):179-80.
13. Kapoor A, Malhotra R, Grover V. Pregnancy associated gingival enlargement. J Oral Health Comm Dent. 2010; 4(2):48-51.14
14. Dr. Sanjay Venugopal, Granuloma Gravidarum/ Pregnancy Tumor JDSR. 2017 Sep: 8(2): 19-26.
15. Ramesh A, Prakash AP. Recurrent pyogenic grauloma- A case report. NUJHS. 2013;5(1):83-85.
16. Krejci B, Bissada F. Women's health issues and their relationship to periodontitis. J Am Dent. Assoc. 2002;3:323-9.
17. Markou E, Eleana B, Lazaros T, Antonios K. The influence of sex steroid hormones on gingiva of women. Open Dent J. 2009;3: 114-9.
18. Gondivkar SM, Gadbail A, Chole R. Oral pregnancy tumor. Contemp Clin Dent. 2010;1(3):190–2.
19. Purwar P, Dixit J, Sheel V, Goel MM. "Granuloma gravidarum": persistence in puerperal period an unusual presentation. BMJ Case Rep [Internet]. 2015(jan09 1):bcr2014206878
20. Newman MG, Takei H, Klokkevold PR, Carranza FA. Carranza's Clinical Periodontology. Saunders; 2015.
21. Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and maxillofacial pathology. 2nd ed. Philadelphia (PA): WB Saunders; 2002. p. 437-95.
22. Rose LF, Mealey BL, Genco RJ, Cohen DW. Periodontics Medicine, Surgery, Oral Implants Selected Soft and Hard Tissue Lesions with Periodontal Relevance. 1st ed. St. Louis: Mosby; 2004

Unlocking the Oral Clues: A Case Report on Detecting Acute Myeloid Leukemia through Oral Manifestations

Dr. Pratikchhya Shrestha,[1] Dr. Shelden Sherpa,[2] Dr. Sushma Adhikari,[3] Dr. Ankit Saha,[4] Dr. Parmila Poudel[5]

[1,4]Lecturer, [2,5]Dental Surgeon, Department of Oral Medicine and Radiology, Kantipur Dental Hospital and Research Center, Kathmandu, Nepal

[3]Post Graduate Resident, Department of Oral and Maxillofacial Pathology, Kantipur Dental Hospital and Research Center, Kathmandu, Nepal

Corresponding Author
Dr. Shelden Sherpa
Email: sheldensherpa@gmail.com

Citation
Shrestha P, Sherpa S, Adhikari S, Saha A, Poudel P. Unlocking the Oral Clues: A Case Report on Detecting Acute Myeloid Leukemia through Oral Manifestations. J Kantipur Dent Coll. 2023;4(2): 31-4.

ABSTRACT

Acute myeloid leukemia (AML) is frequently a fatal bone marrow stem cell cancer characterized by uncontrolled proliferation of malignant marrow stem cells with associated infection, anemia, and bleeding. The disordered proliferation of white and red blood cells in bone marrow become undifferentiated and then lose normal cell function. The undifferentiated cells, called blasts, can reach the bloodstream and infiltrate other organs and tissues in the body, including the oral cavity. The tissue infiltration, together with blood alterations, can cause important clinical oral alterations which can be the first signs and symptoms of leukemia. The purpose of this study was to report the case of a 28-year-old female patient who showed severe hemorrhage and edematous gingiva over a short period of time. Referral to the hematology service after clinical and blood investigations confirmed the diagnosis of an acute myeloid leukemia. Hence, as a clinicians it is important to recognize and promptly refer the patients exhibiting oral signs indicative of systemic conditions, such as leukemia, for ensuring timely intervention and comprehensive care. This case underscores the importance of interdisciplinary collaboration between dentists and hematologists in managing complex medical conditions affecting oral health.

Keywords: Acute Myeloid Leukemia; Gingival Enlargement; Oral Manifestations

INTRODUCTION

Leukemia is a diverse group of hematological disorders arising from hematopoietic stem cells, resulting from the uncontrolled proliferation of neoplastic cells, characterized by impaired differentiation and programmed cell death.[1,2,3] The failure of maturation of precursor cells results in the accumulation of blasts in the bone marrow with consequent suppression of normal hematopoiesis, leading to deficiency of mature leukocytes, erythrocytes, and platelets.[4] The Global Burden of Cancer 2020 (GLOBOCAN 2020) reports 19.1 million new leukemia cases in 2020, with the incidence in children and adolescents aged 0–19 years is no less than 400,000.[5] Survey showed that one in three cancers that occur in children is leukemia.[6] Also some studies showed, the most common occurrence of acute leukemia in adults.[7,8,9] Life-threatening complications are represented by infections, frequently recurrent, as well as severe bleeding episodes. Leukemic cells can invade various organs: Liver, spleen, central nervous system (CNS), bone, and the gingiva. The four most common types of leukemia are acute lymphocytic leukemia (ALL), chronic lymphocytic leukemia, acute myeloid leukemia (AML), and chronic myeloid leukemia.[5]

Acute myeloid leukemia (AML) is a malignant blood and bone marrow cancer characterized by the uncontrolled proliferation of bone marrow stem cells. The incidence of AML has continued to rise globally from 79,372 in 1990 to 144,645 in 2021.[10] It has bimodal age distribution affecting very young and very old population. It shows marginal inclination towards male predominance.[11,12]

The clinical presentation of Acute Myeloid Leukemia (AML) is characterized by a range of various and nonspecific signs and symptoms, primarily stemming from the infiltration of leukemic cells into the bone marrow, resulting in cytopenia. Patients commonly present with manifestations such as fatigue, hemorrhage, or infections, often attributable to reductions in red blood cells, platelets, or white blood cells, respectively. Clinical features such as pallor, fatigue, and dyspnea on exertion are frequently encountered in individuals with AML.[13] Oral complications have been observed in 15% to 93% of leukemia patients and are more commonly seen in acute leukemia.[14-21]

Risk Factors linked to Acute Myeloid Leukemia consists of; 1.Genetic disorders like Down's syndrome, Klinefelter syndrome, Patau syndrome, Fanconi anemia,

Neurofibromatosis, Ataxia telangiectasia, Li-Fraumeni syndrome. 2. Patients with chemical exposures like Benzene, Pesticides, Cigarette smoking and Herbicides. 3.Using chemotherapy like Alkylating agents, Topoisomerase-II inhibitors and Taxanes. 4.Under radiation exposures like Therapeutic radiation andnon therapeutic radiation.[12]

The established treatment approach for AML involves initiating remission induction chemotherapy using a combination of anthracycline and cytarabine. Subsequently, patients may undergo consolidation chemotherapy or opt for allogeneic stem cell transplantation, the choice depending on their capacity to withstand intensive therapy and the prospects of achieving cure solely through chemotherapy.[13,22]

When left untreated, is invariably fatal. While patients can be sustained for a limited duration (with a median survival of 11–20 weeks), they inevitably succumb to the primary complications stemming from bone marrow failure, namely infection and hemorrhage.[12]

CASE REPORT

A 28 years old female patient reported to the department of Oral Medicine and Radiology with the chief complaint of bleeding gums on upper and lower front teeth region since 7 days, which was spontaneous in origin and subsided on rinsing mouth with water. It was associated with pain which was sudden on onset, mild, continuous, dull aching, aggravated on pressure, radiating towards the temporal region. It was also associated with foul odor and burning sensation. There was no relevant medical history. The patient did not exhibit any detrimental habits.

Extraorally, patient exhibited signs of pallor, skin rashes, and palpable right and left submandibular lymph nodes, which was firm to hard in consistency, fixed, single in number and tender on palpation. On intraoral examination, the gingiva appeared enlarged, soft, and edematous (Figure1) and tender on palapation. Also, the bleeding was excessive upon probing. A round, purplish-red colored mass, measuring approximately 0.5 cm in diameter, was observed on the left buccal mucosa (Figure 2). On palpation it was soft in consistency, non-tender, and showed no discharge. Additionally, ecchymosis and petechiae were evident on the palate, accompanied by a swelling that was soft, fluctuant, and tender upon palpation, extending from the left first premolar to the third molar (i.e 24,25,26,27,28) (Figure 3). Multiple ulcers, each measuring approximately 2x2 mm^2, and ecchymosis extending to the base of uvula were also noted on the right palatal region (Figure 4). The patient's oral hygiene status was also suboptimal. Other dental findings included multiple dental caries and angle's class I molar relation with Trauma From Occlusion (TFO).

Figure 1: Edematous gingiva with spontaneous bleeding

Figure 2: Vascular mass on left buccal mucosa

Figure 3: Swelling along with ecchymosis and multiple ulcers on palate

Figure 4: Swelling along with ecchymosis and multiple ulcers on palate

For further evaluation Orthopantomogram (OPG) was advised for the patient which showed generalized bone loss and no other significant clinical findings were found (Figure 5).

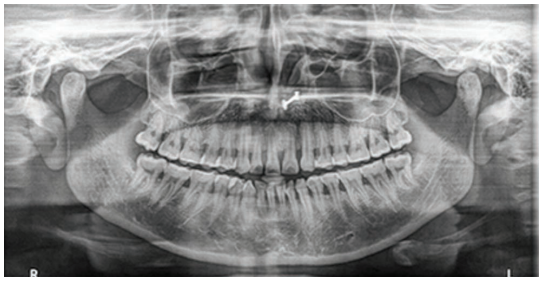


Figure 5: Orthopantomogram

Blood investigations was advised to the patient which showed INR to be 1.54. CBC indicated a significant decrease in hemoglobin levels (9.5 mg/dl) and platelets count (23000 cells/cu mm) along with a substantial increase in white blood cell count (197000 cells/cu mm). The PBS showed: Blasts: 85%, Promyelocyte: 02%, Myelocyte: 03%, Metamyelocyte: 02%, Segmented neutrophils: 02%. Normocytic normochromic red blood cells (RBCs) with a few polychromatophils and nucleated RBCs. There was a marked increase in the total white blood cell (WBC) count, and some blasts displayed Auer rods. Platelets were markedly reduced in number. These findings collectively suggested Acute Myeloid Leukemia (AML)

The patient was referred to the Department of Hematology at Tertiary care hospital for the management of AML. Subsequently, she underwent chemotherapy as part of the treatment regimen.

DISCUSSION

Acute Myeloid Leukemia (AML) is known for its diverse and nonspecific clinical presentation, often presenting challenges in diagnosis, especially when initial symptoms manifest in the oral cavity.

A meticulous examination along with appropriate radiographic and blood investigations are crucial steps in achieving an accurate diagnosis. In the present case, the comprehensive intraoral examination played a pivotal role in identifying concerning oral signs suggestive of an underlying systemic condition. The patient exhibited intraoral abnormalities such as gingival enlargement, ecchymosis, petechiae, and ulcerations, which raised suspicion for an underlying hematologic disorder which was similar to case report and review conducted by Wu J et al. (2002)[23], Cammarata-Scalisi F, Girardi K, et al (2020).[24] Quispe RA et al. (2022), in their study with total of 33 individuals and age range from 1.6 to 74 years concluded Acute myeloid leukemia presented with more oral manifestations as the first clinical signs of the disease. All individuals with leukemia presented lesions, such as ulcer, erosion, bleeding, ecchymosis, color change of the bluish or pale mucous membranes and areas of tissue necrosis. Hard tissue lesions were less frequent.[25] Oral manifestations when present, it was easier for patients to identify the clinical signs because of accessibility of the mouth, compared to other body structures. The first oral manifestation include gingival bleeding, gingival hyperplasia, ulcers and petechiae.[26-29] Complementary imaging examinations, such as panoramic radiography and computed tomography, are essential to evaluate bone structures in greater detail. For this reason, when radiography revealed the characteristics of malignant bone lesions, the patients can be referred immediately to specialists in hematology/oncology.[30,31] Furthermore, the integration of blood investigations provided additional diagnostic insights, which revealed blasts cell displaying Auer rods, ultimately leading to the correct diagnosis of Acute Myeloid Leukemia (AML).[32,33]

CONCLUSION

The health of the oral cavity significantly reflects the health of the whole body. Identification of the signs and symptoms of oral lesions can act as a warning sign of hidden and serious systemic involvement. This case highlights the essential role of dentists in recognizing oral signs of systemic diseases like leukemia and underscores the necessity of interdisciplinary collaboration between dental and medical specialities. Through early detection, timely referral, and coordinated care, patients can receive comprehensive management, ultimately improving their overall health outcomes.

REFERENCES

1. Fernandes KS, Gallottini M, Castro T, Amato MF, Lago JS, Braz-Silva PH. Gingival leukemic infiltration as the first manifestation of acute myeloid leukemia. Spec Care Dentist [Internet]. 2018;38(3):160–2. Available from: http://dx.doi.org/10.1111/scd.12283.
2. Reenesh, M.; Munishwar, S.; Rath, S.K. GeneralisedLeukaemic Gingival Enlargement: A Case Report. J Oral Maxillofac Res. 2012;3:5.
3. Lupi, S.M.; Baena, A.R.Y.; Cervino, G.; Todaro, C.; Rizzo, S. Long-Term Effects of Acute Myeloid Leukemia Treatment on the Oral System in a Pediatric Patient. Open Dent. J. 2018, 12, 230–237.
4. Chowdhri, K.; Tandon, S.; Lamba, A.K.; Faraz, F. Leukemic gingival enlargement: A case report and review of literature. J Oral Maxillofac Surg Med Pathol. JOMFP 2018;22:77-81
5. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global cancer statistics 2020: Globocan estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2021;71:209-49.
6. American Cancer Society. Leukemia. Atlanta, Georgia: American Cancer Society; 2021. Available from: https://www.cancer.org/ cancer/leukemia. html. [Last accessed on 2021 Apr 11].

7. Dong Y, Shi O, et al. Leukemia incidence trends at the global, regional, and national level between 1990 and 2017. Experimental hematology & oncology. 2020 Dec;9(1).
8. Nagel G, Weber D, et al. Epidemiological, genetic, and clinical characterization by age of newly diagnosed acute myeloid leukemia based on an academic population-based registry study (AMLSG BiO). Annals of hematology. 2017 Dec;96(12):1993-2003.
9. Cammarata-Scalisi F, Girardi K, Strocchio L, Merli P, Garret-Bernardin A, Galeotti A, et al. Oral manifestations and complications in childhood acute myeloid leukemia. Cancers (Basel) [Internet]. 2020;12(6):1634. Available from: http://dx.doi.org/10.3390/cancers12061634
10. Zhou, Y., Huang, G., Cai, X. et al. Global, regional, and national burden of acute myeloid leukemia, 1990–2021: a systematic analysis for the global burden of disease study 2021. Biomark Res 12, 101 (2024). https://doi.org/10.1186/s40364-024-00649-yAsif N, Hassan K. Acute myeloid leukemia amongst adults. J Islamabad Med Dental Chollege. 2013;2(4):58-63
11. Asif N, Hassan K. Acute myeloid leukemia amongst adults. J Islamabad Med Dental College. 2013;2(4):58-63
12. Deschler B, Lübbert M. Acute myeloid leukemia: epidemiology and etiology. Cancer: Interdisciplinary International Journal of the American Cancer Society. 2006 Nov 1;107(9):2099-107.
13. Kabel A, Zamzami F, Al-Talhi M, Al-Dwila K, Hamza R. Acute myeloid leukemia: A focus on risk factors, clinical presentation, diagnosis and possible lines of management. Cancer Res Treat. 2017;5:62-7.
14. Bodey GP. Oral complications of myeloproliferation disease. J Postgrad Med. 1971;49:115-21. 13.
15. Michaud M, Baehner RL, Bixler D, Kafrawy AH. Oral manifestations of acute leukemia in children. J Am Dent Assoc. 1977;95:1145-50. 14.
16. Shepherd JP. The management of the oral complications of leukemia. Oral Surg Oral Med Oral Pathol. 1978;45:543-8. 15.
17. Scully C, Mac Farlane W. Orofacial manifestations of childhood malignancy: Clinical and microbiological findings during remission. J Dent Child. 1983;50:121-5. 16.
18. Barret AP. A long-term prospective clinical study of oral complications during conventional chemotherapy for acute leukemia. Oral Surg Oral Med Oral Pathol. 1987;63: 313-6. 17.
19. Kamp AA. Neoplastic diseases in a pediatric population: A survey of the incidence of oral complications. Pediatr Dent. 1988;10:25-9. 18.
20. Fayle SA, Curzon ME. Oral complications in pediatric oncology patients. Pediatr Dent. 1991;13:289-95. 19.
21. Cousin GC. Oral manifestations of leukaemia. Dent Update 1997;24:67-70.
22. Roboz GJ. Current treatment of acute myeloid leukemia. Current opinion in oncology. 2012 Nov 1;24(6):711-9.
23. Wu J, Fantasia JE, Kaplan R. Oral manifestations of acute myelomonocytic leukemia: a case report and review of the classification of leukemias. Journal of periodontology. 2002 6 Jun;73(6):664-8.
24. Cammarata-Scalisi F, Girardi K, et al. Oral manifestations and complications in childhood acute myeloid leukemia. Cancers. 2020 Jun 19;12(6):1634
25. Quispe RA, Aguiar EM, de Oliveira CT, Neves ACX, Santos PS da S. Oral manifestations of leukemia as part of early diagnosis. Hematol Transfus Cell Ther [Internet]. 2022;44(3):392–401. Available from: http://dx.doi.org/10.1016/j.htct.2021.08.006
26. Watson E, Wood RE, Maxymiw WG, Schimmer AD. Prevalence of oral lesions in and dental needs of patients with newly diagnosed acute leukemia. J Am Dent Assoc. 2018;149(6):470– 80. https://doi.org/10.1016/j.adaj.2018.01.019.
27. Hou GL, Huang JS, Tsai CC. Analysis of oral manifestations of leukemia: a retrospective study. Oral Dis. 1997;3(1):31–8. https://doi.org/10.1111/j.1601-0825.1997.tb00006.x
28. Lopez-Valverde N, L opez-Valverde A, Diego RG, de, Ramírez JM, Flores-Fraile J, Muriel-Fernandez J. Gingival hyperplasia as an early manifestation of acute myeloid leukemia. A retrospective review. J Clin Exp Dent. 2019;11(12):1139–42. https:// doi.org/10.4317/JCED.56214.
29. . Busjan R, Hasenkamp J, Schmalz G, Haak R, Trumper L, Zie- € bolz D. Oral health status in adult patients with newly diagnosed acute leukemia. Clin Oral Investig. 2018;22(1):411–8. https://doi.org/10.1007/s00784-017-2127-x.
30. Misirlioglu M, Adisen MZ, Yilmaz S. Diagnosis of acute myeloid leukemia in a dental hospital; Report of a case with severe gingival hypertrophy. Niger J Clin Pract. 2015;18(4):573–6. https://doi.org/10.4103/1119-3077.151803.
31. Vourexakis Z. Oral lesions presenting as an early sign of acute leukaemia. BMJ Case Rep. 2015;2015(1):2014–5. https://doi.org/ 10.1136/bcr-2014-205100.
32. Willis MS, McKenna RW, Peterson LC, Coad JE, Kroft SH. Low blast count myeloid disorders with Auer rods: a clinicopathologic analysis of 9 cases. Am J Clin Pathol. 2005 Aug 1;124(2):191-8.
33. Ritter J, Vormoor J, Creutzig U, Schellong G. Prognostic significance of auer rods in childhood acute myelogenous leukemia: Results of the studies AML-BFM-78 and– 83. Med Pediatr Onc. 1989;17(3):202-9.

Journal of Kantipur Dental College
Author Guideline

INTRODUCTION

The Journal of Kantipur Dental College (JKDC) is a peer reviewed, open access biannual biomedical journal. It is the official journal of Kantipur Dental College.

The JKDC works under the belief that knowledge gained through scientific research and advances should be shared and accessible. It publishes research-based articles within the field of biomedical sciences including basic sciences and clinical disciplines, public health, health care management, medical education, ethical and social issues pertaining to health care. Hence, it grants readers permission to read, download, copy, distribute, print, search and create links to the full text articles available online at www.kantipurdental.edu.np/journal without any charge. Thereby, it also aims to increase the visibility and ease of use of open access scientific and scholarly articles so as to promote their increased usage and impact. Authors do not have to pay for submission, processing or publication of articles in JKDC.

Articles are published under the following categories: Editorials/Guest editorial, Research/Original Article, Review Article, Case Report/Series, Short Communication, Book review, View point and Student KDC.

THE EDITORIAL PROCESS

The submitted manuscripts are duly acknowledged and initially reviewed for probable publication by the editors with the confirmation that they are being submitted only to the JKDC, have not been published, simultaneously submitted or accepted for publication elsewhere.

The manuscripts are then sent to expert peer reviewers blinded to the contributor's identity and vice versa for review and comments. The final decision on whether to accept or reject the article are taken by the Chief-editor based on the peer reviewer's comments. The authors are informed about the modification/acceptance/rejection of the manuscript with the peer reviewer's comments.

Revised articles have to be resubmitted after making the necessary changes or clarifying questions made during the peer review process. The author may withdraw his/her manuscript prior to publication with written applications.

The accepted articles are edited for grammatical, punctuation, print style and format errors and page proofs and are sent to the corresponding author who should return them within stipulated date. Non response may result in delay in publication or even rejection of the article.

INSTRUCTIONS TO AUTHORS

Manuscripts must be prepared in accordance with "Uniform requirements for Manuscripts submitted to Biomedical Journals" developed by the International Committee of Medical Journal Editors (ICMJE) www.icmje.org. The uniform and specific requirements of JKDC are summarized below. Before sending a manuscript authors are requested to check for the instructions.

SPECIFICATION OF THE MANUSCRIPT

The language of the manuscript should be simple and legible, which must be written in British English or English (US) without grammatical, typographical and bibliographical errors. The manuscript must be proof-read before submission. Manuscript should use proper language that serves the purpose of effective communication. Manuscript should not be written in contraction. For example: can't, don't, etc.

Format: Microsoft Word (.doc or .docx) file format and all the illustrations, figures and tables should be placed within the text at the appropriate points.

Front Size/Style: 12/Times New Roman Spacing: 1.5 Border spacing: 1 inch (all sides)

Page number: Right hand bottom

Image file format: jpeg or tiff/ Resolution: 300 dpi (dot per inch)

All manuscripts must be type written and submitted to the Chief Editor, JKDC. The total number of authors including Principal author should not be more than 6(Six). Authors must submit manuscripts through email in the following address: jkdcjournal@gmail.com

TYPES OF MANUSCRIPT AND WORD LIMITS

RESEARCH ARTICLE

Research article should be divided into these sections:

Title

Title should be short not more than 15 words.

Authorship

It should contain name of the pertinent authors with their position and affiliated institution and e-mail address of corresponding author.

Abstract

It should not exceed 300 words and should be in a structured summary. All research articles should be

submitted with the following subheadings: Introduction, Objective, Materials and Method, Result and Conclusion.

Keywords: 3-7 keywords arranged alphabetically separated by semicolons.

Introduction
Introduction should clearly state the problem being investigated, the background and reasons for conducting the research. It should summarize relevant research to provide context and also state how the work differs from published work. It identifies the research questions/ hypothesis that has to be answered and also explains others' findings.

Materials and Method
This section should provide sufficient details about the procedure, research design, sample selection, so that readers can understand and replicate the study. It should explain inclusion and exclusion criteria. It should give details of new methodology or give citation for previously published work.

Result
This should provide answer to research question/ hypothesis. Findings can be shown in tables and figures, and explain what was found. Presentation of results shall not be duplicated in multiple formats.

Discussion
Discussion should describe what the present results mean and what is already known about the subject. It should indicate how the results relate to expectations and new scientific knowledge. It also identifies the gaps and ideas for further study.

Conclusion
A concise conclusion which should briefly explain the importance and usefulness of the work.

Acknowledgement
All contributors who do not meet the criteria for authorship can be listed.

References
References should be listed in a separate reference section immediately following the text in Vancouver superscript system. The total number of references should not exceed 30.

Word limit
Manuscript 2500 words including figures and tables (excluding abstract and references)

REVIEW ARTICLE
Review article must cover various aspects of the topic chosen, areas of interest and should also incorporate latest researches and findings. It should be systemic critical assessments of literature and data sources. It should include; Title up to 15 words, Abstract 300 words (structured/ unstructured), Manuscript up to 3000 words excluding references and References up to 50. There shall be no conclusion section, if needed summary section can be added.

CASE REPORT/SERIES
New/interesting/ rare cases with clinical significance or implications can be reported. Valid written expressed consent should be taken prior to involving any person in case report manuscript. The identity of the patient should not be revealed in text or figures. Confidentiality should be maintained. It should include; Title 15 words, Abstract 150 words (structured / unstructured) with key words 3-5 arranged alphabetically separated by semicolons.

Manuscript should be 1500 words (excluding abstract and references). The total number of references should not exceed 15.

VIEW POINT / SHORT COMMUNICATION / BOOK REVIEW
These articles are personal or professional views and allow the author to express their own point of view on any issues relevant to health. It should include; Title 15 words and total 1000-1500 words.

STUDENT KDC
Student KDC section is provisioned for dental students for submitting manuscript on research/survey, case report, essay and articles on career and web-searches. Total word count should be 1000-1500 words.

Images (photographs, drawings)
If images (photographs/ line drawings) are to be included, clearly scanned images free from technical artefacts should be submitted. Magnifications, areas of key interest should be indicated by an arrow, symbol or abbreviation the details of which should be explained at the bottom of the figures. The scanning resolution should be 300 dpi (dots per inch). Title or captions and clearly numbered for each image should be provided. Figure/s should be cited in orderwithin the text, e.g. (Figure 4).

Tables
Tables should be simple and legible. It should present only essential data with a title or caption and clearly numbered. Table/s should be cited within the text, e.g. (Table 3).

Units and abbreviations
All measurements should be expressed in Standard International (SI) units. Avoid abbreviations in the title and abstract. All unusual abbreviations should be fully explained at their first occurrence in the text.

Drug names
Generic drug names should be used.

Conflict of Interest Notification
This should be notified (if any).

Ethical consideration
Manuscripts submitted for publication should be attached with ethical clearance letter from the respective institutional ethical committee or review board.

Informed consent
Informed consent of the patients must be taken before they are considered for participation in the study. Patient identifying information such as names, initials, hospital numbers or photographs should not be included in written descriptions. Patient consent should be obtained in written and archived with authors.

Protection of human subject in research
When conducting experiments on human subjects, appropriate approval should be obtained from the Ethical Committee. All the procedures on human experimentation must be performed in accordance with the ethical standards of the responsible ethical committee (both institutional and national) and the Helsinki Declaration of 1964 (as revised in 2008).

Permission
Authors must obtain written permission for the borrowed and previously published material and submit them with the manuscript. The borrowed material should be acknowledged.

Checklist for authors before submitting the manuscript
- Covering letter
- Completely filled JKDC declaration of authorship
- Ethical committee approval
- Informed consent (if appropriate)
- Abstract
- Manuscript files including tables/figures/ pictures
- References
- Word count (Abstract/Text)

Kantipur Dental College

Teaching Hospital & Research Center

Dhapasi, Basundhara Ring Road (Near Police Bit), Kathmandu-3, Nepal
Tel: 977-01-4385910, 4385911 (Hospital), 977-0-14366242/4358586 (College)
Toll Free No.: 16600171111; Fax: 977-01-4385912
E-mail: kdchktm@gmail.com Website: www.kantipurdental.edu.np