

PREVALENCE OF DEVIATED NASAL SEPTUM AMONG NEPALESE PRECLINICAL STUDENTS AT KATHMANDU MEDICAL COLLEGE TEACHING HOSPITAL, NEPAL

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ABSTRACT

INTRODUCTION

The fragile nature of the nasal septum and other bony structures makes them prone to fragmentation and destruction. Deviated nasal septum persists in adult stage of life giving rise to anatomical, psychological and cosmetic consequences. There are many consequences of deviated nasal septum like nasal obstruction, mouth breathing, headache and asymmetry of face. The amount of airflow and resistance to it in the nasal cavity with deviated nasal septum are quite different from person to person. Our study is focused on the prevalence of deviated nasal septum.

MATERIAL AND METHODS

This was a cross-sectional observational study conducted among 300 individuals from Nepalese preclinical students studying at Kathmandu Medical College Teaching Hospital (KMCTH). Prevalence of deviated nasal septum in males and females were determined affecting symmetry of the face.

RESULTS

The prevalence of deviated nasal septum was found to be 53% (159) of total study population. The left sided nasal septal deviation was found to be more in male 33.33% (50) than that of female 29.33% (44). The asymmetry of the face was observed in 55% (165) of total study population. However, asymmetry of face was observed more in male 58.66% (88) than in female 51.33% (77).

CONCLUSION

The deviated nasal septum and asymmetry of the face were remarkably prevalent among Nepalese preclinical students studying at Kathmandu Medical College Teaching Hospital. The prevalence of deviated nasal septum and asymmetry of face was found significantly greater in male than in female ($p < 0.05$).

KEYWORDS Asymmetry of face, lower anterior crowding of dentition of lower jaw, deviated nasal septum (DNS)

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INTRODUCTION

The septum and other bony structures of the nasal cavity are fragile and prone to fragmentation and destruction. Septal deviation is a product of reduced vertical growth of bony structures surrounding it.^{1,2} The nasal septum is a osseous cartilaginous structure in the middle of the nose.³ It is designed to separate the two sides of the nose, allows airflow and helps the nose to run its functions like warming, humidity, filtering, helping with olfaction and phonation.⁴ The nasal septum deviation and nasal prominences can be one of the best tool to recognize the asymmetry of face of an individual and its correlation with diseased condition and future risk to any kind of trauma.⁵ Few reports are available on deviated nasal septum. But there is lack of data on deviated nasal septum with its correlation with symmetry of face. Lower anterior crowding of dentition may have role in determining the symmetry of face. Thus, the aim of the present study is to access the deviated nasal septum and the asymmetry of face.

MATERIAL AND METHODS

A cross-sectional observational study was conducted among 300 Nepalese preclinical students (males and females 150 each) from MBBS, BDS and B.Sc. Nursing first and second years, who got admitted at Kathmandu Medical College Teaching Hospital (KMCTH), Duwakot. Ethical approval for the study was taken from the institutional review committee (IRC) of Kathmandu Medical College. The study was of six months duration from Dec 2017 to June 2018 after obtaining the clearance from IRC of Kathmandu Medical College. Written consent was taken from preclinical students for participating in the research. Individuals who did not give consent and foreign national students were excluded from the study. A clinical examination was done by anterior rhinoscopy using nasal speculum. Photographs were taken using digital camera in norma frontalis view with the nasal cavity positioned centrally in the image. Photographs were observed in detail and recorded in structured proforma.

The examination was also performed to observe the deviation of nose to right or left side or no deviation of nose with its prevalence. Sterilized mouth mirror, metallic probe, tweezer and cheek retractor were used for intraoral examinations when lower anterior crowding was detected after opening the mouth to observe for lower midline shift to right or left side based on situation of lower frenum or frenulum. The presence of lower anterior crowding included crowding of teeth in lower jaw (mandible) from canine tooth of right side of the mandible to canine tooth of left side of the mandible at symphysis menti (lower midline) region with overlapping and crowding of dentition shifting the midline of face. Symmetry and asymmetry of the face in male and female subjects were

observed. 10 to 15 individuals were observed at a time. Observations were made at free time of students without hampering the study time. Data was collected from them by a self-designed questionnaire in a written form from the respondents to obtain the necessary information. Data collected was compiled in Microsoft Office excel 2007 and further analysed by SPSS version 20. Chi-Square test was used. P -value less than 0.05 was considered statistically significant.

RESULTS

The prevalence of deviated nasal septum was found to be in 53% (159) of the total study population. The prevalence of deviated nasal septum and asymmetry of face in male was significantly greater than female individuals ($p < 0.05$). Left sided nasal deviation was more 31.33% (94) than right side 21.66% (65) for both male and female subjects (Table 1). The deviated nasal septum in male to right side was 22.66% (34) and to left side was 33.33 % (50). The deviated nasal septum in female to right side was 20.66% (31) and to left side was 29.33% (44) (Table 1, Figure 1). The asymmetry of the face in male was found to be more 58.66% (88) than that of female 51.33% (77) (Table 2, Figure 2). However, symmetrical face was found to be in 55% (165) of total study population (Table 3). Lower anterior crowding in male was only 2.66% (4) and that of female was 4.66% (7) (Table 3, Figure 3).

Table 1. Prevalence of deviated nasal septum (N= 300)

DNS	N	Right deviation	%	Left deviation	%	No deviation	%
Male	150	34	22.66	50	33.33	66	44
Female	150	31	20.66	44	29.33	75	50

Table 2. Prevalence of asymmetry and symmetry of face (N= 300)

Gender	N	Asymmetrical face	%	Symmetrical face	%
Male	150	88	58.66%	62	41.33%
Female	150	77	51.33%	73	48.66%

Table 3. Distribution of deviated nasal septum and symmetry and asymmetry of face in the study population (N=300)

Parameter	Male (n=150)	Female (n=150)	Total (N=300)
Nasal deviation	%	%	%
Right	22.66% (34)	20.66% (31)	21.66% (65)
Left	33.33% (50)	29.33 % (44)	31.33% (94)
No nasal deviation	44% (66)	50% (75)	47.00% (141)
Asymmetry of face	58.66 % (88)	51.33 % (77)	55.00% (165)
Symmetry of face	41.33 % (62)	48.66 % (73)	45.00% (135)
Anterior crowding of dentition of lower jaw	2.66 % (4)	4.66 % (7)	3.66% (11)

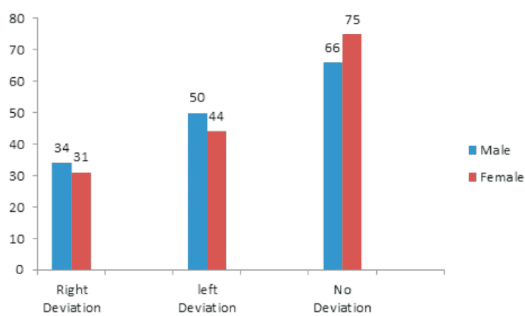


Figure 1. Showing deviated nasal septum towards right side, left side and with no deviation

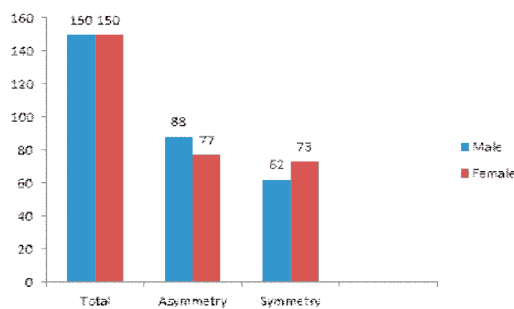


Figure 2. Showing asymmetry and symmetry of face in male and female

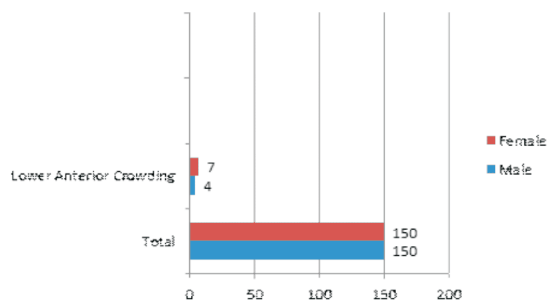


Figure 3. Showing lower anterior crowding of dentition in lower jaw

DISCUSSION

The results of the present research showed that the overall prevalence of deviated nasal septum were remarkably present in 53% (159) students among 300 preclinical students sample representative of Nepalese preclinical students at KMCTH. Our result is similar with the study conducted by Kumar et al.⁶ They found 52.4% had deviation towards right and 47.6% had deviation towards left. Also, investigations in the present

study showed 22.66% (34) deviated nasal septum towards right side in male and 20.66 % (31) in female. It revealed 33.33% (50) of students had deviated nasal septum towards left side in male and 29.33 % (44) in female. The predominated prevalence of deviated nasal septum towards left side in male with increasing age was also found by the study done by Min et al (1995).⁷ However, they found the overall prevalence of deviated nasal septum to be only 22.38%. One of the study was conducted on prevalence of septal deviation in school aged children aged 6-15 years showed septal deviation only in 9.5% of children by Haapaniemi et al.⁹ Deviated nasal septum is the most common cause for nasal obstruction, which increases with advancing age.^{10,11} As the study conducted by them was limited only to children, it showed less prevalence (only 9.5%) of deviated nasal septum. The other causes for difference in prevalence of deviated nasal septum could be due to racial, social, food habits and ethnical background of the sample size. The overall percentage of asymmetry of the face in our study was found to be 55% (165).

However, the asymmetry in male was higher 58.66% (88) than that of female 51.33% (77). Similar to our finding, a study was conducted on facial asymmetry and nasal septal deviation showing no statistical correlation between them.¹² We also found no statistical correlation between deviated nasal septum and asymmetry of the face. We found a total of only 3.66% (11) individuals with anterior crowding of dentition in lower jaw with no statistical correlation with asymmetry of face. The similar research has been done suggesting the directional shift of lower arch with lower incisor crowding affecting the midline symmetry of the face.¹³⁻¹⁵ A study of the relationship between dental crowding and facial morphology in 51 individuals was carried over the first five years of the permanent dentition, finding some relationships but no strong or consistent pattern done by Richardson.¹⁶

CONCLUSION

The deviated nasal septum and asymmetry of the face were remarkably prevalent among Nepalese preclinical students studying at KMCTH. The prevalence of deviated nasal septum and asymmetry of face was found significantly greater in male than in female ($p < 0.05$). The result showed a greater left sided deviated nasal septum than the right side. Awareness about deviated nasal septum and its consequences are still inadequate even among preclinical medical students.

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REFERENCES

1. Mays S. Nasal septal deviation in a medicieval population. *Am J Phys Anthropol* .2012 Jul;148(3):319-26. doi: 10.1002/ajpa.22046.
2. Gray LP. Septal and associated cranial birth deformities: types, incidence and treatment. *Med J Aust*. 1974 Apr 13;1(15):557-563.
3. Kent SE, Reid AP, Nairn ER, Brain DJ. Neonatal septal deviations. *JR Soc Med* 1988; 81:132-35.
4. Gray LP. Deviated nasal septum. Incidence and etiology *Ann Otol Rhino Laryngol Suppl*. 1978 May-Jun; 87(3 Pt 3 Suppl 50):3-20.
5. Blaugrund SM *Otolaryngol Clin North Am*. 1989 Apr;22(2):291-306.
6. Kumar L, Belaldavar BP, Bannur H. Influence of Deviated Nasal Septum on Nasal Epithelium: An Analysis. *Head Neck Pathol*. 2017 Dec;11(4):501-505.
7. Min Y-G, Jung HW, Kim CS. Prevalence study of nasal septum deformities in Korea: results of a nationwide survey. *Rhinology*. 1995; 33:61-65.
8. Haapaniemi JJ, Suonpaa JT, Salmivalli AJ, Tuominen J. Prevalence of septal deviations in school aged children. *Rhinology*. 1995; Mar, 33(1):1-3.
9. Ruano-Gil D, Montserrat-Viladiu JM, Vilanova-Trías J, Burgés-Vila J. Deformities of the nasal septum in human foetuses. *Rhinology*. 1980 Jun;18(2):105-109.
10. Alpini D, Corti A, Brusa E, Bini A. Septal deviation in newborn infants. *Int J Pediatr Otorhinolaryngol*. 1986 Apr;11(2):103-107.
11. Jazbi B. Nasal septum deformity in the newborn. Diagnosis and treatment. *Clin Pediatr (Phila)* 1974 Nov;13(11):953-956.
12. Lee JS, Lee H, Kim JW, Chang M, Park M. Association of facial asymmetry and nasal septal deviation in acquired nasolacrimal duct obstruction in East Asians. *J Craniofacial Surgery*. 2013 Sep; 24(5):1544-8.
13. Sakuda M, Kuroda Y, Wada K, Matsumoto M. Changes in crowding of teeth during adolescence and their relation to the growth of the facial skeleton. *Trans Eur Orthod Soc* 1976:93-104.
14. Leighton BC, Hunter WS. Relationship between lower arch spacing/crowding and facial height and depth. *Am J Orthod* 1982; 82:418-25.
15. Bjork A. Variations in the growth pattern of the human mandible: Longitudinal radiographic study by the implant method. *J Dent Res* 1963;42(Pt 2):400-11.
16. Richardson ME. Late lower arch crowding. The role of facial morphology. *Angle Orthod* 1986;56 :244-54.