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ETHNICITY WISE PREVALENCE OF OVERJET AMONG NEPALESE ADOLESCENTS OF KATHMANDU VALLEY

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ABSTRACT

Introduction: Overjet is an extensive horizontal overlap of the incisal ridge of the upper teeth over the lower teeth and of the buccal cusp ridges of the posterior teeth with respect to their lower counterparts. Such a change is usually associated with facial muscle imbalance problems, resulting in an anteroposterior dentoskeletal relationship.

Aims and objective: To find out ethnicity wise prevalence of Overjet among Nepalese Adolescents of Kathmandu Valley

Materials& method: It is a cross-sectional descriptive study. The study population included 14-18 year-old adolescents studying in high school of all three districts of Kathmandu Valley. Anevaluation form was developed categorizing different levels of deep bite following WHO guidelines 1985 and accordingly data were recorded on it.

Statistical Analysis: Data were analyzed with descriptive statistics using the Statistical Package for the Social Sciences (SPSS for Windows, Version 23) in which p-values were calculated by Pearson Chi-Square Tests

Results: Out of 938 selected students 92.1% had Normal overjet, 5.8% had increased overjet, 1.8% severely increased overjet and 0.3% had most severely increased overjet. Female showed higher percentage of normal overjet. Ethenic group showed mixed findings.

Conclusion: Prevalence of Normal overjet was 92.1%, increased overjet was 5.8%, severely increased overjet was 1.8% and most severely increased overjet was 0.3%.

female showed higher percentage of normal overjet and most severely increased overjet than male whereas male showed higher percentage of increased overjet and severely increased overjet than female. As per total count of participants among each ethnic group Advasi-Tar, Dalit, Madhesi and others showed 100% of normal overjet followed by janajati-Hi (94%) , Brahmin/chettri (90.8%) and Muslim (83.3%). Muslim (16.7%) showed higher percentage of increased overjet followed by Brahmin/chettri (6.6%) and Janajati-Hi (4.5)%. Brahmin/chettri showed higher percentage (2.2%) of severely increased overjet than Janajati-Hi (1.2%), where as both group showed same percentage of most severely increased overjet

Key words: Overjet, ethnicity, High school students, Prevalence

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Introduction

Malocclusions include a set of anomalies characterized by gaps in the tooth arrangement and/or the relationship between the maxillomandibular bone.[1] Overjet is an extensive horizontal overlap of the incisal ridge of the upper teeth over the lower teeth and of the buccal cusp ridges of the posterior teeth with respect to their lower counterparts. Such a change is usually associated with facial muscle imbalance problems, resulting in an anteroposterior dentoskeletal relationship.[2] One of the greatest assets a person can have is a "smile" that shows beautiful, natural teeth. An untreated and unsightly fracture of an anterior tooth can affect the behavior of a child, his progress in school and can have more impact on their daily living.[3]

Dental injuries may occur throughout life, but Traumatic Dental Injuries (TDI) are a very significant problem among children.The main etiology being accidents like falls, fights and during sports.[4] They are associated with biological, socio-economic, psychological and behavioural factors. The predisposing dental risk factors include increased incisal overjet, openbite, protrusion and lip incompetence.[5]

During the school age, children actively indulge in outdoor play, especially organized bodily contact play. Careless activities increase the possibility of injuries. Though these activities are markers of growth and development of the child, loss of balance and impaired movements are the result of traumatic injuries.[6]

In orthodontic practice, lip protrusion has been observed with proclined upper and lower incisors in bimaxillary protrusion.[7] Such lip protrusion has been shown to be reduced with backward movement of the anterior teeth[8,9], which often accompanies premolar extraction[10].

Bimaxillary protrusion is the malocclusion that upper and lower incisors are proclined and soft tissue at perioral area is usually prominence.[11,12] The retraction of incisors can produce changes in facial profile and lip protuberance. Lip changes and amount of incisors retraction in this malocclusion were continuously presented in dental literatures[13,14-19].

Despite of fact that increased overjet is directly related dental trauma, lip protrusion to lip competency, forming diagnositic criteria for extraction treatment planning due to inclination of incisors and facial aesthetics, limited studies can be cited inliterature of Nepali. Hence this study was proposed.

AIMS AND OBJECTIVE:

General Objective:

To find out ethnicity wise prevalence of Overjet among Nepalese Adolescents of Kathmandu Valley

Specific objectives:

1. To find out prevalence of normal overjet
2. To find out prevalence of increased overjet
3. To find out prevalence of severely increased overjet
4. To find out prevalence of most severely increased overjet
5. To find out prevalence of overjet of different extent among genders
6. To find out prevalence of overjet of different extent among various ethnic groups

MATERIATS & METHOD:

It is a cross-sectional descriptive study. The study population included 14-18 year-oldadolescents studying in high school of all three districts of Kathmandu Valley. Multistage sampling process was adapted for study Sample and final sample size of 938 was derived out of1097 screened that mate the inclusive criteria. *Exclusion criteria:* Subjects with craniofacialanomalies (clefts and syndromes) and non-Nepali nationals were excluded from the study).

Overjet were categorically set as Normal overjet: 0-3.5mm, increased overjet: 3.5-6mm, severely increased overjet: 3-5-9mm,most severely increased overjet: >9mm. Participants were divided into ethnic groups as Adivasi-Tar, Brahmin/chettri, Dalit, janjati-Hi, Madhesi, Muslim, and others as per government of Nepal

guideline.

Clinical examination: students were examined at the schools, in quiet classroom withoutexternal interference, under natural or artificial illumination. The examination lasted approximately 15 minutes per child, following the World Health Organization (1985) guidelines. The assessment of dental occlusion was carried out using latex gloves, dentalmouth mirrors, and mill metric rulers. Students were examined by using dental probe and plane mouth mirror. Sufficient numbers of autoclaved instruments were made available to avoid theinterruption during the study. After each day of examination, the entire instruments wereautoclaved. Quality assurance: Training and calibration of examiner: Oral examination wasperformed by two trained and calibrated examiners. Before the survey, 60 students were examined by each of the two investigators to assess inter-examiner reliability and, Kappa valuesfor both the examiners were found to be 0.87 and 0.88 respectively. An ethical clearance was obtained from the Ethical Review Board of Institute of Medicine. Each study individual was informed about the objective and benefit of the study.The informed consent form was developed to ensure consent of each study individual.

STATISTICAL ANALYSIS:

Firstly, data were coded and entered into Excel sheet. To maintain the data quality (validity)rechecking and cross checking were done during data entry phase. After the entry of the data to excelsheet necessary data cleaning were done. Secondly, Data were analysed with descriptive statistics using the Statistical Package for the Social Scences (SPSS for Windows, Version 23) in which p-values were calculated by Pearson Chi-Square Tests. P-Value less than 0.05 were considered significant. 95% Confidence Interval for proportion were also calculated.

RESULT:

Out of 938 selected students 92.1% had Normal overjet,5.8% had increased overjet, 1.8% severely increased overjet and 0.3% had most severely increased overjet. (Table 1,Fig 1)

Evaluating genders, among female's total count 95% had Normal overjet,3.5% had increased overjet, 1% severely increased overjet and 0.5% had most severely increased overjet. In contrast among male's total count 89.9% had Normal overjet,7.5% had increased overjet, 2.4% severely increased overjet and 0.2% had most severely increased overjet. (Table 2,Fig 2)

Among different ethnic group for overjet out of total count of Advasi-Tar showed 100% of normal overjet. Brahmin/chettri showed 90.8% normal overjet, 6.6% had increased overjet, 2.2% had severely increased overjet and 0.3% had most severely increased overjet.

Dalit showed 100% of normal overjet. Janajati-Hi showed 94% normal overjet, 4.5% had increased overjet, 1.2% had severely increased overjet and 0.3% had most severely increased overjet. Madhesi showed 100% normal overjet. Muslim showed 83.3% normal overjet, 16.7% had increased overjet. Others showed 100% of normal overjet(Table 3, Fig 3).

Table 1: Categorically set distribution of Overjet

Status	Frequency	Valid Percent
6-9mm	17	1.8(0.01, 0.02)
3.5-6mm	54	5.8(0.04, 0.07)
0-3.5mm	864	92.1(0.90, 0.94)
>9 mm	3	0.3(0.00, 0.006)
Total	938	100.0

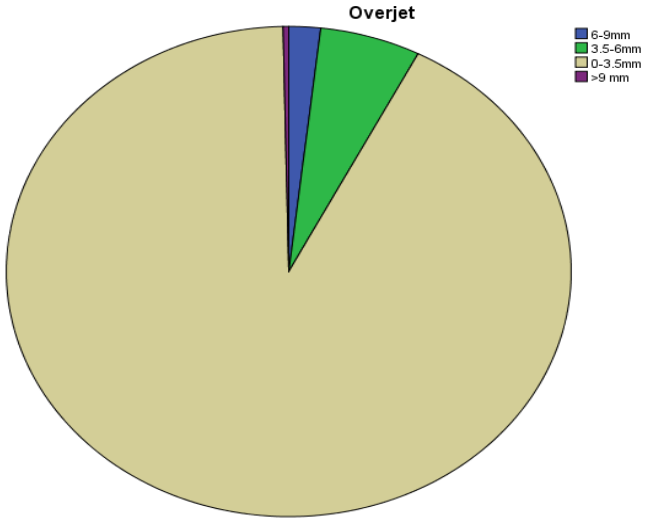

Figure 1: Categorically set distribution of Overjet

Table 2: Gender wise categorically set distribution of Overjet

			Overjet				Total	P Value
			>9 mm	0-3.5mm	3.5-6mm	6-9mm		
Sex	F	Count	2	385	14	4	405	0.014
		% within Sex	0.5%	95.1%	3.5%	1.0%	100.0%	
	M	Count	1	479	40	13	533	
		% within Sex	0.2%	89.9%	7.5%	2.4%	100.0%	
Total		Count	3	864	54	17	938	
		% within Sex	0.3%	92.1%	5.8%	1.8%	100.0%	

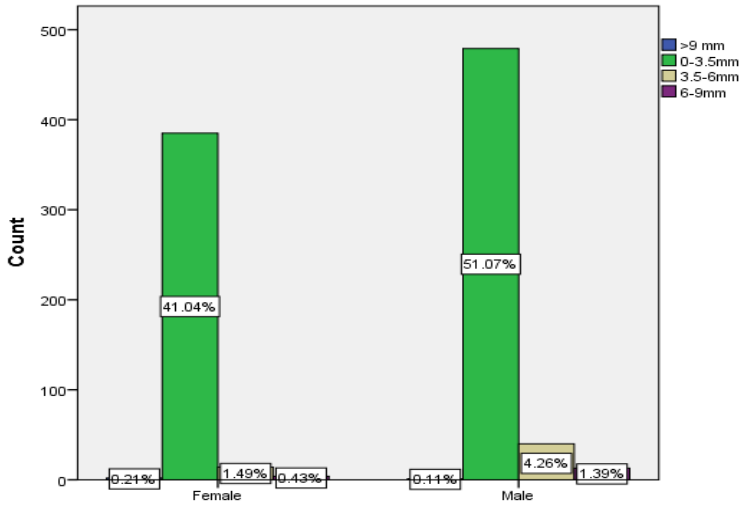

Figure 2: Gender wise categorically set distribution of Overjet

Table 3: Ethnicity wise categorically set distribution of Overjet

			Overjet					
			>9 mm	0-3.5mm	3.5-6mm	6-9mm	Total	P value
Ethnicity	Adivasi-Tar	Count	0	2	0	0	2	
		% within Ethnicity	0.0%	100.0%	0.0%	0.0%	100.0%	
		% within Overjet	0.0%	0.2%	0.0%	0.0%	0.2%	0.9
	Brahmin/Chh	Count	2	525	38	13	578	
		% within Ethnicity	0.3%	90.8%	6.6%	2.2%	100.0%	
		% within Overjet	66.7%	60.8%	70.4%	76.5%	61.6%	
	Dalit	Count	0	6	0	0	6	
		% within Ethnicity	0.0%	100.0%	0.0%	0.0%	100.0%	
		% within Overjet	0.0%	0.7%	0.0%	0.0%	0.6%	
	Janajati-Hi	Count	1	316	15	4	336	
		% within Ethnicity	0.3%	94.0%	4.5%	1.2%	100.0%	
		% within Overjet	33.3%	36.6%	27.8%	23.5%	35.8%	
	Madhesi	Count	0	7	0	0	7	
		% within Ethnicity	0.0%	100.0%	0.0%	0.0%	100.0%	
		% within Overjet	0.0%	0.8%	0.0%	0.0%	0.7%	
	Muslim	Count	0	5	1	0	6	
		% within Ethnicity	0.0%	83.3%	16.7%	0.0%	100.0%	
		% within Overjet	0.0%	0.6%	1.9%	0.0%	0.6%	
	Others	Count	0	3	0	0	3	
		% within Ethnicity	0.0%	100.0%	0.0%	0.0%	100.0%	
		% within Overjet	0.0%	0.3%	0.0%	0.0%	0.3%	
Total		Count	3	864	54	17	938	
		% within Ethnicity	0.3%	92.1%	5.8%	1.8%	100.0%	
		% within Overjet	100.0%	100.0%	100.0%	100.0%	100.0%	

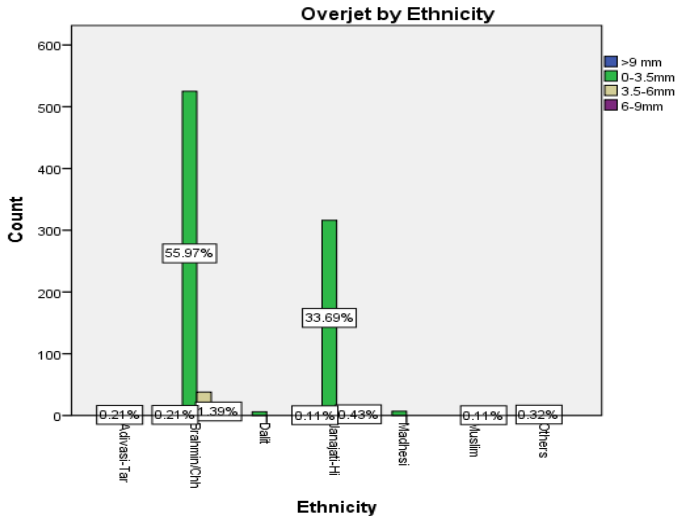

Table 3: Ethnicity wise categorically set distribution of Overjet

DISCUSSION:

overjet were also reported in Nigeria as increased overjet: 44.6%[20]and in China's western city Xi'an increased overjet 35.0% .[21]The increased overjet (>3 mm) occurred more frequently in the early mixed dentition (43.8%) than in the primary stage (33.9%)[22] However, in terms of severe increased overjet (>8 mm), the change was substantial: 0.9% for primary and 5.2% for mixed dentition. This change may increase the risk of oral trauma.[23] Ajayi (2008) had reported that the rate of increased overjet was 24.7% in Nigerian children.[24] Drummond (2003) reported prevalence rates of 33% for increased overjet in South African population[25]

Normal overjet was prevalent among Northern Saudis (66.4% and 64.4%), Jeddah population (69.6% and 59%), Riyadh population (67% and 76%), Tanzanians (73.3% and 65.9%), Nigerians (68.3% and 81.8%), Iranians (67.7% and 60.4%), and Pakistanis (58.4% and 61.4%).[26-31]

Our study on Nepalese population also showed relatively similar findings. Our population also represents higher percentage of normal overjet . female showed higher percentage of normal overjet and most severely increased overjet than male whereas male showed higher percentage of increased overjet and severely increased overjet than female

CONCLUSION:

Prevalence of Normal overjet was 92.1%, increased overjet was 5.8%, severely increased overjet was 1.8% and most severely increased overjet was 0.3%.

Among genders female showed higher percentage of normal overjet and most severely increased overjet than male whereas male showed higher percentage of increased overjet and severely increased overjet than female.

As per total count of participants among each ethnic group Advasi-Tar, Dalit, Madhesi and others showed 100% of normal overjet followed by janajati-Hi (94%) , Brahmin/chettri (90.8%) and Muslim (83.3%). Muslim (16.7%) showed higher percentage of increased overjet followed by Brahmin/chettri (6.6%) and Janajati-Hi (4.5)%. Brahmin/chettri showed higher percentage (2.2%) of severely increased overjet than Janajati-Hi (1.2%), where as both group showed same percentage of most severely increased overjet.

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