Original research article

International Journal of Medical Science and Education | pISSN- 2348 4438 | eISSN-2349- 3208

PREVALENCE OF ERUPTION STATUS OF THIRD MOLARS IN COLLEGE STUDENTS OF BIKANER (INDIA)

Saini Pankaj[1*], Pankaj Jai Prakash[2], Sharma Vijay Kumar[3], Katara Priyanka[4]

1. Ph. D. Scholar, Department of Anatomy, S.M.S. Medical College, Jaipur (Rajasthan)
2. Resident, Department of Community Medicine, Mahatma Gandhi Medical College, Jaipur (Rajasthan)
3. Ex. Professor and Head, Department of Anatomy, S. P. Medical College, Bikaner (Rajasthan)
4. Senior Demonstrator, Department of Anatomy, S.M.S. Medical College, Jaipur (Rajasthan)

***Correspondence Email:** pankajsaini1976@gmail.com

Received: 23/05/2013 ***Revised: 17/03/2014*** ***Accepted: 21/04/2014***

ABSTRACT

Background: Generally eruption of third molars occurs between the age of 18 and 24 years with a wide variation. The prevalence rate of non-erupted third molars widely varies and it is influenced by age, sex and ethnic origin. The failure of third molar eruption is a quite common condition and the extraction of impacted third molar teeth is carried out as routine surgical procedure in dental departments. The present study was aimed to determine the number of third molars per person with their eruption status. **Material and Methods:** A sample size of 180 students between the age group 17-25 years was selected by multistage random sampling. All the participants were interviewed, examined and intra-oral X-rays of lower third molar tooth were taken. **Results:** The results showed that 3.33% of third molars are congenitally missing. Approximately 94% of the subjects had all four third molars, 2.78% had three molars, 1.11% had two third molars and 0.5% had one third molar with 1.67% having agenesis of all third molars. The third molar agenesis showed predilection for maxilla (4.72%) than mandible (1.94%). Sex, religion and socio-economic status had no effect on the eruption of third molar teeth. **Conclusion:** The present study showed that 33.62% of third molars were fully erupted, 40.09% partially erupted and 26.29% were remained unerupted. About 3.33% third molars were congenitally missing.

Key words: Third molar, tooth eruption, prevalence.

INTRODUCTION

There are wide racial variations in the eruption sequence of third molars, although in all races these are the last teeth to erupt. The third molars are the most frequently impacted teeth because this late eruption is responsible for impaction of the third molar tooth. Different races and population groups exhibit definite inheritance patterns of jaw size, tooth size and facial growth and this racial variation in jaw size, tooth size and facial growth is crucial for determination of the eruption, impaction and incidence of agenesis of third molars. **(1)** An unerupted or partially erupted tooth can cause mild to severe symptoms. Patients, who have unerupted tooth seek dental treatment because of pain or swelling

or other reasons. The literature shows that tooth impaction is a usual phenomenon. However, different regions of the jaw show considerable variation in the prevalence and distribution of impacted third molars. **(2)**

Many studies carried out on third molars, especially mandibular third molars, because of their highest incidence of retention. Mandibular third molars are more frequently associated with pathologies, their position variations are more and challenges of surgical treatment are higher. **(3)**

Till date, very few studies regarding eruption status of third molar teeth in Rajasthan was conducted. So, present study was aimed to determine number of third molars per person with their eruption status.

MATERIALS AND METHODS

It was a descriptive cross-sectional study carried out among 180 subjects (90 boys and 90 girls) aged between 17 to 25 years from randomly selected three colleges of Bikaner city. 9 groups were made according to age (in completed years) with class interval of one year. Then 20 students (10 boys and 10 girls) were selected randomly for each group. The purpose of study was explained to each participant and informed consent was taken. Only those students who had full complement of teeth and had exact date of birth were included. Those participants who did not give consent and had history of extraction of any of the teeth were not included in the study.

The personal information of the subjects like name, age, sex, caste, religion and socio-economic status were recorded in a pre-tested pre-structured performa. Clinical examination was done to see the status of third molar and based upon the status they were classified as completely erupted, partially erupted and unerupted. The eruption status was assessed by using visual method and with the aid of mirror and probe. The teeth which were partially erupted and unerupted were subjected for radiographic examination. The intra-oral peripheral X-rays of subjects were taken.

An unerupted tooth:

An unerupted tooth is a tooth lying within the jaws, entirely covered by soft tissue, and partially or completely covered by bone. **(4)**

A partially erupted tooth:

A partially erupted tooth is a tooth that has failed to erupt fully into a normal position. The term implies that the tooth is partly visible or in communication with the oral cavity. **(4)**

An impacted tooth:

An impacted tooth is a tooth which is prevented from completely erupting into a normal functional position. This may be due to lack of space, obstruction by another tooth, or an abnormal eruption path. **(4)**

Socio- Economic Status:

The socio-economic status of the individual or community is an important determinant of the standard of living and health status. The SES influences on the incidence and prevalence rates of many health-related events. **(5)**

In this study, social classes were determined using modified B. G. Prasad's classification. The Prasad's classification was taken because it is simple and only one variable (income) is used in this. This classification can be used in both rural and urban areas to assess the socioeconomic status of the community. **(6)**

Socio Economic Status: Class	Modified B. G. Prasad's Classification (for 2013)
I	Rs. 5156 & above
II	Rs. 2578-5155
III	Rs. 1547-2577
IV	Rs. 773-1546
V	Rs. below 773

In the present study, the classification was little modified. Class-I was considered as upper social class, class-II and class-III were considered as middle social class while class-IV and class-V were considered as lower social class.

RESULTS

The mean age of the study group was 21 years (± 2.58). The total number of third molars found in 180 subjects was 696; out of them 343 teeth were maxillary and 353 teeth were mandibular. The proportion of third molar agenesis was around 3.33% (24 of total 720 teeth). The third molar agenesis showed predilection for maxilla (4.72%) than mandible (1.94%).

Table-1 shows 93.88% subjects had all four third molars, 2.78% had three third molars, 1.11% had two third molars and 0.5% had one third molar. Only 1.67% of the subjects had agenesis of all third molars.

Table No-1 Showing per person number of third molars:

Gender	No of 3rd molar per person					Total
	0	1	2	3	4	
Boys n (%)	2 (2.22)	0 (0)	1 (1.11)	3 (3.33)	84 (93.33)	90 (100)
Girls n (%)	1 (1.11)	1 (1.11)	1 (1.11)	2 (2.22)	85 (94.44)	90 (100)
Total n (%)	**3 (1.67)**	**1 (0.55)**	**2 (1.11)**	**5 (2.78)**	**169 (93.88)**	**180 (100)**

Table No-2 Showing status of eruption of maxillary and mandibular third molars:

Status of eruption	Completely erupted n (%)	Partially erupted n (%)	Unerupted n (%)	Total n (%)
Maxillary	79 (23.03)	103 (30.03)	161 (46.94)	343 (100)
Mandi-bular	155 (43.91)	176 (49.86)	22 (6.23)	353 (100)
Total	**234 (33.62)**	**279 (40.09)**	**183 (26.29)**	**696 (100)**

Table-2 shows the status of eruption of maxillary and mandibular third molars in which 33.62% of teeth were completely erupted, 40.09% of them were partially erupted and 26.29% of them were unerupted. Complete eruption was found more in mandibular third molars (43.91%) as compared to maxillary third molars (23.03%); while non eruption was found more common in maxillary third molars (46.94%) as compared to mandibular third molars (6.23%).

Table No-3 Showing significance of variables of third molar eruption:

Variable	Completely erupted n (%)	Partially erupted n (%)	Unerupted n (%)	Chi square (df)	P Value
Sex					
Boys	115 (33.14)	152 (43.80)	80 (23.05)	5.194 (2)	0.074
Girls	119 (34.10)	127 (36.39)	103 (29.51)		
Religion					
Hindu	154 (34.00)	175 (38.63)	124 (27.37)	1.315 (2)	0.518
Muslim	80 (32.92)	104 (42.80)	59 (24.28)		
Social class					
Upper	43 (34.4)	44 (35.2)	38 (30.4)	2.126 (4)	0.713
Middle	122 (32.8)	155 (41.67)	95 (25.54)		
Lower	69 (34.67)	80 (40.20)	50 (25.13)		

Table-3 shows that various confounding factors like sex, religion and socio-economic status did not associated with eruption of maxillary and mandibular third molars (P>0.05).

DISCUSSION

The mean age of this study group was 21 years (± 2.58 SD). Sandhu *et al.* **(3)** reported a mean age of their subjects as 19.3 years. Byahatti S *et al.* **(1, 2)** reported a mean age of their subjects 21.58 years (±2.9079) and 23.5 years (±2.9079) in two studies conducted in Libiya and South India respectively.

In present study, about 33.62 % of the third molars were found to be completely erupted and remaining 66.38% of the teeth were in various stages of eruption. Almost same results were found in Byahatti S *et al.*'s **(1)** study while in Sandhu *et al.*'s **(3)** study, 24% of the teeth were found to be erupted and 76% were in various stages of eruption.

The proportion of students having all 4 third molars was higher (93.88%) than a study by Sandhu *et al.*(**3**) (76%) but lower than Byahatti S *et al.*'s **(2)** (94.66%) in Indian population.

In present study the incidence of congenitally missing third molars was found 3.33% which is lower than the data reported by Sandhu *et al.***(3)** (11.5%), Levesque *et al.* **(7)** for French Canadians (9%), Hattab *et al.* **(8)** for Jordanians (9.1%), Venta *et al.* **(9)** for Finnish students (12%).

In the present study conducted on college students of Bikaner city (India), 1.67% had agenesis of all third molars, which is almost similar than the results obtained from Hattab *et al.* **(8)** (1.7%) and Hugoson and Kugelberg,**(10)** on Swedish population (2%); but slightly less than results by Byahatti S *et al.* **(1,2)** (2.5% for Libyan population and 3.33% for South Indian population).

The proportion of agenesis of third molars in boys (2.22%) was higher than girls (1.11%) findings were similar to the findings of Levesque *et al.* **(7)** and Hattab *et al.* **(8)** but differ

from those of Sandhu *et al*. **(3)** and Shah et al. **(11)**.

The results show that maxillary agenesis (4.72%) was more common than the mandibular (1.94%), which is similar with the results of previous studies. **(3, 8)**

Observations of present study showed that more than three quarters of the subjects had all four third molars, which was similar to the results obtained by Hattab *et al*. **(8)** and Sandhu *et al*.**(3)**. But this proportion was higher compared with the findings of Hellman **(12)** on American students, who noted that one half of the persons had all four third molars.

Results showed no significant differences in eruption status of third molars among boys and girls, (P value = 0.074), which was in agreement with the results obtained from Hattab *et al*. **(8)** but differ from Hellman **(12)**.

Study shows that maxilla had a higher frequency of unerupted teeth (46.94%) than the mandible (6.23%). 33.62% of third molars were fully erupted, this value is close to Venta *et al*. **(9)** ((35%) but more than that reported by Sandhu *et al*. **(3)** (24%) and less than that reported by Hattab *et al*. **(8)** (58%).

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

REFERENCES

1. Byahatti S, Ingafou MSH. Prevalence of eruption status of third molars in Libyan students. Dent Res J (Isfahan). 2012 Mar-Apr; 9(2):152–157.
2. Byahatti SM, Nayak R, Jayade B. Eruption status of third molars in south Indian city. J Indian Acad Oral Med Radiol. July-Sep. 2011; 23(3):S328-332.
3. Sandhu S, Kaur T. Radiographic evaluation of the status of third molars in the Asian-Indian students. J Oral Maxillofac Surg. 2005; 63(5):640-645.
4. United Kingdom. Management of unerupted and impacted third molar teeth: A national clinical guideline. Edinburgh: Scottish intercollegiate guidelines network; 1999 Sep. p24. Report No. 43.
5. Agarwal AK. Social classification: The need to update in the present scenario. Indian J Community Med. 2008; 33(1):50-51.
6. Dudala SR, Arlappa N. An updated Prasad's socio economic status classification for 2013. Int J Res Dev Health. 2013 April; 1(2):26-28.
7. Levesque GY, Demirjian A, Tanguay R. Sexual dimorphism in the development, emergence, and agenesis of the mandibular third molar. J Dent Res. 1981; 60:1735–41.
8. Hattab FN, Fahmy MS, Rawashdehma MA. Impaction status of third molars in Jordanian students. Oral Surg Oral Med Oral Pathol Radiol Endod. 1995; 79:24–29.
9. Venta I, Turtola L, Ylipaavalniemi P. Changes in clinical status of third molars in adults during 12 years of observation. J Oral Maxillofac Surg. 1999; 57:386–9. discussion 389-91.

10. Hugoson A, Kugelberg CF. The prevalence of third molars in a Swedish population: An epidemiological study. Community Dent Health. 1988; 5:121–38.
11. Shah RM, Boyd MA, Vakil TF. Studies of permanent tooth anomalies in 7886 Canadian individuals. J Can Dent Assoc. 1978; 44:262–4.
12. Hellman M. Our Third Molar Teeth; Their Eruption, Presence and Absence. Dent Cosmos. 1936; 78:750–62.