RESEARCH ARTICLE

PREVALENCE AND PATHOLOGIES ASSOCIATED WITH IMPACTED THIRD MOLAR IN AZAMGARH POPULATION

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ABSTRACT

Background: Impacted teeth are those that do not erupt into the dental arch in the time allotted. Any tooth can become impacted, but mandibular third molars are the most frequent. Because of neighbouring teeth, dense overlaying bone or soft tissue, a lack of room in the jaw, an irregular course of eruption, improper placement of the tooth bud, or pathological lesions, the tooth may become impacted. Dentists need to know about the genesis of an impacted mandibular third molar, clinical anatomy, radiologic examination, surgical therapy, probable complications, and pathological state connected with it.

Aim and Objectives: The study's goal was to investigate the prevalence and pattern of impacted third molars in the Azamgarh population, with the goal of estimating the frequency of impacted third molars and evaluating the relationship between impacted third molars and other pathological disorders.

Materials and Methods: The current research was conducted at the Dental College of Azamgarh Department of Oral Medicine and Radiology (U.P). In this study, 1000 patients, both male and female, aged 17 to 67 years old who presented to the department of Oral Medicine and Radiology between 2016 and 2018 were chosen. After describing the operation to the patient, he gave his informed permission. The patient was examined clinically according to Kerr, Ash, and Millard, and then radiologically evaluated using an orthopantomogram. The position and depth of the impacted third molar were documented using Winter's categorization criteria.

Results: The most prevalent age group for impacted third molars, according to the current study, is the third decade (27-37). 40.98 % of Impacted molars were prevalent in the mandible (61.2%) and males (67.8%). The most prevalent kind of impaction was mesioangular (36.7 %), and pericoronitis was the most common pathological disease. It was discovered to be 38.8%.

Keywords: Impacted third molar, O.P.G.

INTRODUCTION:

Impacted teeth are those that do not erupt into the dental arch in the time allotted. Any tooth can become impacted, but mandibular third molars are the most frequent. Because of neighbouring teeth, dense overlaying

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bone or soft tissue, a lack of room in the jaw, an irregular course of eruption, improper placement of the tooth bud, or pathological lesions, the tooth may become impacted. Mandibular third molars are the most frequent impacted teeth. Impacted third molars emerge between the ages of 17 and 21, and impaction is more common in the mandible than in the maxilla, with males having a much greater frequency than females.[1] Clinical and radiographic investigations aid in the classification of impacted teeth as well as the diagnosis and differentiation of the many diseases connected with them. Dental caries of a partly erupted third molar or neighbouring second molar is the most prevalent pathology, followed by pericoronitis. There might also be second molar root resorption, periodontal issues, odontogenic cysts, and malignancies, among other things.[2] Pericoronitis is an inflammatory disorder that is most commonly linked with partly erupted third molars. Pain, swelling, limited jaw opening, trouble swallowing, fever, malaise, and lymphadenopathy are all clinical symptoms. The position of the third molars in the jaw, as well as their occlusal structure, which includes large occlussal fissures, encourages the buildup of biofilm on the tooth, which leads to dental caries. This tooth is at risk of distal cervical caries because of impacted mandibular third molars that touch the cemento-enamel junction of the second molar. Due to pressure from the third molar's eruptive effort and chemical mediators released by the decreased enamel epithelium, impacted third molars trigger root resorption of the second molar. Furthermore, an impacted third molar reduces the quantity of bone on the distal end of the second molar, resulting in a difficult-to-repair periodontal defect.[3] In addition, several studies have indicated that an impacted third molar reduces the angle of the mandible, making it more prone to fracture, and is linked to lower arch crowding, TMJ problems, nonspecific orofacial discomfort, and neuralgias.[4] The goal of this study is to look at the origin of impacted third molars, clinical anatomy, radiologic evaluation, surgical therapy, and potential consequences. This sort of research is useful for assessing impacted teeth as well as designing surgical procedures. Such research will improve public awareness about the necessity of regular dental exams, which can lead to the early diagnosis of impacted teeth and the implementation of suitable remedies before issues emerge.[5]There are presently no statistics on the prevalence or pathophysiology of the disease associated with impacted third molar in Azamgarh population. Hence this study is designed to investigate the prevalence and pathology associated with impacted third molar in patient in Azamgarh population.

MATERIAL AND METHOD:

Aim: To look at the prevalence and pattern of impacted third molars in the people of Azamgarh.

Objectives:

• To determine the prevalence of impacted third molars in the Azamgarh, Uttar Pradesh, India population.

• To see whether there's any link between impacted third molars and other diseases.

Source Of Data: The research was carried out at the Dental College Azamgarh, Department of Oral Medicine and Radiology (U.P). During the years 2016-2018, 1000 patients of both genders, ages 17 to 67, reported to the Department of Oral

Medicine and Radiology. All of the patients gave their informed permission. The study was authorized by the Dental College Azamgarh Ethical Committee.

Selection Criteria

Inclusion Criteria

• All patients between the ages of 17 and 67 who had an O.P.G examination.

Exclusion Criterias

• Patients who have had an impacted third molar removed before.

• Patients under the age of seventeen.

• Congenital illnesses or facial syndromes are present.

• A fractured jaw.

Sample Size: 1000 patients.

Armamentarium Used:

1) Mask for the mouth
2) A pair of disposable sterile gloves.
3) Mouth mirror (No.5)
4) A Williams probe is used.
5) Kidney tray.
6) [CARESTREAM – CS 8000C.] O.P.G machine
7) Polythene that is transparent.
8) Acer desktop computer.
9) A ruler made of metal.
10) Lead apron.

Methodology: Informed permission was gained once the operation was explained to the patient. The patient was examined clinically according to Kerr, Ash, and Millard, and then radiologically evaluated using the orthopantomogram (OPG) model CARESTREAM – CS 8000C. The following are some of the other parameters that were followed:

1) The Frankfurt Horizontal Plane was horizontally aligned with the ground.

2) The face was divided into equal halves by the Mid-Sagittal Plane.

3) The Canine Plane is the third plane.

All pictures were obtained by the same radiologist using a uniform process for patient placement and exposure parameter setup, and the radiographs were viewed under standard light boxes to identify the number, kinds, and prevalence of related diseases.

The following criteria were used to choose the radiograph:

1) Excellent quality in terms of angulations and contrast.

2) Mandibular and maxillary teeth with neighbouring teeth obstructing their route were included.

3) There should be no exposure or processing artifacts in a panoramic radiograph.

The location and angulation of were recorded using Winter's classification criteria, using the angle formed between the intersecting longitudinal axis of the second and third molars as the criterion.

1) Vertical impaction (10° to -10°)
2) Mesioangular impaction (11° to 79°)
3) Horizontal impaction: (80°–100°)
4) Distoangular impaction: (-11°– -79°)
5) Others: (111°– -80°)

The following pathologies were shown to be related with impacted teeth:

1) Caries in the impacted or neighbouring teeth;

2) Periodontal bone loss of greater than 5 mm below the cementoenamel junction of the neighbouring tooth;

3) The neighbouring tooth's root resorption.

4) An increase of more than 4 mm in the pericoronal space of the dental follicle surrounding the impacted tooth.

RESULT:

The purpose of this study was to determine the frequency and pathophysiology of impacted third molars in the Azamgarh community using radiography. The majority of the patients in this study were between the ages of 27 and 37. It was discovered that 414 people made up 41.4 % of the overall study population. Following that, 260 patients in the 17-27 year old age group made up 26 % of the research population. The number of patients in the 37-47 year old age group was determined to be 175. (17.5%) There were 94 people in the 47-57 year old age group (9.4 %)

Patients and minimum patients were found to be between the ages of 57 and 67, accounting for 5.7% of the entire study population. The most common age group for impacted third molars was 27-37 years old. It was discovered that 541 people made up 40.98% of the overall study population. The majority of individuals with impacted teeth were between the ages of 57 and 67. **(See Table 1)**

There were 650 (65%) male and 350 (35%) female patients out of a total of 1000. A maximum of 254 (39.08 percent) of the 650 male patients were between the ages of 27 and 37, while a minimum of 37 (5.79%) were between the ages of 57 and 67. A maximum of 157 (44.86 percent) of the 350 female patients were between the ages of 27 and 37, while a minimum of 21 (6.0 percent) were between the ages of 57 and 67. Between male and female patients, there was a substantial difference. **(See Table 2)**

The maxilla had 510 impacted teeth while the mandible had 810 affected teeth. Male patients had 357 (69.8%) impacted teeth in the maxilla and 539 (66.6%) in the mandible. In female patients, 153 (30.2%) had impacted teeth in the maxilla and 271 (33.4%) had impacted teeth in the mandible. Male and female patients had significantly different numbers of impacted teeth in the maxilla and mandible. **(See Table 3)**

A total of 1320 impacted teeth were discovered in both jaws. 510 (38.6%) of them were in the maxilla, whereas 810 (61.4%) were in the mandible. Mesioangular impaction was the most prevalent kind of impaction in both jaws. It was discovered that there were 486 impacted teeth, accounting for 36.7 percent of all impacted teeth discovered. Horizontal impaction, ie.158 (12.2%), was found to be the smallest. Mesioangular impaction was the most prevalent impaction in the maxilla. It was discovered that there were 221 impacted teeth in the maxilla, accounting for 16.7% of all impacted teeth, with a minimum of 18 (1.4%) being horizontal impaction. Mesioangular impaction was the most prevalent impaction in the mandible.

It was discovered that 265 teeth in the maxilla were impacted, accounting for 16.7% of all affected teeth, with horizontal impaction accounting for the remaining 10.8%. The kind of impaction in the maxilla and mandible differed significantly. (Section 4)

Pericoronitis was the most prevalent pathological finding in both jaws. It was discovered that 512 pathologies contributed 38.8% of the total pathologies. It was followed by dental caries, which accounted for 14.09 percent of all diseases with a total of 184 cases. Cysts and tumors were the second most prevalent pathology. It was discovered to be 31, accounting for 7.0 percent of all diseases. Periodontitis (3.0%), periapical radiolucency (2.0%), root resorptions (1.0%), and abscesses (14%) were the other diseases (1.1 percent). Odontomes were the least prevalent pathology identified in both jaws (0.1 %). **(See Table 5)**

Pericoronitis was the most frequent disease in the maxilla, accounting for 10.6% of all maxilla pathologies. While abscess (0.1%) of the overall diseases of the maxilla was shown to be the lowest. Pericoronitis was reported to be the most prevalent (28.2%) and odontomes to be the least common in the mandible (0.1 %). **(See Table No. 5)**

DISCUSSION:

A partly erupted or unerupted tooth that will not finally assume proper arch connection with neighbouring teeth and tissues is referred to as an impacted tooth.[5] Impacted teeth are frequently discovered to be linked to Pericoronitis, periodontitis, cystic lesions, neoplasms, and root resorptions are all conditions that might harm neighbouring teeth. The etiology of lower arch crowding, temporo-mandibular joint (TMJ) abnormalities, unexplained orofacial discomfort, and neuralgias has been linked to an impacted third tooth, which decreases the angle of the mandible and renders it prone to fracture.[6] Third molar impaction is most commonly caused by inadequate maxillofacial skeletal growth or a poor connection between maxillofacial skeletal development and third molar maturation. As a result, the gap between the second molar and the mandibular ramus is narrowed.[7]

Impacted molars were found to be more common in males (67.8%) than females (32.2%) in our gender-based analysis. A research done by Mwaki and Guhuna et al[8] and another comparable study conducted in the United States of America indicated that 58 percent of the patients were male. However, according to certain studies, females in white Europeans (Lytle et al).[9] Singapore, and China had a greater frequency than men. (Peterson and colleagues).[10] Female Predilection can be explained by Hellman's theory, which states that female jaws stop developing when the third molar begins to erupt, but male jaws continue to expand after the third molar erupts. (Sandhu and Kaur, among others).[11]

The most prevalent kind of impacted third molar was mesio-angular impaction (36.7%), which was followed by vertical impaction (31.4%). Disto-angular impaction was the third most prevalent kind of impaction. Horizontal impaction was the least prevalent kind of impaction. In studies by Quek et al[12] Kramer and William et al[13], similar findings were obtained. The findings, however, differ with those of Hugoson and Kugelberg et al[14], who showed that vertical angulations were the most prevalent. This might be related to the fact that these research utilized various methods of angulation categorization. Depending on the occurrence of a pathological condition. Pericoronitis was the most prevalent pathology detected in

both the maxilla and the mandible. It was determined to be 28.2 percent in the mandible and 10.6 percent in the maxilla. In both jaws, the overall percent of pericoronitis was 36.7 percent. Caries in the third molar (14.09%) was also found. Caries in the second molar (7.6%) was the most common pathological condition, whereas odontomes was the least common. Santosh patilet al[15] observed similar findings in his investigation. Adeymo et al[16], on the other hand, found dental caries and its sequels to be the most common, followed by pericoronitis and periodontitis. Caries was found to be 14.09% in impacted teeth, which was greater than the percentages reported by Van der Linden et al [17] (7.1%) and Laskin et al [18] (7.1%) (6.5%). This might be attributed to population shifts.

As a result, accurate identification of an affected third molar is required for early diagnosis of related illnesses, as well as adequate therapy of the impacted third molar to avoid future complications. This study, which included 1000 patients, was solely conducted on the Bareilly population; nevertheless, bigger sample sizes are needed for radiographic evaluation of the frequency and pathology of impacted third molars.

CONCLUSION:

Impaction is described as a failure of tooth eruption caused by a physical obstruction in the eruption route or by the tooth being in an aberrant position. Third molars account for 98 % of all impacted teeth and are linked to a variety of pathological conditions, including caries, pericoronitis, pressure effects, and resorption of neighbouring 2nd molars, as well as cysts and neoplastic tumors. Lack of room distal to the permanent second molar, delayed third molar mineralization, and early physical maturation have all been documented as probable reasons of third molar impaction.

It's critical to understand the origin of impacted third molars, clinical anatomy, radiologic evaluation, surgical therapy, and early detection of concomitant disorders for correct impacted third molar care. As a result, this study was carried out in the Azamgarh community to determine the frequency and pathophysiology of impacted third molars. However, bigger population studies are needed for a more accurate assessment of the frequency and pathology associated with impacted third molars in order to avoid future problems.

Summary: The purpose of this study was to investigate the frequency of impacted third molars and the various diseases associated with them in the Azamgarh community using radiography. The goal was to determine the prevalence of impacted third molars in the population of Azamgarh, Uttar Pradesh, India, as well as the relationship between impacted third molars and other pathological disorders.

The most prevalent age group with impacted third molars in the current study was the age group of third decade 27-37 years, accounting for 40.98 percent of the entire study population. 3.93 percent of individuals with impacted teeth were found to be between the ages of 57 and 67. Males were more likely than females to have an impacted molar, with 67.8% having one. The most common kind of impaction was mesioangular (36.7%), whereas horizontal impaction was found to be the least common (12.2%). Pericoronitis was the most frequent pathological ailment. It was discovered to be 38.8%.

Clinically, impacted teeth can present with a variety of symptoms, including discomfort, food impaction, and cheek bite. This research would serve as a starting point for detecting and distinguishing the many disorders linked with them. It will also aid in the early diagnosis of impacted teeth, preventing complications from developing.

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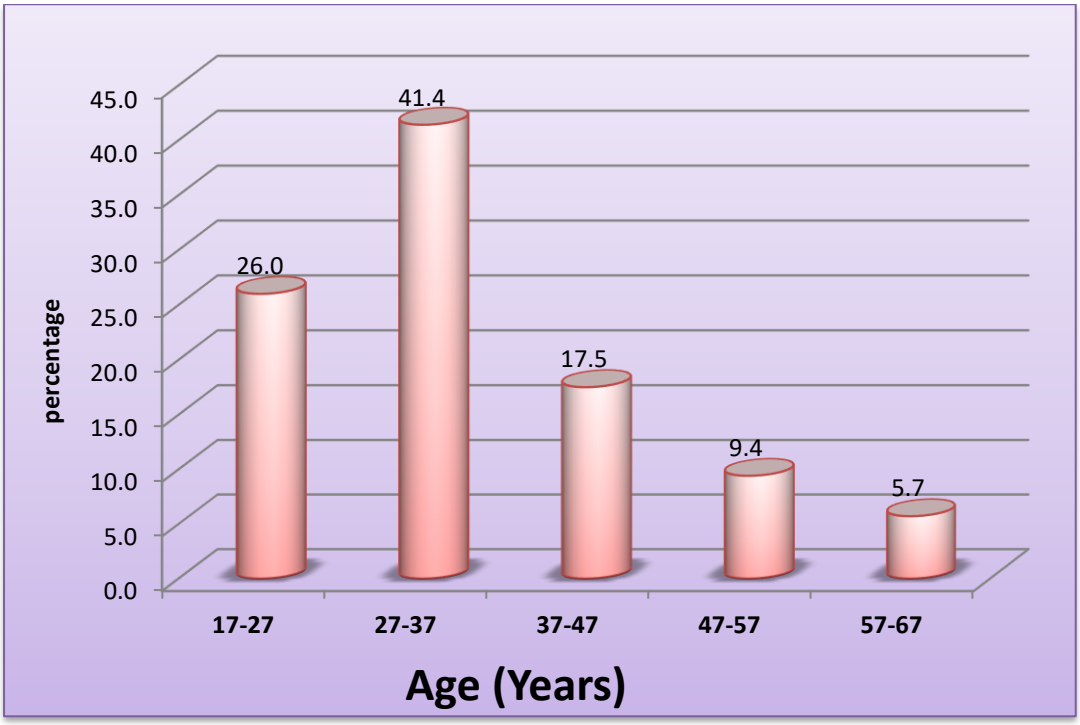
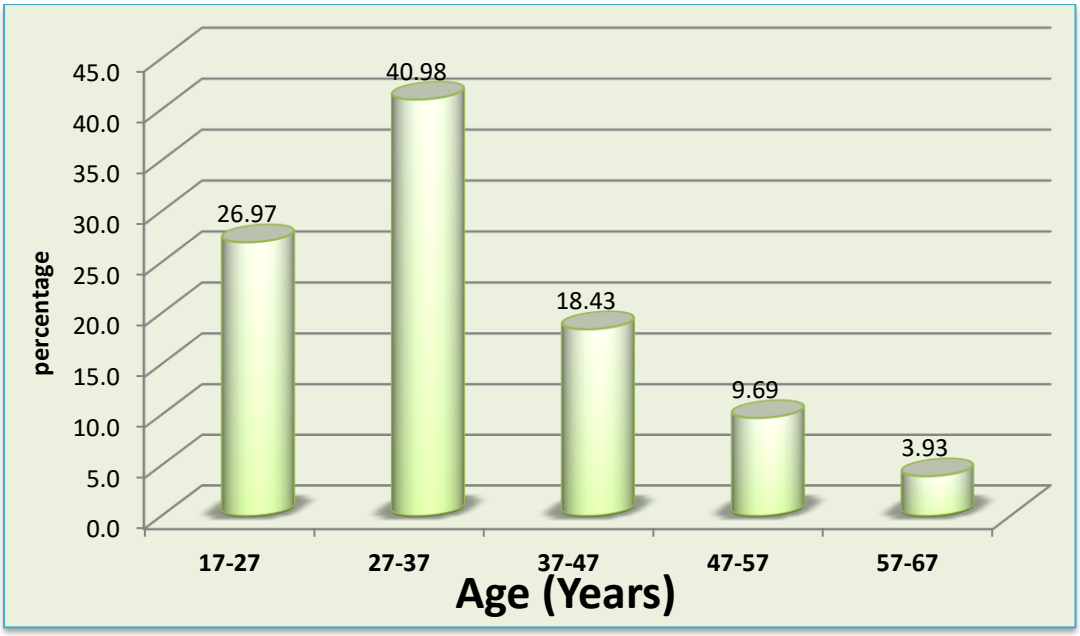
TABLES and GRAPHS:

Table 1: Distribution Of Impacted Tooth According To Age.

Age (in years)	Total patients		Patients with impacted teeth	
	No of patients	%	No of patients	%
17-27	260	26.0	356	26.97
27-37	414	41.4	541	40.98
37-47	175	17.5	243	18.43
47-57	94	9.4	128	9.69
57-67	57	5.7	52	3.93
Total	**1000**	**100**	**1320**	**100**



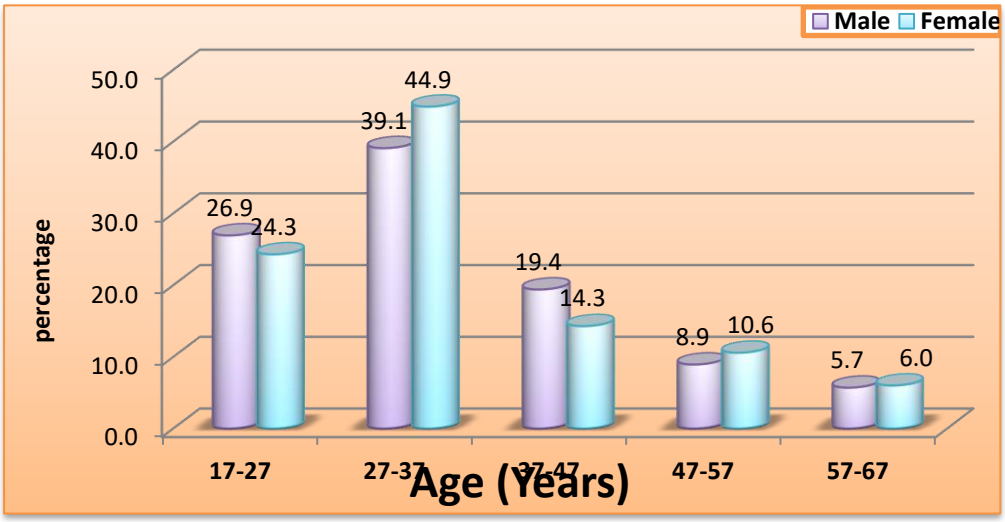
Graph 1: Distribution Of Patients According To Age.



Graph 2: Distribution Of Impacted Teeth According To Age.

Table 2: Distribution Of Male And Female Patients According To Age.

Age (in years)	Male		Female		p- value
	No of patients	%	No of patients	%	
17-27	175	26.92	85	24.29	0.000*
27-37	254	39.08	157	44.86	0.000*
37-47	126	19.38	50	14.29	0.00*
47-57	58	8.92	37	10.57	0.03*
57-67	37	5.69	21	6.00	0.03*
Total	650	65%	350	35%	0.000*

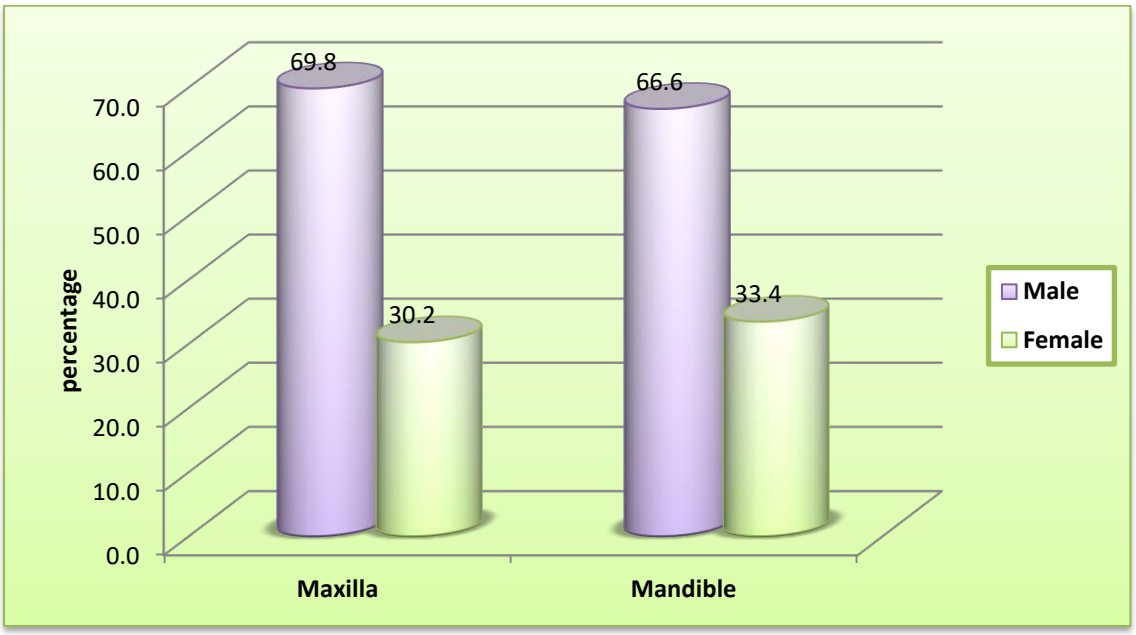


Graph3: Distribution Of Male And Female Patients According To Age.

Table 3: Distribution Of Impacted Teeth By Arch And Gender.

Number of impacted third molars	Maxilla		Mandible	
	No	%	No	%
Male	357	69.8	539	66.6
Female	153	30.2	271	33.4
Totals	510	100	810	100
Chi-square Value-	81.6		88.6	
p- value	0.000*		0.000*	

*p< 0.05 Consider statistically significant.

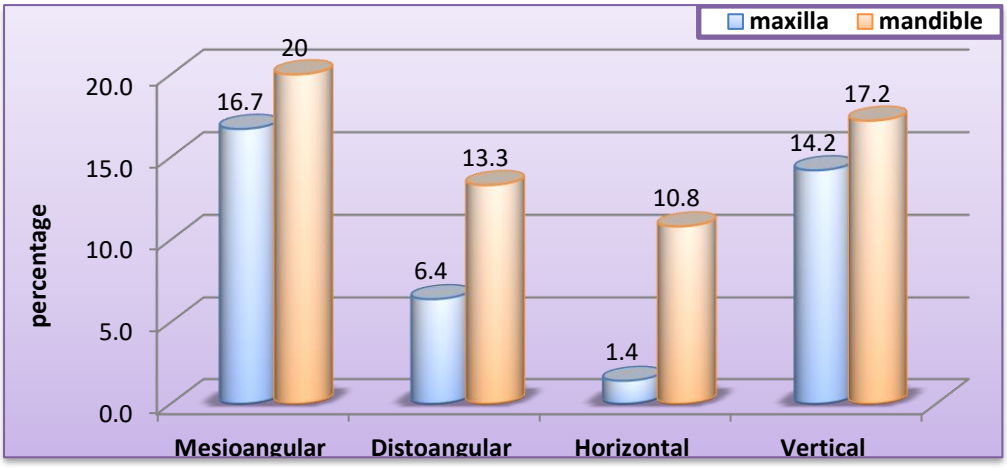


Graph 4: Distribution Of Impacted Teeth By Arch And Gender.

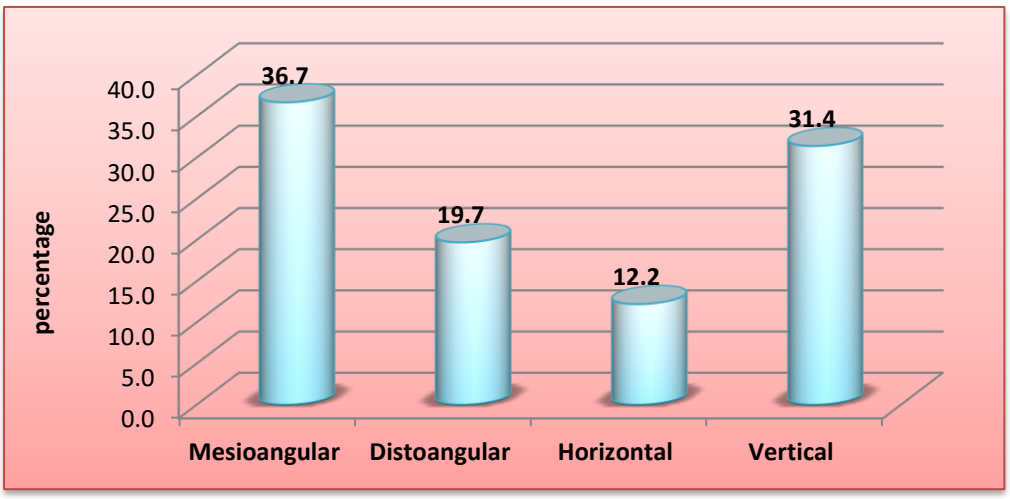
Table 4: Frequency Of Prevalence Of Type Of Impaction Of Third Molar In Both Jaws.

Type of impaction	maxilla		mandible		Total in both jaws		p-value
	No:	(%)	No:	(%)	No:	(%)	
Mesioangular	221	16.7	265	20.0	486	36.7	0.04*
Distoangular	84	6.4	177	13.3	261	19.7	0.000*
Horizontal	18	1.4	140	10.8	158	12.2	0.000*
Vertical	187	14.2	228	17.2	415	31.4	0.044*
Total	510	38.6	810	61.4	1320	100	0.000*

*p< 0.05 consider statistically significant.



Graph 5: Prevalence Of Type Of Impactions Of Third Molars.

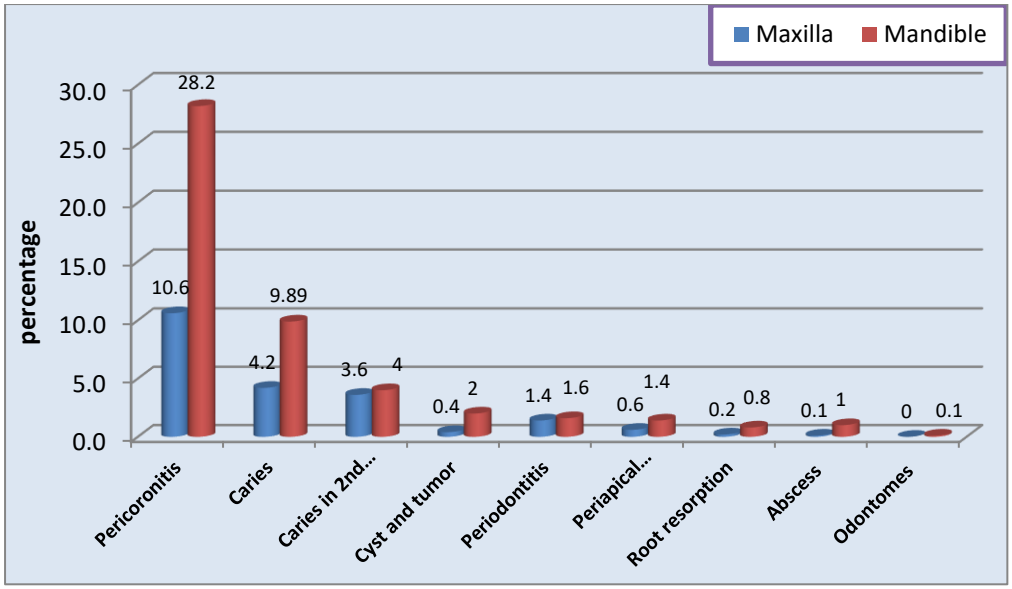


Graph 6: Prevalence Of Type Of Impactions Of Third Molars In Both Jaws.

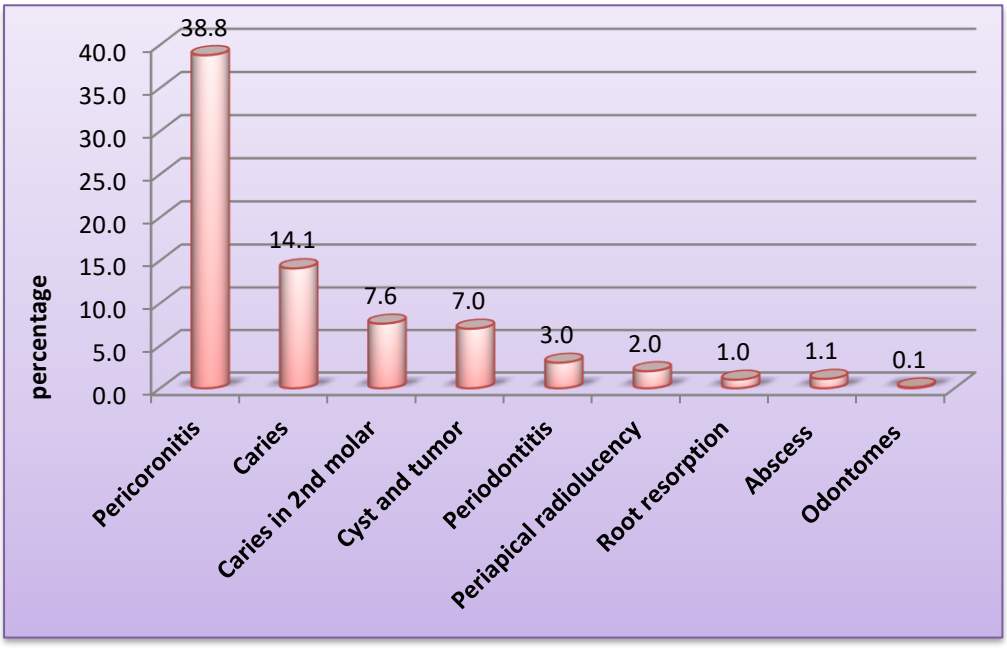
Table 5: Frequency Of Pathologic Condition Associated With Impacted Third Molar In Both Jaws.

Pathologic condition	Maxilla		Mandible		Total in both jaws		p-value
	No	(%)	No	(%)	No:	(%)	
Pericoronitis	140	10.6	372	28.2	512	38.8	0.000*
Caries	55	4.2	129	9.89	184	14.09	0.000*
Caries in 2nd molar	47	3.6	54	4.0	101	7.6	0.486
Cyst and tumor	5	0.4	26	2.0	31	7.0	0.000*
Periodontitis	18	1.4	21	1.6	38	3.0	0.630
Periapical radiolucency	8	0.6	18	1.4	26	2.0	0.049*
Root resorption	3	0.2	10	0.8	13	1.0	0.052
Abscess	1	0.1	13	1.0	14	1.1	0.001*

*p< 0.05 consider statistically significant.



Graph 7: Frequency Of Pathological Conditions Associated With Impacted Third Molars.



Graph 8: Frequency Of Pathologic Conditions Associated With Impacted Third Molars In Both Jaws.

FIGURES:

Figure 1: Armamentarium For Clinical Examination

Figure 4: Desktop For Radiological Procedure

Figure 2: Orthopantomogram Machine

Figure 5: Lead Apron

Figure 3: Armamentarium For Radiological Procedure