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Original Research Article

Prevalence of midline diastema according to race in Afghanistan

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ABSTRACT

Objective: The main aims of this study were to determine the prevalence of Midline Maxillary diastema according to three common races (Tajik, Pashtoon, and Hazara), sex, and type of dental arch among 999 OPD patients in National and Specialized Stomatology Hospital, Kabul-Afghanistan.
Materials and Methods: 999 patients in 15-30 years were selected by a systematic random sampling method during the seventh month. Patients were examined directly intra-orally, and information was collected by a single researcher, recorded on pre-prepared questioner forms, and then data analyzed by the SPSS.25 software.
Results: The result shows that the prevalence of maxillary midline diastema was 5.8%, that most of them were male 3.3% than females 2.3%. Frequency of midline diastema was more in Tajik race 6.5% than Pashtoon 5.5% and Hazara 3.6%. According to the arch form, midline diastema appearance was mostly detected in the Square arch form at 6.8% than the Ovoid 5.4% and Triangular 4.3%.

1. Introduction

In Greek, diastema means space, which defines as a space between two or more than two teeth.[1] It happens more in the upper arch midline between two central incisors; thus, it's called the central maxilla's diastema line. It's a crucial esthetic concern for most patients and their parents.[2] Diastema is shown as a part of natural growth in the mixed dentition period among the children. In most cases, it removes naturally by the natural progress toward maturity of the teeth; thus, it's possible to be continued by the existence of more space (more than 2 mm) or its related cases.[3] Edward Angle et al. (1907) define midline diastema as a current form of malocclusion determined by the distance between the upper and lower arches. He also describes the functions and esthetic prognosis of diastema. He said that diastema between teeth always makes an unpleasant appearance, and related to its width, it can disturb speech.[4] Also, Andrew (1972), in his classic topic (seven key of ideal occlusion) in fifth law, mentioned there should be no diastema between teeth. The contact area should be tight and support the patient with straight and cute teeth and ideal occlusion. Keene also describes the space more than 0.5mm between central maxillary teeth called midline maxillary diastema.[5] In some cultures, especially in Africa, in the past and the present, diastema or space between teeth was one of the cute factor, even some people with different ways make space between their teeth.

In France, call for them the chance teeth. In Australia, people believe that the children with space between their teeth can be rich people in the future.[6,7]

Diastema can be real or unreal. The unreal diastema occurs in the displacement stage of temporary teeth with permanent teeth. Often it modifies spontaneously. The real diastema can appear after the displace mentation of temporary teeth with permanent teeth; it can't change spontaneously; in this case, it needs to treat.

Midline diastema in the maxilla is one of the significant problems of beauty. People worldwide and even in third

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world countries like Afghanistan, who have been suffering from war and poverty for many years, care about their appearance. However, the number of such people is still minimal, but their number is increasing with increasing knowledge and awareness. Unfortunately, due to lack of facilities, scientific resources, and economic problems, there are no evidence-based studies in Afghanistan about the prevalence of maxillary midline diastema, so as a first step, this study was carried out at the National and Specialized Stomatology Hospital, the only specialized center in Afghanistan that It has 200 to 300 OPD patients every day and about 30 to 50 specialists graduate from the specialty program annually. In this hospital, the departments of maxillofacial surgery, periodontology, pediatric dentistry, orthodontics, and prosthodontics are active.

Most popular causes of midline diastema described in following:

1. Space between central teeth in permanent dentition before the canine teeth' eruption is occasionally possible, modifying after the canine eruption.[8] (if it is not more than 2mm).
2. Lack of correspondence and miso-distal dimension of teeth due to increased dental arch length and tooth material lack can damage these proportions and cases diastema. We can point to Microdontia, Macrognathia, and tooth missing and tooth extraction.[9]
3. Up normal attachment frenulum or thick and massive labial frenulum can case the midline maxillary diastema; this kind of frenulum avoids the central teeth connection with each other due to the existence of fibrotic connective tissue between two central teeth.[10]
4. Pressure habits like thumb sucking, tongue trust can lead to midline diastema. These patients usually have general spacing in anterior teeth with anterior teeth proclination.
5. The existence of hard and soft tissue pathologies some time can lead to midline diastema. The presence of tumors, odontoma, and the un eruption mesodense between the roots of two central teeth can lead to this condition.
6. Iatrogenic.

Hereditary and race can lead to occur the midline maxillary diastema, even though its reported the high number of incidence midline maxillary diastema in the black race.[1]

2. Methods and Materials

This descriptive study was carried out in the OPD department of National and Specialized Hospital, Kabul-Afghanistan, on the 999 patients. The sampling method was systematic random sampling. 999 OPD patients were randomly selected during the seventh month. After carefully direct intra-oral examination of 999 patients with a single researcher, on the dental unit, with adequate light and a dental examination kit and direct vision, the data was conveying to the pre-prepared questionnaire. In the intra-oral examination, the existence of maxillary midline diastema and arch form was detected. The questionnaires' collected data was added to the coding paper and then to the SPSS.25 software and analyzed.

2.1. Inclusion criteria

1. No any restorative treatment done before on the anterior maxilla.
2. No any orthodontic treatment done before.
3. Patient with sound tooth specially in the anterior maxillary segment.
4. Patients between the ages of 15-30 years.
5. Existence of anterior teeth in the maxilla

2.2. Exclusion criteria

1. Patients less than 15 and 30 years old.
2. Patients who have had received orthodontics treatment before.
3. Patient with missing of maxillary teeth in esthetic zone.
4. Patient with restorative treatment in esthetic zone.

3. Results

Among 999 OPD patient of National and Specialized Stomatology Hospital, between the range of 15-30 years old from during seventh month from 10/4/2019 to 10/11/2019 on determining prevalence of maxillary midline diastema, and it's related to race, sex, and type of dental arch form, the following results were found that described.

In Figure 1, the prevalence of maxillary midline diastema was described. It shows which the prevalence of midline maxillary diastema was 5.8 % in all subjects.

Relation of maxillary midline diastema according to prevalence with its percentage are described. In this study found that in male was 3.3% a little more than female, was 2.5%.

Maxillary midline diastema is more frequent in male than female.

The being of midline maxillary midline diastema and its relation to three common races (Tajik, Pashtoon, Hazara) are described. It shows which diastema more exist in Tajik race than Hazara and Pashtoon.

Table 1: Maxillary midline diastema according to individual race

Number	Race	Numbers of all cases	Midline diastema cases	Percentage
1	Tajik	562	37	6.5%
2	Pashtoon	218	12	5.5%
3	Hazara	218	8	3.6%

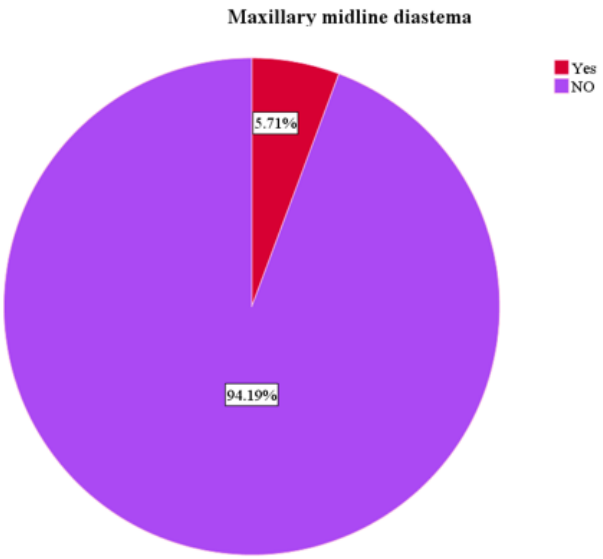

Fig. 1: Prevalence of maxillary midline diastema

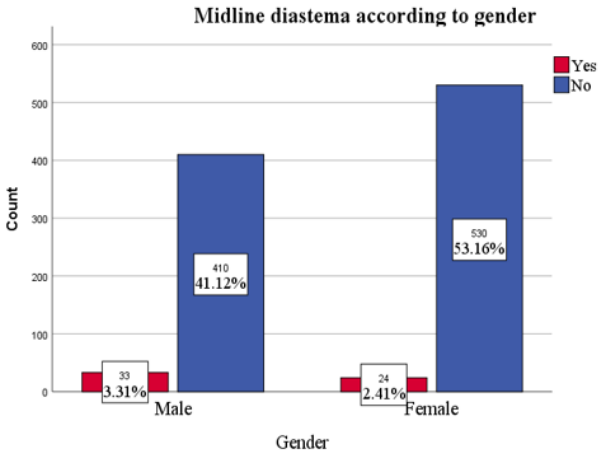

Fig. 2: Midlinediastema according to gender

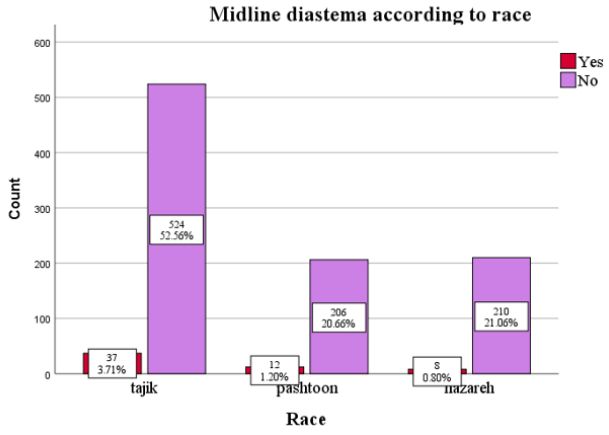

Fig. 3: Midline diastema according to race

In Tajik race among 562 subjects in 37 case was exist midline diastema about (6.5%). In Pashtoon race among 218 subjects in 12 case was exist midline diastema about (5.5%) and in Hazara race among 218 subjects in 8 case was exist midline diastema about (3.6%).

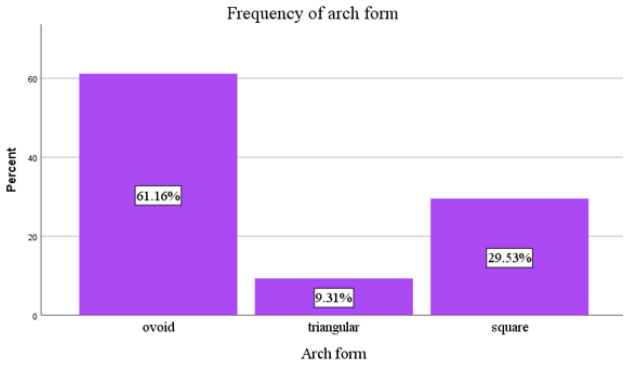

Fig. 4: Frequency of arch form

This figure described diastema and its relation to dental arch form. It shows that most frequent arch form is ovoid than square and triangular.

Table 2: Maxillary midline diastema according to each arch form

Number	Type	All cases	Midline diastema	Percentage
1	Ovoid	611	33	5.4%
2	Square	295	40	6.8%
3	Triangular	93	4	4.3%

Ovoid type of dental arch among 611 subjects was exist in 33 case about (5.4%), Square type of dental arch among 295 subjects was exist in 40 case about (6.8%), Triangular type of dental arch among 93 subjects was exist in 4 case about (4.3%).

4. Discussion

From the above study, it is concluded that the incidence of maxillary midline diastema is found to be about 5.8%. The result which is found from this study is approximately similar to the other countries researches results. In a study done by Weymen (1967), 5-3% and Gardiner (1987), 7% reported.[11,12] In this study, the existence of midline maxillary diastema in males was 3.3%, a little more than female, in females was 2.5%, which is close to the other countries reports. In a study about midline maxillary diastema in Baqdad city of Iraq in 2013, 40% in males and 16% in females exist midline maxillary diastema.[13–15] In another research in Taichung city of Tiland in 2012, the incidence of diastema in males was more than female.[16]

About the existence of midline maxillary diastema and its relation to three races (Tajik, Pashtun, Hazara), the result

shows that diastema in the Tajik race 65.52% was more than Hazara 13.79% and Pshaton 20.69% existed.

results of this study shows that, maxillary midline diastema in oval arch 3.4% was more than square arch 2% and triangle 0.40%. In a study done about dental arch morphology in School of dentistry of Piracicaba in 2011 among 51 subjects (21/male and 30/female) between 15-19 ages and Caucasian race, the following results found very similar to the finding results in this study.[17]

Table 3: Arch form incidence in School of dentistry of Piracicaba

Arch form	Incidence percentage
Oval	41%
Square	39%
Tapered	20%

The research which is done about dental arch morphology in School of dentistry of Piracicaba in 2011.[17]

5. Conclusion

From 1000 OPD patients in Kabul Stomatology hospital, only 5.8% had midline maxillary diastema, while 94.20%were normal means without midline maxillary diastema. Which the incidence was more in male, Tajik race, and oval dental arch.

6. Suggestion

1. Increase the information level and awareness of the people about dental and jaws abnormalities by the social media.
2. Increase the people trust to the medical staff
3. More research about dental malocclusion
4. Holding the conference and symposium for knowing the cases of midline maxillary diastema and its treatment.

7. Source of Funding

None.

8. Conflict of Interest

None.

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