

## **THE OVERVIEW OF MAXILLARY AND MANDIBULARY MESIODISTAL TEETH SIZE OF MEN AND WOMEN ON BANJARNESE PEOPLE**

**Irnamanda DH, Diana Wibowo, Okky Malinda. M**

The Faculty of Dentistry, Lambung Mangkurat University, Banjarmasin

### **ABSTRACT**

**Background:** Malocclusion is a deviation from normal occlusion therefore, it needs an orthodontic treatment plan. Mesiodistal tooth widths can help provide information before the treatment in dentistry. Variation of dental mesiodistal width is caused by factors of race, genetics, ethnicity, gender, environmental and disease. **Purpose:** This research aimed at getting an overview of dental mesiodistal size of the maxilla and mandibula in men and women Banjarnese population. **Methods:** This research was a descriptive using a cross-sectional design. The sampling method used purposive sampling technique. The samples amounted to 40 women and 40 men in banjarnese population with age range between 17 - 22 years. Measurement dental mesiodistal size was done by using digital caliper. **Result:** The result showed the average size of dental mesiodistal maxilla and mandibular in men was larger than size in women of Banjarnese population. **Conclusion:** It can be concluded that the average size dental mesiodistal maxilla and mandible in men was larger than size in women of Banjarnese population.

**Keywords:** Dental mesiodistal size, banjarnese population

**Korespondensi:** Irnamanda DH, Dentistry Program, Medical Faculty Lambung Mangkurat University, Jl. Veteran 128B, Banjarmasin 70249, South Kalimantan, e-mail:irnamanda@gmail.com

### **INTRODUCTION**

The widths of tooth mesiodistal varied between individuals and populations. The mesiodistal tooth widths measurement variance is caused by several factors, such as race, genetic, ethnic group, sex, environment, and diseases. Mesiodistal tooth widths size is one accurate data to provide information for the diagnosis as well as information prior to dental treatment, especially orthodontics, conservative dentistry, and prosthodontics. Mesiodistal tooth widths size is also a diagnostic tool to predict the outcome of treatment and as a comparator to determine an anomaly. The exact relationship of the maxillary teeth mesiodistal width, with the mandibular teeth mesiodistal width, will support optimal occlusion.<sup>1,2</sup>

According to Singh and Gopal (2006) research on North India children, the maxillary and mandibular mesiodistal tooth crown width on boys, were wider than those of girls. In Indonesia, research on Madura and Java ethnic group showed

that mesiodistal tooth on boys were wider than that of girls.<sup>2,3,4</sup> Knowledge of the mesiodistal tooth width in any population is required for dental treatment, such as Pont index, Bolton analysis, Linders method, and Korkhaus method. For example, in dental restoration, where teeth restored as closely as possible, the knowledge of mesiodistal tooth width were required. In orthodontics treatment, one of the methods that frequently used is the Bolton analysis.<sup>5,6</sup> The mesiodistal teeth width measurement can be determined by measuring the maximum distance between mesial and distal teeth contact point on the interproximal surface, or by measuring the teeth contact point between adjacent teeth using caliper with a sharp edge, and has precision of two decimal place.<sup>5,6</sup>

### **MATERIALS AND METHODS**

This research is a descriptive study which is conducted with a cross sectional method to get an overview of the maxillary and mandibular teeth mesiodistal width size of both Banjarnese men and

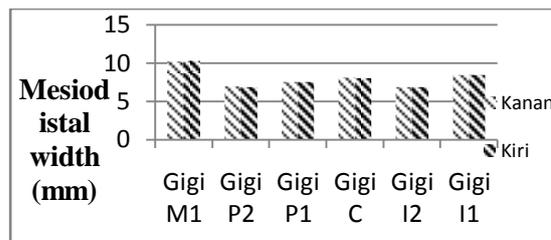
women. This study used a purposive sampling technique, where the sampling is based on a predetermined criteria, whether the criteria is inclusion or exclusion criteria. The tools used in this study are spatula, rubber bowl, maxillary and mandibular impression tray, dental mirror, and digital caliper. The material used in this study are informed consent, alginate, type 3 gypsum, and water. This study begins with a preparation stage, that is filling out a form of consent impressing approval of a person to be the subject of research. Then, proceed with the sampling rate of Banjarnese people that met the inclusion and exclusion criteria.

Study then continued with the impression stage. Before impression conducted, researchers allow the subject to sit and relax with mandibular position parallel to the floor, then researchers chose appropriate impression tray that matched the size and shape of the maxilla and mandibula of the subject. After the impression tray that matched the maxilla and mandibula of the subject has been acquired, then researchers mix the impression material with the ratio of powder and water, in accordance with the manufacturer’s instruction until it is homogeneous, and then fill the mixed impression material into the maxillary impression tray, then do the impression on the subject’s maxilla. Once it is done, then we do the similar procedure to the subject’s mandibula.

The study then continued with the casting stage, that is mixing the type 3 gypsum with water and mix the mixture until it is homogeneous, then pour the homogeneous gypsum mixture into the negative dental impression in impression tray while tapping to prevent trapped air bubbles, causing in porous casting results. After that, we wait for about 15 minutes until the gypsum sets. After the gypsum sets, then we conduct the measurement stage. Measurement performed on the maxilla and mandibula dental models using digital caliper. The mesiodistal measurement performed by measuring the maximum distance between mesial and distal teeth contact point on the interproximal surface, or by measuring the teeth contact point between adjacent teeth. To obtain a reliable results, then measurement is performed with two different measurement tools or inter-observer reliability on the same time.

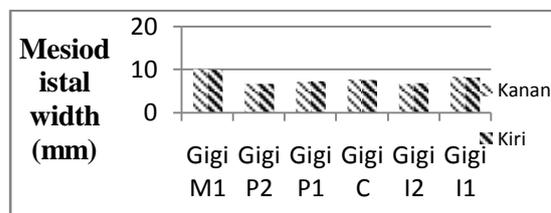
**RESULTS**

The results of this research is described in the graphics 1- 4 below.



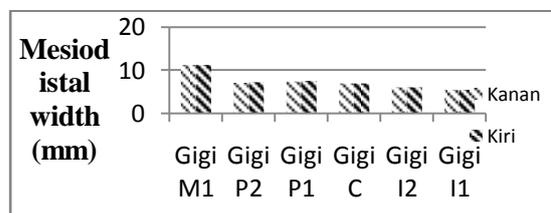
Graphic 1 Mesiodistal maxillary teeth size average in the left and right regions of Banjarnese men

Graphic 1 indicates that on men’s maxillary teeth, there are large differences of mesiodistal size on each teeth between right and left regions. In the first maxillary incisors, the difference between right and left regions is 0,05 mm. In the second maxillary incisive, there is no size difference between right and left regions. In maxillary canine, the size difference is 0,06 mm, first maxillary premolar 0,01 mm, second maxillary premolar 0,07 mm, and first maxillary molar 0,1 mm.



Graphic 2 Mesiodistal maxillary teeth size average in the left and right regions of Banjarnese women

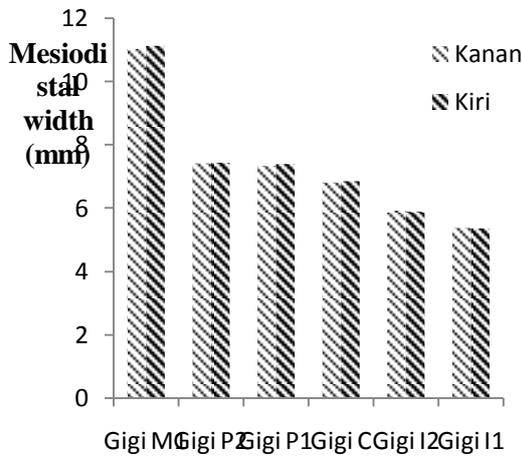
Graphic 2 indicates that on women’s maxillary teeth, there are large differences of mesiodistal size on each teeth between right and left regions. In the first maxillary incisors, the difference between right and left regions is 0,07 mm, second maxillary incisive 0,1 mm, maxillary canine 0,13 mm, first maxillary premolar 0,1 mm, second maxillary premolar 0,13 mm, and first maxillary molar 0,07 mm.



Graphic 3 Mesiodistal mandibular teeth size average in the left and right regions of Banjarnese men

Graphic 3 indicates that on men’s mandibular teeth, there are large differences of mesiodistal size on each teeth between right and left regions. In the first mandibular incisors, the difference between right and left regions is 0,03 mm, second mandibular incisive 0,01 mm, mandibular canine 0,02 mm, first mandibular

premolar 0,12 mm, second mandibulary premolar 0,09 mm, and first mandibulary molar 0,03 mm.



Graphic 4 Mesiodistal mandibulary teeth size average in the left and right regions of Banjarnese women

Graphic 4 indicates that on women’s mandibulary teeth, there are large differences of mesiodistal size on each teeth between right and left regions. In the first mandibulary incisors, the difference between right and left regions is 0,02 mm, second mandibulary incivise 0,04 mm, mandibulary canine 0,05 mm, first mandibulary premolar 0,06 mm, second mandibulary premolar 0,02 mm, and first mandibulary molar 0,09 mm.

**DISCUSSION**

Gunaid’s study in 2012 reported that the phase of young permanent teeth was the picked phase to obtain an accurate teeth measurement. In this phase, there were slight damages and attritions on each teeth. For that reason, the age range of samples in this study is between 17-22 years old. This is as an attempt in reducing the impact of several factors in actual tooth measurement.8

It has been mentioned before, that there were some factors that can affect mesiodistal teeth size, such as : genetical factor (supported by Dewanto (1993)’s study), race factor (supported by Lavelle and Smith’s study on white, yellow, and black races, and Herniyati (2005)’s study on Caucasian with Batak and Malay, and between Caucasian and Javanese. There were other factors such as sex, environmental factor, ethnic tribe factor, and disease factor. 7,9,10

Based on the table 5 and 6, weknow that mesiodistal teeth width in men’s maxillary and mandibulary were wider than those in women. It indicated that sex was one of the factors that affect mesiodistal teeth size. Besides all of the factors mentioned before, it also can be caused by long

amelogenesis process period on desidui and permanent tooth in men. From the above results we know that, mesiodistal size on each maxillary and mandibulary teeth in Banjarnese men and women, has only little differences between right and left regions. The differences between right and left regions in maxillary and mandibulary of men and women were about 0.01 mm – 0.13 mm. This result is supported by Gunaid’s study (2012) which stated that there were no findings of significant differences in right and left mesiodistal teeth width size. 3,8,10

Swasono S (2004) study on Madura and Javanese, obtained results that mesiodistal tooth width on boys were significantly wider than girls. This is consistent with this research which stated that maxillary and mandibulary mesiodistal teeth size on Banjarnese men, were wider than those on women. This dissimilarity is also seen in the number of mesiodistal teeth width size, which the average mesiodistal teeth width size number on men, exceeded the average mesiodistal teeth width size number on women, about 1.16 mm on maxillary and 0.14 mm on mandibulary. This dissimilarity in the mesiodistal tooth size number is suitable with Gunaid (2012) study on Yemeni Arab population which stated that there are considerable differences between the number of maxillary and mandibulary mesiodistal teeth size on men and women. 4,8

Based on the table 1 – 6, the mesiodistal width measurement on each teeth in men and women had differences in 1st incisors, 2nd incisors, canine, 1st premolar, 2nd premolar, and 1st molar. This is consistent with Ueta (1984) study which stated that there are differences on incisors mesiodistal width between men and women. Previous studies conducted by Bishara et al (1994) in Iowa, also found that the average number of maxillary mesiodistal incisors of men were wider than women. Gaidyte et al (2003) study on 37 men and 71 women (65.7% samples dominated by women) in Kaunas University of Medicine, found that anterior teeth number of men were higher than women. 11,12,13

The study of mesiodistal teeth size needs to be conducted. It shows the fact that the data of shape and size of teeth were needed to support services in the field of dentistry, particularly in supporting diagnosis and malocclusion treatment, which requires an orthodontic treatment planning. The results of this study showed that mesiodistal width size on each teeth either maxillary or mandibulary on Banjarnese men were wider than women. It is expected that the results of this study, can be used as an initial data about mesiodistal teeth size of men and women representing Banjarnese population, which later on this data can also be used as a references to determine the change and genetical variation in the population.

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