CHAPTER I

INTRODUCTION

1.1 Research Background

An impacted tooth is defined as a tooth that is embedded in the alveolar ridge so that its eruption is prevented or the tooth is locked in position by bone or the adjacent teeth. Based on a study, mandibular second premolars rank third in the frequency of impaction whereas permanent molars and maxillary permanent canines are in first and second rank respectively. The prevalence of impacted premolars according to age were identified. The overall prevalence in adults has been reported to be 0.5% (for maxillary premolars, the range is 0.1% to 0.3% meanwhile for mandibular premolars the range is 0.2% to 0.3%). (McNamara & McNamara, 2006).

In another research, it is said that a tooth that is blocked from erupting into the mouth in a normal condition is called impacted. However, a tooth may only be partially impacted, which means it can only erupt partially into the mouth, or completely impacted, which is totally covered by bone and not likely to erupt. (The American Association of Oral and Maxillofacial Surgeons, 2007).

In a research, the primary etiology of impacted tooth are genetics, endocrinologic deficiency, irradiation, palatal clefts, developmental abnormalities of germs, supernumerary tooth or tooth fragments, dento-maxillary disharmony, late or missing root development, growth disharmony between pre-maxilla and
maxilla, maxillary brachygnatia, transversal growth deficiency of the anterior maxilla. (Bourzgui, Sebbar, Abidine, & Bentahar, 2003).

As for the secondary etiology, such as loss of guidance of the lateral incisor, trauma, premature extraction causing space problems by mesialisation of the anterior sector (after extraction of the second deciduous molar, second mandibular premolar moving mesially), root malformation, pericoronary pathology, ectopic germ position, thick fibrous tissue, mesio-distal dimension of the nasal fossae, unerupted canine at the borderline of a palatal cleft. (Bourzgui et al., 2003).

The fact that in Indonesia no research has been done on the prevalence of impacted mandibular premolars has attracted the author’s interest to do this research at RSGM UNPAD.

1.2 Problem Identification

Based on the background that has been explained above, it can be concluded that: How is the prevalence of impacted mandibular premolar by using panoramic radiograph di RSGM UNPAD.

1.3 Aims of Research

The aim and objective of this research is to observe the prevalence of impacted mandibular premolar by using panoramic radiograph in RSGM UNPAD.

1.4 Research Benefit
The theoretical benefit of this research as an additional information which could be used in future references of dentist or general practitioners in Rumah Sakit Gigi dan Mulut and Fakultas Kedokteran Gigi Universitas Padjadjaran on the prevalence of impacted mandibular second premolar on patients.

The practical benefit from this research is that the dentist or general practitioners could identify the prevalence of impacted mandibular premolar where it could be very helpful for the dentists to provide such service for attending cases that are related to the subject above.

1.5 Conceptual Framework

A study said that premolar impactions occur because of local factors such as mesial drift of teeth arising from premature loss of primary molars, displaced position of the developing premolar tooth buds, or pathology such as inflammatory or follicular cysts. (McNamara & McNamara, 2006). They may also be associated with over-retained or infraocclusal ankylosed primary molars or with syndromes such as cleidocranial dystosis (McNamara & McNamara, 2006). From some resource, it is said that tooth impaction is a result of a lack of space in the mouth. (The American Association of Oral and Maxillofacial Surgeons, 2007).

Tooth impaction can affect variety of problems, from severe orofacial pain, acute dysphagia, facial cellulitis to serious dental disorders. (Shiv Kumar & Shiv Kumar, 2010). Other than that, tooth impaction can also cause pain, infection, crowding or damage to adjacent teeth, and contribute to more significant health problems. For example, the sac that surrounds an impacted tooth may become cystic and fill with fluid that allows it to enlarge, causing damage to adjacent tissues such as the adjacent teeth, jawbone and other structures. Occasionally, a tumor may develop from the tissues surrounding the impacted tooth requiring a more involved surgical procedure to treat it. (The American Association of Oral and Maxillofacial Surgeons, 2007).
According to a study, the frequency of impaction of permanent teeth can be distributed as follows; lower third molars, upper third molars, upper canines, upper and lower premolars, upper incisors, lower canines, lower incisors, upper and lower first molars and upper and lower second molars. (Bourzgui et al., 2003).

Dental panoramic is also called as orthopantomogram (OPT). The OPT have many advantages such as large areas of the jaws that can be visualized with panoramics. This makes these radiographs valuable for detecting impacted or supernumerary teeth, developing teeth in children, large pathologic lesions in the jaws, and abnormalities in adjacent structures such as the maxillary sinuses and soft tissues of the neck. (Geist, 2001).

Furthermore, panoramic imaging can also delivers outstandingly low radiation but effective doses to many parts of the body, such as the bone marrow and thyroid gland, than full-mouth intraoral radiography. Other than that, patients do not have to open the jaws, so panoramics can be performed for patients with trismus. (Geist, 2001).

Whereas for periapical radiograph, the positioning of the film packet is very uncomfortable for the patient, often causing gagging. Secondly, for inexperienced operators, it is very difficult to position the holders within the mouth. Lastly, sometimes the anatomy of the mouth makes the periapical technique impossible to be used. (Whaites, 2013). Therefore in this research, the author will be using dental panoramic X-ray.

1.6 Location and Time of Research

The location of study is at RSGM UNPAD and the research is conducted from October 2014 to March 2015.