CHAPTER I
INTRODUCTION

1.1 Research Background

Oral hygiene has been widely acclaimed and endorsed as an important preventive practice which assures better dental health (Marsh, 2004). Usually, the practitioner or health care workers evaluate one’s oral hygiene by measuring the existence of dental plaque in oral cavity (Theilade, 2000). Dental bacterial plaque is a biofilm that adheres tenaciously to tooth surfaces, restorations, and prosthetic appliances (Marsh, 2004). Many visit their dentists at regular intervals for removal of dental plaque or hardened deposits-calculus on teeth when dislodgement by tooth brushing is impossible (Marsh, 2004).

It has been well documented that mechanical plaque removal is essential in the prevention of dental caries and diseases such as gingivitis and periodontitis (Loesche, 2011). Recent evidence shows that approximately 47% of adults in the United States aged 30 years and older suffer from periodontal diseases, while 70% of individuals aged 65 and older also suffer from the same disease (Nightingale et al., 2014). Since dental and periodontal problems are usually linked to the oral hygiene performance of individuals, tooth-brushing is obviously important (Özgöz et al., 2010).

According to dental health care research, tooth-brushing is the simplest and most effective way to meet oral-hygiene requirements for removing bacterial plaque from tooth surfaces (Kadkhodazadeh, 2012). Although manual tooth
brushing can be extremely effective in removing dental plaque for the appropriate amount of time, but the majority of the population does not properly master the correct tooth brushing technique (Addy, 2005). Studies emphasized that brushing method, frequency, duration, level of access, applied power and experience create precious differences in the removal of plaque (Boyd et al., 2012).

Psychologist reveals the removal of dental plaque to maintain oral hygiene in each individual may also depend upon the manual dexterity and cognitive ability of individuals (Williams, 2004). Statistically revealed, given a 10% occurrence of left handedness over total six billion people in the world populations, and 90% remaining are right handers. Men are reported slightly more likely than women to be left-handed. Hand preference was stated as one of the most important parameters affecting cognitive abilities and proficiency (Orbak, 2007). Grossman et al., 2011, stated that effective plaque control of the primary dentition can be particularly difficult to achieve because of problems with motivation and manual dexterity in some children. It has been reported that right-handed medical students performed better with either hand in terms of error rate and first-time accuracy compared with left-handed ones for endoscopic manipulation (Hanna et al., 1997).

Firas and Hayder, stated in their journal, left handed group had better skills to manipulate with tooth brushing than right handed group, each group separately showed better skills to manipulate with tooth brushing and good oral hygiene in the side other than the side of the dominant hand. The result of study showed that the means of plaque index were elevated in right handed students 1.184±0.529 compared with left handed students 0.874±0.596. (Hashim, 2010).
A controversial result was carried out by another researcher Binali, on effect of right or left handedness on caries experience and oral hygiene, the mean of the oral hygiene index was lower for right-handed subjects than those for left handers and the difference was statistically significant. The right handed individuals was stated that having a better oral hygiene and the lower incidence of caries because of their better manual dexterity and brush efficiency (Cakur et al., 2011).

Through the most of the studying above, the results still remains controversial between these two different groups in removing dental plaque. But, something interesting, statistically proved that, the left handers has better ability to access the right quadrants of the mouth to perform oral hygiene procedures, whereas right handers are more successful in plaque control of the left quadrants.

Although many research has been conducted by other researchers on the effects of handedness associated with their oral hygiene condition, up to date there has been no surveys conducted to determine the effects of handedness towards plaque removal ability by introducing a tooth brushing technique in Indonesia. Hence, based on the statements above, the author is interested in studying the relationship between handedness, brushing technique and oral hygiene conditions by obtaining the plaque index among the Malaysians in Dentistry, UNPAD.

1.2 Problem Identification

Based on the overview of the background, the author wants to know how handedness affect the plaque removal ability among the Malaysian dentistry students in Padjadjaran University (UNPAD).
1.3 Research Purpose

To evaluate the oral hygiene condition of left and right handed Malaysian dentistry students in UNPAD.

1.4 Research Benefits

The benefits of this study are:

1. Provide useful information about oral hygiene conditions when brushing teeth using the dominant hand and for the knowledge of plaque control.
2. Provide useful information for the researcher.

1.5 Conceptual Framework

Oral hygiene is the key factor to maintaining good oral health, which is the ability to maintain a clean mouth, free of plaque, and calculus by daily oral self-care or, when necessary provided by a caregiver (Darby and Walsh, 2010). According to Oral Health U.S. 2002 Annual Report, there is a strong positive association between poor oral hygiene and gum disease, making poor oral hygiene the primary etiologic agent. The level of oral hygiene is usually determined by summing up the level of plaque on the tooth surface.

As plaque is an indicator to evaluate individual’s oral hygiene, therefore, plaque level on tooth surface can be scored by plaque index. Plaque index is an assessment tool used to evaluate the status of oral hygiene by measuring dental plaque that occurs on the tooth surfaces or areas adjacent to the gingival margin.
There are several types of plaque index, as an example, Turesky-Modified Quigley-Hein Plaque Index records the amount of debris found on the buccal and lingual surfaces of the following teeth. It is easy to be used with simple criteria, and examination can be done quickly with high accuracy (Hancocks, 2011).

Since there is an indisputable relationship between plaque scores and oral hygiene, therefore, removal of plaque by regular tooth brushing is the most important part of a dental health regimen. Plaque can be controlled by regular tooth brushing and cleaning between teeth by flossing (Carranza and Newman, 2002). In several prophylactic methods, brushing is the most important action to maintain a good oral health with minimum plaque accumulations. The mechanical removal of dental plaque is achieved primarily through direct contact of the toothbrushes with teeth and gingiva together with the scouring action of the toothbrush filaments (Addy, 2005).

Correct tooth brushing technique is important because excessive force may be linked with gingival trauma such as the occurrence of gingival recession. The Australian Dental Association report suggests around two out of every three people apply too much pressure when brushing their teeth, which can cause receding gums. The ideal brushing technique is the one that allows complete plaque removal in the least possible time, without causing any damage to the tissues (Jepsen, 2010). Brushing teeth with oscillating, rotating (with or without pulsating action) mode of action have been shown to be more effective in removing plaque and improving gingival outcomes. Various studies showed that most individuals only remove about 40% to 50% of plaque by tooth brushing.
The results of the studies indicate that most subjects are not effective brushers even though they brush every day (Jepsen, 2010).

Rolling tooth-brushing technique is a very simple tooth brushing technique which does not need much practicing, and is suggested in this study as a prophylactic oral hygiene instruction. It is designed to give the teeth an overall thorough cleaning and remove plaque in addition to stimulating gingival tissue (Wilkins, 1999). Frandsen suggested that the outcome of tooth brushing is not dependent only on brushing technique but the design of the brush, the used of toothpaste and dental aiding tools, the frequency and duration of brushing, the skill of the individual using the brush by habitual hand also considered under crucial factors in plaque removing (Frandsen, 2000).

Brushing efficiency is directly related to an individuals' manual dexterity (Cakur et al., 2011). Handedness in human dexterity define as preferred hand which the hand that is more precise for manual tasks. It is always controversial between these two different groups in skills to manipulate with tooth brushing by dominant hand (Tezel, 2001). Most studied conclude that, left handers are more expert in removal of plaque. This better oral hygiene of the left-handed individuals is compatible with optimal gingival health and may be in relation with their psychomotor functions (Tezel, 2001). Dentists usually encourage their patients for using both hands during application of oral hygiene procedures to prevent negative effects derived from only right or left hand use (Ozden, 2011).

Therefore, from the statement above, author realise that there is a correlation between plaque removal and handedness.
1.6 Research Methodology

Type of this research is descriptive survey approach by cross-sectional study. Technique of selecting sample used is purposive sampling method. The target population will be the Malaysian students in Dentistry, UNPAD by direct observation of relevant student.

1.7 Location and Time of Research

The location of the study will be held on February 2015 to April 2015 at Faculty of Dentistry, UNPAD.