คุณภาพชีวิตในมิติสุขภาพช่องปากและความพึงพอใจของผู้ป่วยต่อการรักษาทางทันตกรรมประดิษฐ์ ที่คณะทันตแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

นายปีย์เมธ บุญมีขาว

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต
สาขาวิชาทันตกรรมประดิษฐ์ ภาควิชาทันตกรรมประดิษฐ์
คณะทันตแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
ปีการศึกษา 2556

ORAL HEALTH-RELATED QUALITY OF LIFE AND PATIENT SATISFACTION TO THE PROSTHODONTIC TREATMENT AT FACULTY OF DENTISTRY, CHULALONGKORN UNIVERSITY

Mr. Peamate Boonmekhao

A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Science Program in Prosthodontics
Department of Prosthodontics
Faculty of Dentistry
Chulalongkorn University
Academic Year 2013

Thesis Title	ORAL HEALTH-RELATED QUALITY OF LIFE AND PATIENT SATISFACTION TO THE PROSTHODONTICS TREATMENT AT FACULTY OF DENTISTRY, CHULALONGKORN UNIVERSITY
By	Mr. Peamate Boonmekhao
Field of Study	Prosthodontics
Thesis Advisor	Associate Professor Mansuang Arksornnukit, Ph.D.
Thesis Co-Advisor	Assistant Professor Tewarit Somkotra, Ph.D.

Accepted by the Faculty of Dentistry, Chulalongkorn University in Partial Fulfillment of the Requirements for the Master's Degree

.....Dean of the Faculty of Dentistry

(Assistant Professor Suchit Poolthong, Ph.D.)

THESIS COMMITTEE

.....Chairman

(Wacharasak Tumrasvin, Ph.D.)

.....Thesis Advisor

(Associate Professor Mansuang Arksornnukit, Ph.D.)

.....Thesis Co-Advisor

(Assistant Professor Tewarit Somkotra, Ph.D.)

.....Examiner

(Assistant Professor Orapin Kaewplung, Ph.D.)

.....External Examiner

(Sutee Suksudaj, Ph.D.)

ปีย์เมธ บุญมีขาว : คุณภาพชีวิตในมิติสุขภาพช่องปากและความพึงพอใจของผู้ป่วยต่อการรักษาทางทันตกรรมประดิษฐ์ ที่คณะทันตแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย. (ORAL HEALTH-RELATED QUALITY OF LIFE AND PATIENT SATISFACTION TO THE PROSTHODONTIC TREATMENT AT FACULTY OF DENTISTRY, CHULALONGKORN UNIVERSITY) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: รศ. ทพ. ดร. แมนสรวง อักษรนุกิจ, อ.ที่ปรึกษาวิทยานิพนธ์ร่วม: ผศ. ทพ. ดร. เทวฤทธิ์ สมโคตร, 84 หน้า.

การศึกษาในครั้งนี้มีวัตถุประสงค์เพื่อศึกษาคุณภาพชีวิตในมิติสุขภาพช่องปาก ก่อนและหลังการรักษาทางทันตกรรมประดิษฐ์ ตลอดจนประเมินความพึงพอใจของผู้ป่วยภายหลังการรักษาในผู้ป่วยที่มารับบริการทางทันตกรรมประดิษฐ์ ที่คณะทันตแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย กลุ่มตัวอย่างเป็นผู้ป่วยจำนวน 664 ราย (เป็นผู้ป่วยที่คลินิกทันตกรรมระดับปริญญาบัณฑิต 467 รายและคลินิกบัณฑิตทันตกรรมประดิษฐ์ 197 ราย) มีช่วงอายุ 18-84 ปีและอายุเฉลี่ย 53.9±13.4 ปี ร้อยละ 45.5 ของกลุ่มตัวอย่างเป็นเพศชาย ผู้ป่วยถูกสัมภาษณ์แบบตัวต่อตัวโดยทันตแพทย์หนึ่งคนที่ผ่านการปรับมาตรฐานมาแล้ว ข้อมูลที่ถูกสัมภาษณ์ประกอบด้วยข้อมูลทั่วไป ประวัติทางการแพทย์-ทางทันตกรรมก่อนเริ่มการรักษา และคุณภาพชีวิตในมิติสุขภาพช่องปากโดยใช้ดัชนีโอไอดีพีประเมิน 3 ครั้ง คือ การเริ่มรักษาครั้งแรก การกลับมาตรวจครั้งแรกหลังจากใส่ฟันเทียม และครั้งสุดท้ายที่เสร็จสิ้นการรักษา นอกจากนี้ยังประเมินความพึงพอใจของผู้ป่วยโดยใช้มาตรวัดด้วยสายตารูปแบบ100 มิลลิเมตรในการกลับมาตรวจครั้งแรกหลังจากใส่ฟันเทียม หลังจากนั้นวิเคราะห์ข้อมูลด้วยสถิติเชิงพรรณาและเชิงวิเคราะห์ด้วยสถิติแมนน์ วิทนีย์ ยู สถิติครัสคัล วาลิส สถิติทดสอบฟรายด์แมน และสถิติทดสอบวิลคอกซัน ไซน์ แรงค์ ที่ระดับความเชื่อมั่นร้อยละ 95 ผลการศึกษาพบว่าค่าเฉลี่ย/ค่ามัธยฐานของคะแนนโอไอดีพี ทั้ง 3 ครั้งของผู้ป่วยที่คลินิกทันตกรรมระดับปริญญาบัณฑิตคือ 23.9/15.0 10.3/5.0 และ 0.1/0 ตามลำดับ และของผู้ป่วยที่คลินิกบัณฑิตทันตกรรมประดิษฐ์คือ 22.7/15.0 6.5/5.0 และ 0.2/0 ตามลำดับ โดยคะแนนโอไอดีพีทั้ง 3 ครั้งแตกต่างกันอย่างมีนัยสำคัญทางสถิติ นอกจากนี้ในการเริ่มรักษาครั้งแรกพบว่าร้อยละ 71.7 ของผู้ป่วยที่คลินิกทันตกรรมระดับปริญญาบัณฑิตและร้อยละ 75.1 ของผู้ป่วยที่คลินิกบัณฑิตทันตกรรมประดิษฐ์ได้รับผลกระทบจากสภาวะช่องปากในด้านกายภาพ โดยมีความจำกัดในการทำหน้าที่ในการรับประทานอาหารและการพูดเนื่องจากการสูญเสียฟันเป็นสภาวะในช่องปากที่เป็นสาเหตุ ในการกลับมาตรวจครั้งแรกหลังจากใส่ฟันเทียมพบว่าร้อยละ 71.3 ของผู้ป่วยที่คลินิกทันตกรรมระดับปริญญาบัณฑิต และร้อยละ 40.6 ของผู้ป่วยที่คลินิกบัณฑิตทันตกรรมประดิษฐ์ยังได้รับผลกระทบจากสภาวะช่องปากต่อการรับประทานอาหารจากอาการเจ็บปวดหรือความรู้สึกไม่สบายนื่องจากเจ็บจากการใช้ฟันเทียม และเมื่อเสร็จสิ้นการรักษาพบว่าน้อยกว่าร้อยละ 5 ของผู้ป่วยทั้งสองคลินิกที่ยังได้รับผลกระทบจากสภาวะในช่องปาก ค่าเฉลี่ย/ค่ามัธยฐานของคะแนนความพึงพอใจต่อการรักษาของผู้ป่วยที่คลินิกทันตกรรมระดับปริญญาบัณฑิตและคลินิกบัณฑิตทันตกรรมประดิษฐ์คือ 88.9/90.0 และ 92.0/95.0 ตามลำดับ ผลการศึกษาในครั้งนี้บ่งบอกได้ว่าการรักษาทางทันตกรรมประดิษฐ์สามารถฟื้นฟูคุณภาพชีวิตในมิติสุขภาพช่องปากทั้งในด้านกายภาพ ด้านจิตใจ และด้านสังคม อีกทั้งยังสร้างความพึงพอใจในระดับดีมากภายหลังการรักษาในกลุ่มผู้ป่วยที่มีทั้งความจำเป็นทางวิชาชีพและความรู้สึกจำเป็นของผู้ป่วยเองต่อการรักษาทันตกรรมประดิษฐ์

ภาควิชา ทันตกรรมประดิษฐ์ ลายมือชื่อนิสิต .....

สาขาวิชา ทันตกรรมประดิษฐ์ ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก .....

ปีการศึกษา 2556 ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์ร่วม .....

5376122132 : MAJOR PROSTHODONTICS
KEYWORDS: ORAL HEALTH-RELATED QUALITY OF LIFE (OHRQOL) / ORAL IMPACTS ON DAILY PERFORMANCES (OIDP) / PROSTHODONTIC TREATMENT / SATISFACTION

PEAMATE BOONMEKHAO: ORAL HEALTH-RELATED QUALITY OF LIFE AND PATIENT SATISFACTION TO THE PROSTHODONTIC TREATMENT AT FACULTY OF DENTISTRY, CHULALONGKORN UNIVERSITY. ADVISOR: ASSOC. PROF. MANSUANG ARKSORNNUKIT, Ph.D., CO-ADVISOR: ASST. PROF. TEWARIT SOMKOTRA, Ph.D., 84 pp.

This study aimed to assess the Oral Health-Related Quality of Life (OHRQoL) before and after prosthodontic treatment, and to assess the patient satisfaction to prosthodontic treatment among patients after obtaining prosthodontic treatments at Faculty of Dentistry, Chulalongkorn University. Six hundred and sixty four participants (467 subjects from Under-graduated; UG clinic and 197 subjects from Post-graduated; PG clinic) with 18-84 years of age with an average age of 53.9±13.4 years, of which 45.5% of them were male were face-to-face interviewed at Prosthodontics Clinic, Faculty of Dentistry, Chulalongkorn University. Data comprised of general information, medical and dental history. For the assessment of OHRQoL, this study used the Oral Impacts on Daily Performances (OIDP) which were assessed at three different periods; the first dental visit (T0), first recheck visit (T1) and completed visit (T2). The 100-mm VAS horizontal line was used for assessing satisfaction at T1. Descriptive analysis was performed. The OIDP scores at T0 and VAS scores at T1 were analyzed by the Mann-Whitney U Test and the Kruskal-Wallis Test. The Friedman Test and Wilcoxon Signed Ranks Test were used to analyze the OIDP scores between periods of assessment. Statistical significance was set at α = .05. The OIDP scores (mean/median) in UG participants at T0, T1, and T2 were 23.9/15.0, 10.3/5.0, and 0.1/0, respectively whereas those in PG participants were 22.7/15.0, 6.5/5.0, and 0.2/0, respectively. In addition, the OIDP scores were significant different between periods of assessment ($p < .05$). At T0, those participants reported physical performances especially on eating and speaking with the main symptom were functional limitation due to the tooth loss. At T1, 71.3% of the UG and 40.6% of the PG participants had oral impact on eating due to pain or discomfort of denture. Meanwhile, at T2 there was very slightly oral impact. The VAS scores (mean/median) in UG and PG participants were 88.9/90.0, and 92.0/95.0, respectively. This study indicated that for those who had both profession, and perceived need for prosthodontic treatments had the improvement in all performances of OHRQoL with high level of satisfaction after obtaining the treatment.

Department:	Prosthodontics	Student's Signature	.....
Field of Study:	Prosthodontics	Advisor's Signature	.....
Academic Year:	2013	Co-Advisor's Signature	.....

ACKNOWLEDGEMENTS

I would like to express my profound appreciation and deep regards to my thesis advisor; Associate Professor Mansuang Arksornnukit, and my co-advisor; Assistant Professor Tewarit Somkotra for their help, encouragement, teaching, good advice, and support throughout the course of this thesis. This thesis would not been completed without all the supports I have received from them.

I wish to express my sincere thanks to the thesis committees; Wacharasak Tumrasvin, Assistant Professor Orapin Kaewplung, and Dr. Sutee Suksudaj, for their advices and suggestions.

I am particularly grateful to the teachers, patients, staffs, dentists and dental student at Under-graduate and Post-graduate Prosthodontics Clinic at the Faculty of Dentistry, Chulalongkorn University, and my friends for their cooperation, help, encouragement, and support during the period of this research.

Finally, I owe my deepest gratitude to my parents and my sister for their help, support and encouragement over this Master's Degree course. All of these are expressed from my heart.

CONTENTS

Page

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER I
INTRODUCTION

Background and Rationale

Nowadays, the objective of health treatment is getting rid of the disease and having a better Quality of life (QoL). In the field of dentistry, goal of oral health care develops into the broadeN scope not just within the mouth. Oral Health-Related Quality of Life (OHRQoL) is the foundation of the QoL. OHRQoL acts as an important component of general health and well-being, which everybody need. The dental treatment shifted from a disease centered-biodental approach to a patient centered-biopsychosocial approach in oral health care [1-5].

Tooth loss is a chronic dental disease that could disturb general and oral health including physical, psychological, and social well-being [6]. It is commonly oral burden of QoL and OHRQoL that is still a major public health problem affecting worldwide population [7]. Dental caries and periodontal disease are the most prevalence oral disease leading to edentulous status [6, 7]. Many studies reported the dental caries, periodontal problem, and tooth loss related to the impairment of OHRQoL [8, 9].

According to World Health Organization (WHO) data, the important index of tooth loss which proposed as a goal of oral health, are the numbers of individuals with 21 or more natural teeth (NT) at ages 35-44 and 60-74 years. The percentage of completely edentulous at the ages 60-74 years is also used as index [10]. The 7th National Oral Health Survey in Thailand has reported that prevalence of two indices is slightly better than the previous survey [11]. Moreover, the percentage of adult and elder who have prosthetic need are higher than those of participants who have prosthetic status. The unfavorable OHRQoL might attribute to completely/partially

edentulous person who does not obtained denture. Thus is still oral health problem in Thailand [12].

Dental substitution is the reconstructive treatment to improve all aspect of OHRQoL including chewing ability, oral function, speaking, esthetics, self-confidence and social opportunities [13-16]. On the other hand, the patient's satisfaction with their oral condition and dental treatment is an important factor as well as the OHRQoL [17]. This might be a primary outcome of an elective treatment such as prosthodontic treatment [18].

Previous OHRQoL's researches in Thailand were used among Thai adult [19] and older [20] in rural setting with low dental disease and low in demand for dental care. To fulfill this knowledge gap on serious exploration in population who seeking prostheses, this study aims to address assessment of both prevalence and magnitude of OHRQoL among Thai adults and elders who have demand for prosthodontic care by assessing relationship among socioeconomic, natural tooth status, and prosthodontic factors. Furthermore, this study also examines how treatment can improve OHRQoL and patient's satisfactory in longitudinal scale.

Research Questions

Primary Question: Is the OHRQoL among patients who sought and obtained prosthodontic care improved?

Secondary Question: What is the satisfaction of prosthodontic care among patients who sought and obtained treatment?

Research Objectives

Primary Objective: To assess the improvement of OHRQoL among patients who sought and obtained prosthodontic care.

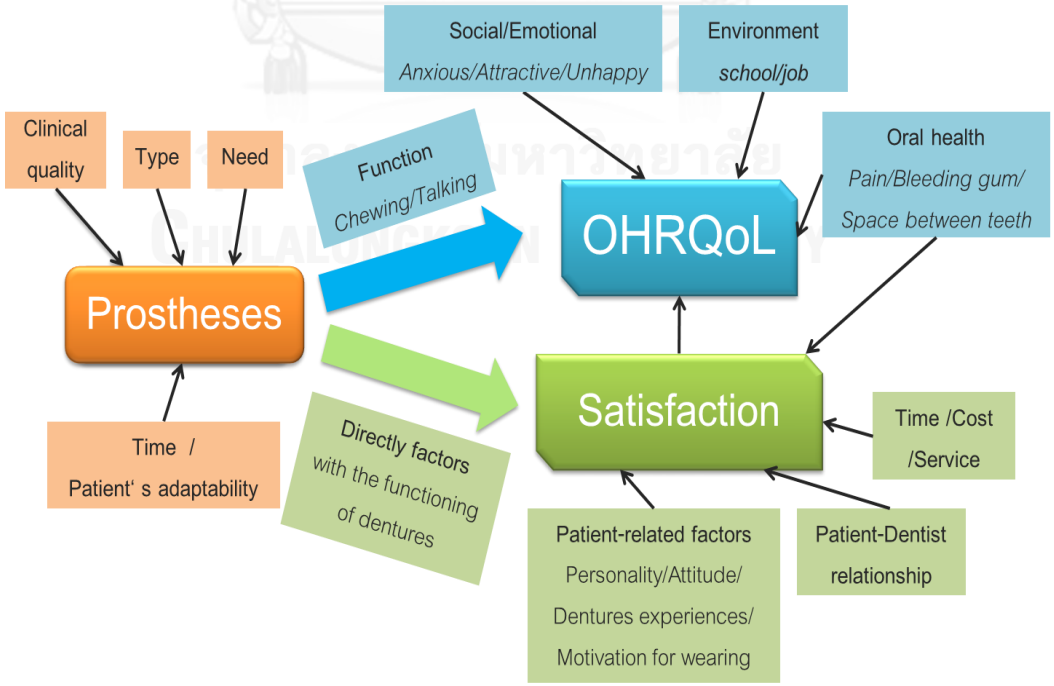
Secondary Objective: To assess the satisfaction of prosthodontic care among patients who sought and obtained prosthodontic treatment.

Research Hypothesis

H_0: There is no statistically significance difference in OHRQoL among patients who sought and obtained prosthodontic care between before and after treatment.

H_a: There is statistically significance difference in OHRQoL among patients who sought and obtained prosthodontic care between before and after treatment.

Conceptual Framework



Key Words

- Oral health-related quality of life (OHRQoL)
- Oral Impacts on Daily Performances (OIDP)
- Prosthodontic treatment
- Satisfaction

Operation Definitions

General prosthodontic patients: Patients who healthy or have uncomplicated general health and obtained simple prosthodontic treatment.

Complicated prosthodontic patients: Patients who have complicated general health and/or complicated prosthodontic treatment.

Adult: Person who have age < 60 years old

Elder: Person who have age ≥ 60 years old

Removable partial denture: Metal/Acrylic Removable partial denture

Fixed partial denture: Crown or Bridge 1-5 unit

Research Design

Prospective Cohorts study

Benefits of the study

1. The results might be the supportive information for integrating humanized care concept in order to improve the teaching and learning at the Department of Prosthodontics, Faculty of Dentistry, Chulalongkorn University.

2. To develop of the comprehensive database of participants and Prosthodontic clinic.

3. The results from long-term study might show significant change of OHRQoL that was useful for further study.

4. The results might be used as evidenced-base for health policy i.e. dental need assessment, managing realistic priority, and dental service planning.

CHAPTER II
LITERATURE REVIEW

Oral health-related quality of life

In 2003, the OHRQoL was guided to the World Dental Federation (FDI)/World Health Organization (WHO)/International Association for Dental Research (IADR) collaboration documented guidelines for Global Oral Health Goals 2020. It aimed to provide a framework for health policy maker at different levels; regional, national and local and to specify realistic goals and standards for oral health to be achieved by the year 2020. Additionally, the guideline was aimed to not only to minimize oral disease but also to decrease the impact of oral health, psychological, and social well-being on OHRQoL aspect [10].

A. Oral health is integral and essential to general health

Oral health means more than good teeth. In 2003, the World Oral Health Report stated that “it is integral to general health and essential for well-being”. It implies the situation of free from chronic oro-facial pain, oral and pharyngeal (throat) cancer, oral tissue lesions, birth defects such as cleft lip and palate, and other diseases and disorders that affect the oral, dental and craniofacial tissues, known as the craniofacial complex [21].

B. Oral health is a determinant factor for quality of life

The craniofacial complex allows us to speak, smile, kiss, touch, smell, taste, chew, swallow, and to cry out in pain. It provides protection against microbial infections and environmental threats. Oral diseases restrict activities in school, at work and at home causing loss of millions of school and work hours each year

worldwide. Moreover, the psychosocial impact of these diseases often significantly diminishes the quality of life (QoL) [21].

C. **Developmental of Oral health-related quality of life**

Cohen & Jago (1976) considered that the greatest contribution of dentistry is to improve quality of life. They first advocated the development of socio-dental indicators [1, 3, 22]. Then, socio-dental term was replaced with the term Oral health-related quality of life (OHRQoL) [3]. Most studies of OHRQoL were based on Locker's model of oral health [23] that were adapted from World Health Organization charter [24]. This concept described the consequences of disease. For example, disease can lead to impairment which may contribute to the functional limitation and/or the disabilities and finally the handicap. Disability is more likely to occur when both discomfort and functional limitation exist, and handicap is more probable if all three have happened [25, 26] (Figure 1).

Wilson and Cleary (1995) proposed a new conceptual model of health and its outcomes with QoL. It integrated both biological and psychological aspects of health outcomes. There are five different levels in the model, namely, physiological factor, symptom status, functional health, general health perceptions, and overall quality of life [27]. (Figure 2) This theoretical model can be applied to OHRQoL [1, 3].

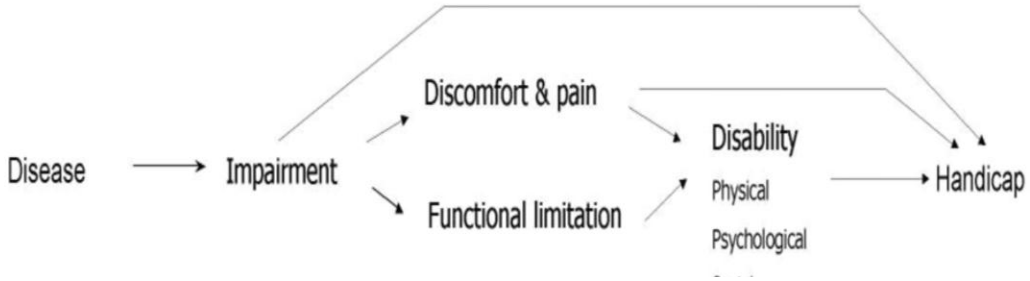


Figure 1: Locker's model of oral health

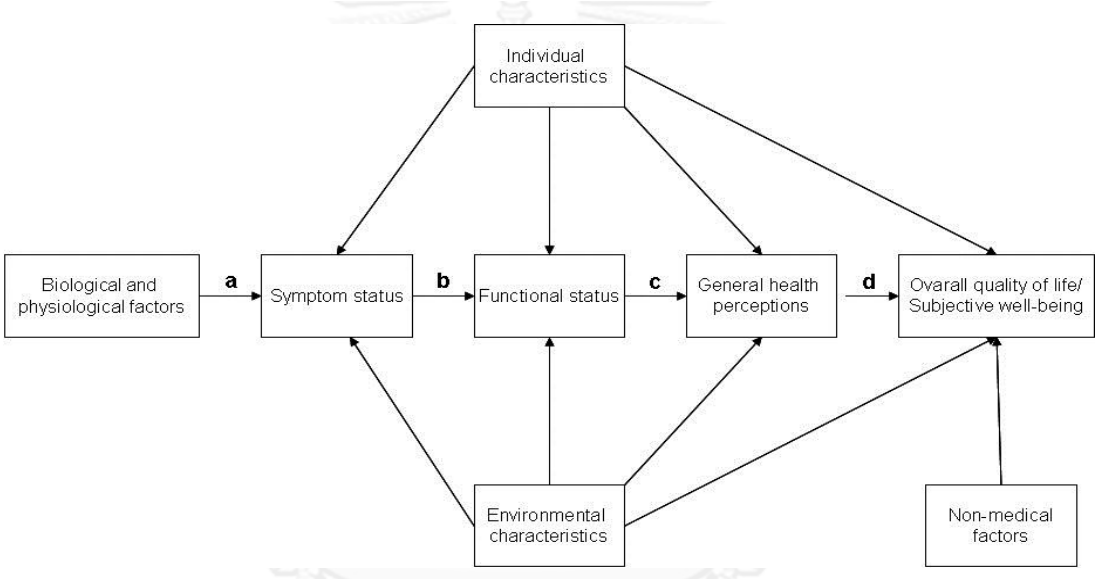


Figure 2: Wilson and Cleary model

However, the terms OHRQoL, oral health, and QoL were treated as synonymous and interchangeable. OHRQoL has no strict definition and varies from simple to more rigorous. The United States Surgeon General's report on oral health defines OHRQoL as "a multidimensional construct that reflects (among other things) people's comfort when eating, sleeping, and engaging in social interaction; their self-esteem; and their satisfaction with respect to their oral health" [28]. Later, the definition was offered by Locker and Allen in 2007 as "The impact of oral disease and disorders on aspects of everyday life that a patient or person values, that are of

sufficient magnitude, in terms of frequency, severity or duration to affect their experience and perception of their life overall" [11].

OHRQoL is a several dimensions that include a subjective evaluation of the individual's oral health, functional well-being, emotional well-being, expectations, and satisfaction with cares, and sense of self [3] (Figure 3).

Figure 3: Dimensions comprising OHRQoL

Assessment of Oral health-related quality of life

OHRQoL is very important for both theoretical and practical reasons. The United States Surgeon General focused OHRQoL as a health priority [28]. Measurement of OHRQoL captures for a shift from traditional medical/dental criteria to the assessment and care that emphasize on a personal's social and emotional experience and physical functioning in defining appropriate treatment goals and outcomes.

The OHRQoL is a multidimensional concept that captures people's perception about factors that are important in their daily life. Fundamentally, there are three categories of OHRQoL measure as indicated by Slade [28]. These are social indicators, global self-ratings of OHRQoL and multiple items questionnaires of OHRQoL [29].

Social indicators are used to assess the effect of oral conditions and/or oral disease at the macro level. Typically, large population surveys are carried out to reflect the burden of oral diseases on the entire population particularly among disadvantaged groups [29].

Global self-ratings of OHRQOL (single-item ratings) represent the simplest method of assessing OHRQoL. It refers to ask individuals a general question about their oral health especially in the large studies including national health surveys [22, 29].

Multiple items questionnaires of OHRQoL vary widely in terms of the number of questions (items), and format of questions and responses. It can evaluate specific dimensions of OHRQoL in greater detail. Indices must be simple to use, reliable, valid, precise, acceptable and amenable to statistical analysis. Ten OHRQoL instruments that have been thoroughly tested to assess their psychometric properties were presented at the First International Conference on measuring oral

health [30]. Furthermore, instruments or indicators should have good practical use, acceptance and amenable to statistical analysis. Different measures of OHRQoL with their author name and year is shown in Table 1 [31].

Table 1: Name of measures with their authors name and year

Authors	Name of measure
Cushing et al., 1986	Social impacts of dental disease
Atchison and Dolan, 1990	General Oral Health Assessment Index (GOHAI)
Strauss and Hunt, 1993	Dental Impact Profile (DIP)
Slade and Spencer, 1994	Oral Health Impacts Profile (OHIP)
Locker and Miller, 1994	Subjective Oral Health status indicators (SOHSI)
Leao and Sheiham, 1996	Dental Impact on Daily Living (DIDLS)
Adulyanon and Sheiham, 1997	Oral Impacts on Daily Performances (OIDP)
McGrath and Bedi, 2000	Oral Health Quality of Life UK (OHQoL-UK)

The psychometric properties of indices must be tested before they are used in a new environment. The Oral Health Impacts Profile-14 (OHIP-14) [32] and the Oral Impacts on Daily Performances (OIDP) [33] are the two OHRQoL instruments that are the most successful international used and accepted. Both indices are based on Locker's model of oral health and were recommended from The European Global Oral Health Indicators Developmental Projects [34, 35] Moreover, they are believed as the reliable and valid indicators which have adequate psychometric properties in various populations [36]. The comparative properties of both indices are showed in Table 2.

Table 2: The properties of OHIP and OIDP index

	Oral Health Impacts Profile (OHIP) [32]	**Oral Impacts on Daily Performances (OIDP) [33]**
Original subjects	Adult dental patients in Adelaide, Australia.	Thai people aged 35-44 years in Thailand
Backgrounds	Demonstrated the burden of illness within population and the effectiveness of oral health services in reducing that burden.	Focused on measuring the serious oral impacts on the personal's ability to perform daily activities.
Theoretical framework	Locker's model of oral health	OIDP model developed from the functional level of Locker's interpretation of the World Health Organization (WHO) model.
Dimensions measured	7 conceptual dimensions of impact; Functional limitation, Physical pain, Psychological discomfort, Physical ability, Psychological disability, Social disability, and Handicap.	3 dimensions; physical, psychological and social dimension. All items cover only important daily activities which affected from oral health; Eating, Speaking, Cleaning teeth, Sleeping, Maintaining usual emotional state, Smiling, Enjoying contact with people, and Carrying major work/physical activity.
No. of question	49	8 or 9 (depend on format)
Method	Self-administrated questionnaire	Face-to-face interview
Recall periods	Past 12 months	Past 6 months
Frequency of impacts	Five- point Likert scale (0 = never or not applicable, 1 = hardly ever, 2 = occasionally, 3 = fairly often, 4 = very often)	Five- point Likert scale (1 = Never affected/Less than once a month, 2 = Once or twice a month, 3 = Once or twice a week, 4 = 3-4 times a week, and 5 = Every or nearly every day)
Severity of impacts	-	6 levels (0 = None, 1 = Very less severe, 2 = Less severe, 3 = Moderately severe, 4 = Severe, and Very severe)

Table 2: continued

	Oral Health Impacts Profile (OHIP)	Oral Impacts on Daily Performances (OIDP)
Score calculation	In two ways. The first way is to count the number of impacts reported at a threshold level such as “fairly often” or “very often”. The second way is to standardize (weigh) subscale scores, and then sum those standardized score.	The sum of the multiplying the frequency with the severity score of each dimension. It cans measures condition-specific impacts (CS-impacts).
Advantages	1. Clearly theoretical framework. 2. It covers many dimensions of oral health. 3. Each question is developed from the aspect of general people, not from the aspect of dental professional.	1. Short, and consumes less time. 2. It measures only the significant impacts from oral health on daily performances. 3. It does not have repeated questions. 4. It is easier to measure the behavioral impacts.
Disadvantages	1. Taking long time because of many items. 2. Having many repeated questions 3. Significant “Floor effect”.	1. It has to be used by the trained interviewers. 2. High workload for interviewers.
Implications	1. OHIP-14 has been proofed that it can use as OHIP-49[36] but lower in responsiveness 2. OHIP-EDENT [37].	1. It uses to assess population dental treatment needs in order to facilitate dental service planning. 2. Child-OIDP [38].
Cross-culture language	English, German, Chinese, Sinhalese, Swedish, Brazilian, Malaysian, Korean, Dutch, Spanish, Persian, Greek, Sudanese, French, Italian, Hungarian, Japanese, Arabic	Thai, English, French, Chinese, Persian, Norwegian, Korean, Japanese, Afrikaans Spanish, Malaysian, Myanmar

The main outcome of this study was OHRQoL which was measured by Thai version of Oral Impacts on Daily Performances (Thai-OIDP) index since it is the only one instrument which passed linguistic-cultural tested in Thai and commonly use in Thailand [5, 33].

OIDP index is the shorter and easier than OHIP. It does not have repeated or complicated questions. Furthermore, it consumes less time because it contains only 8 categories. Most of participants are older thus the OIDP is more appropriate to them because interviewing formats are easier for them than self-writing in completing all questions. In addition, recall periods for assessment oral problems is only 6 months. The OIDP focused on only serious impact by severity-based approach may not be overestimated or underestimated the impact, which is preferable for patient-centered outcomes. It can measure in participants who were edentulous and non-edentulous patient unlike OHIP. Interestingly, the OIDP can assess condition-specific impacts (CS-impacts). Both the main symptoms and the main oral impairments were asked from affected behavioral activities according to level of OIDP conceptual framework [5] (Figure 4).

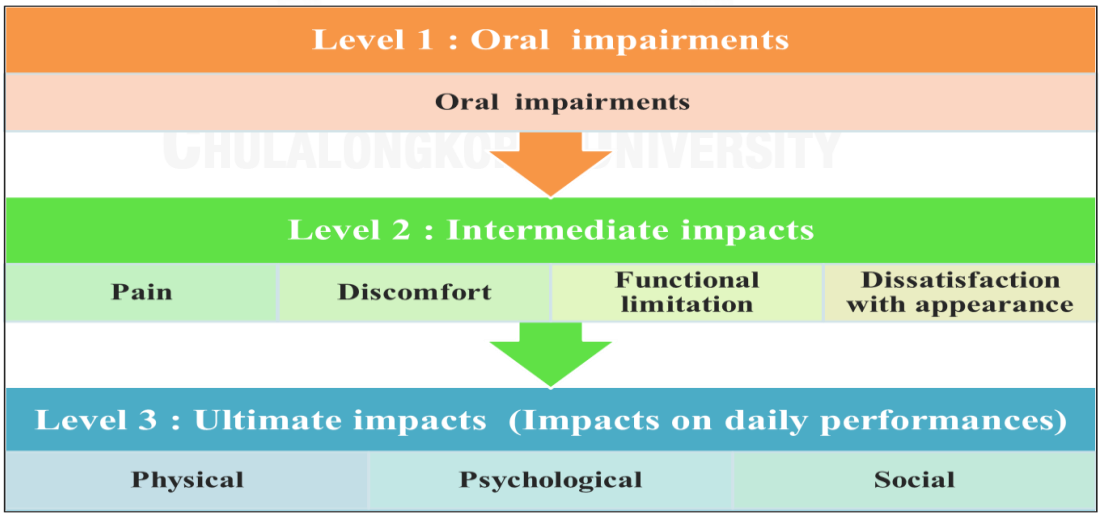


Figure 4: OIDP conceptual framework

The OIDP data was collected on the significant impacts from oral health on the subject's ability to perform 8 daily activities; eating, speaking, cleaning teeth, sleeping, maintaining usual emotional state, smiling, enjoying contact with people, and carrying major work/physical activity [5] (Table 3).

Table 3: Performance and activity of OIDP

Dimension	Item
Physical	- Eating and enjoying food - Speaking and pronouncing - Cleaning teeth or denture
Psychological	- Sleeping and relaxing - Maintain usual emotional state without being irritable - Smiling, laughing and showing teeth without embarrassment
Social	- Enjoying contact with people - Carrying out major work (or social role; $\geq$ 60 years)

The OIDP records both frequency and severity of the impacts from oral health in the past 6 months on Likert scales. There are two patterns of frequency score according to the pattern of problem occurrence; regular pattern and spell pattern (Table 4). If the problems occur regularly, we will use regular pattern (occur more than 1 time/month). If the problems occur less frequency than once a month, we will use spell pattern. The severity score ranges from 0 to 5, which indicates how much trouble the event described by the item has caused in their daily living [5] (Table 4).

Table 4: Patterns of frequency and severity score of OIDP

Score	Frequency		Severity
	Regular pattern	Spell pattern	
0	Never affected in past 6 months	0 day	None
1	Less than once a month	1-5 days	Very less severe
2	Once or twice a month	6-15 days	Less severe
3	Once or twice a week	16-30 days	Moderately severe
4	3-4 times a week	1-3 months	Severe
5	Every or nearly every day	Over 3 months	Very severe

Record form of OIDP in this study was showed in Table 5. The scoring system calculates the sum of the products of the frequency and the severity score (ranges from 0 to 200). The higher OIDP score illustrates the poorer OHRQoL because all items are about the problems affected from oral health [5].

Table 5: Record form of Oral Impacts on Daily Performances (OIDP)

Daily performance	Frequency	Severity	Main oral symptoms	Main oral impairments	Score
1. Eating					
2. Speaking					
3. Cleaning teeth					
4. Sleeping					
5. Maintaining usual emotional state					
6. Smiling					
7. Enjoying contact with people					
8. Carrying major work /physical activity					
Total score					

Oral health-related quality of life study in Thailand

Twenty years ago, there were various Socio-dental or Oral health-related quality of life studies in Thailand. These studies are presented in Table 6. The first study is the study of Adulyanon et al. in 1996, from Thai population aged 35-44 years in 16 rural villages in Khon Kaen, Thailand [19]. Initially, OIDP was commonly used because both OIDP and Child-OIDP have been cross-culturally translated into Thai. Recently, Thai-OHIP version has been developed by Chaiphotchanaphong et al. [39]. This new instrument is suitable for assessing OHRQoL in Thai people.

Most studies in Thais are cross-sectional which focused on clinical factors associated with OHRQoL among non-population based. Previous studies have concentrated on a limit set of factors that are associated with OHRQoL. There is a need to evaluate additional factors of OHRQoL, including psychological and social determinants [29]. The study of Songpaisan is the only one longitudinal study in Thai subjects that uses the OHRQoL as the outcome measurement [40]. Furthermore, most population-based OHRQoL researches have focused on children and adolescences [41].

Table 6: Oral health-related quality of life study in Thailand

Study	Year	Index	Population and setting	No. of samples	Type of research	Objective
Adulyanon et al. [19]	1996	OIDP	35-44 years in Khon Kaen	501	Cross-sectional	Measure incidence of oral impacts on daily performances.
Srisilapanan et al. [42]	2001	OIDP	60-74years dentate in Chiang Mai	707	Cross-sectional	To illustrate differences in assessed need using normative and sociodental approaches to assess prosthetic needs.
Srisilapanan et al. [20]	2001	OIDP	60-74years in Chiang Mai	707	Cross-sectional	Assess the prevalence of oral related impacts on the quality of daily life.
Gherunpong et al. [38]	2004	Child-OIDP	Children aged 11-12 years in Suphan-buri	513	Cross-sectional	To develop an OHRQoL index in Thai children and evaluate its psychometric properties.
Songpaisan [40]	2007	OHIP-14	44-85 years edentate patient in hospital, Nontaburi,.	96	Longi-tudinal	To assess expectation, satisfaction, OHRQoL after receiving complete denture.
Krisdapong et al.[12]	2007	OIDP	60-84 years in Pathumthani	110	Cross-sectional	To assess and compare OHRQoL , perceived and normative needs.
Krisdapong et al. [43]	2009	Child-OIDP and OIDP	Children 12 and 15year in Bangkok and in 8 provinces	1066 and 815	Cross-sectional	To assess f oral impacts on daily life, and the relationship between certain dental conditions and impacts in national survey.
Yiengprug-sawan et al. [44]	2011	Compre-hensive question-naire	15-87 years in university student	87,134	Cross-sectional	To address population-based reports of adult OHRQoL.
Chaiphotcha-naphong [39]	2012	modified Thai OHIP-54	20-87 years patients	680	Cross-sectional	To develop the Thai version of the OHIP and to investigate its psychometric properties.
Somsak [45]	2013	OIDP	60-93 years in University clinic	240	Cross-sectional	To compare OHRQoL of patients who had differences teeth status.

Further study in Thailand should focus on OHRQoL especially in psychogenic and social aspects of intervention outcomes, oral health promotion-prevention, and dental treatment needed. Population-based research should be studied on the integrate basic knowledge and technologies in all field of health cares in order to screen the hidden oral health problems, prioritize them, facilitate dental service, and develop health policy [46].

Variables associated with OHRQoL of prosthodontic patient

Since OHRQoL is the complex nature. A lot of previous studies revealed the variety of variables which related to OHRQoL. Hwang et al. summarized that factors-related OHRQoL were demographic factors, socioeconomic factors, self-perceived oral health, oral and general health, clinical measurement of oral health, oral health behavior, experience of oral pain, satisfaction with oral health, need for dental treatment [47]. The followings are some main factors which correlated with OHRQoL.

A. **The background factor:** The social condition clearly related with the perception of worse impact on OHRQoL i.e. women, poor education, low income, immigrants or being ethnic minority groups [48].

- Age [45, 49-53]: The proportion of older adults affected at least one oral impact were greater than that of younger adults [49]. McGrath C et al. and Tubert-Jeannin S et al. found that the subjects is who were 20-29 years old and less than 65 years old had better OHRQoL than those who were 30-45 years old and over 65 years old, respectively [50, 51]. On the other hand, the results of Kida IA et al. showed that the older persons were 0.6 times greater than the younger persons in oral impacts [52]. Steel et al. reported that increasing age was associated with better oral impacts [53]. Moreover, the study of Yiengprugsawan et al. showed that Thai participants who were more than 50 years old had discomfort in speaking, swallowing and chewing. Nevertheless, younger groups reported more discomfort with social interaction [45].

- Race/ethnicity [53-55]: The studies of Taylor et al. illustrated that nonwhite person had poorer QHRQoL [54]. The results confirmed the existence of race/ethnic oral health disparities had the effects on the lives of individuals. Moreover, there was different pattern of oral impacts between Australian- and British-

born groups [53]. Cultural differences in dental status and oral impairments between eastern-western countries might affect the OHRQoL [55].

- Gender [44, 49, 56-58]: Women have perceived oral health as a greater impact on their QoL than men [56]. Men were 0.3 times more likely than women to have impaired OHRQoL [57]. Women had more negative impact on OHRQoL than men [49]. On the other hand, women had lower oral health related quality of life than men in the physical, social, and worry dimensions [58]. Additionally, men and women had equally overall impacts but women were worse off for social interaction and pain [44].

- Education [29, 44, 49, 51]: Person who has lower education report more oral problems [29]. The subjects who were from lower social class had lower OHRQoL than those who were from higher social class [51]. The prevalence of having at least one oral impact was higher among adults with a lower education level than those with a higher education level [49]. People who graduated from high school had better OHRQoL than those who graduated from less than high school [51]. The study of Srisilpanan et al. revealed that the prevalence of older that has more than 4 years of schooling receiving high level OIDP impacts less than those with lesser 4 years. The university educated group reported the lower overall oral problems [44].

- Economic status [20, 27, 29, 44, 51]: Participants who have lower household income, less in OHRQoL [29]. In Thailand, similar trend was presented in elders [20] but not found in adults [44]. The studies of Tubert-Jeannin S and Atchison et al. showed that persons who worked or were employed had better OHRQoL than those who did not work [27, 51].

B. General health status

- General health [49]: Persons who reported better self- rating of general and oral health had better OHRQoL than those who reported poorer [49].

- **Systemic disease [59-62]:** Frequently, patients with severe and chronic diseases suffered from multiple conditions that gave rising to oral impacts [59]. Diabetic patients showed unacceptable oral health status and in some extent, oral problems affected OHRQoL [60]. Dental patients who were informed about HIV and had a high HIV/AIDS risk perception were more likely to report impaired oral health-related quality of life than their less informed counterparts [61]. The OHRQoL is significantly reduced in hospitalized stroke patients whereby functional impairment seems predominant when compared with psychological and psycho-social aspects [62].

C. Psychological aspect:

- Personality [17, 58]: Neuroticism (including anxiety, anger, hostility, depression, self-consciousness, impulsiveness and vulnerability) was the only personality dimension that had significant relationships with OHRQoL [17]**.** Elders with depression had lower OHRQoL than those without depression in the physical and social dimensions[58].

- Stress [29, 63]: Life stress affects poorer OHRQoL [29]. Work stress may be an important predictor of poor OHRQoL [63].

D. Oral health status

- Tooth loss [6-8, 10, 20, 64, 65]: WHO concerns to reduce the number of edentulous persons in Global goals for oral health 2020 [10]. Tooth loss is the chronic situation and harmful to nutritional status, general health, oral health, OHRQoL, and QoL in worldwide population [7, 8, 64, 65]. Not only validated questionnaires, but also systematic reviewed documented that tooth loss was strong associated with impairment of OHRQoL [6]. Edentulous negatively affect not only oral function, but also daily activities and social life [7]. Elderly dentate person had OIDP scores less than the edentulous person [20]. Furthermore, the study of Yiengprugsawan et al. suggested that female, older age, having low income, having lower education, and being life time as urban resident were associated with having less than 20 teeth in 87,134 Thai adults statistically [65].

- The number of NT [6, 14, 47, 66, 67]: Several measurements were used to assess the relation of the number of remaining teeth and OHRQoL. The fewer teeth remained, the higher impact on OHRQoL was. When number of teeth drops below 17, the OHIP score increases. Person who had higher GOHAI scores with equal to 20 teeth indicating satisfied OHRQoL [6]. Participants with fewer than 10 teeth and 11-20 teeth had 2 to 2.05 and 1.5 to 1.81 times of oral problems compared with 21-32 teeth participant [6, 66]. Elders with more natural teeth and those obtained removable partial dentures had more appreciated on OHRQoL than those who were edentulous or wear complete dentures [47]. On the other hand, the number of teeth did not correlate with OHRQoL and chewing ability [67]. In Thai populations who have less than 20 teeth were greatly related with difficult in speaking, swallowing and chewing [14].

- **Number of teeth needing replacement [13, 55]:** The study of Montero et al. showed that persons who need replacement of at least 4 teeth reported significant highly oral impacts [13]. Furthermore, the natural plus replaced

teeth are better representing for dental status of persons with replaced tooth than the natural teeth alone [55].

- Position/location/distribution of tooth loss [6, 20, 55, 68]: The number of unfilled anterior and posterior tooth space also statically influenced the OHRQoL [55]. The anterior missing teeth are strongly influenced than posterior missing teeth. Patients having one or more unrestored anterior spaces were 1.8 times more likely to report any daily oral problems [6]. The prevalence of Thai elders who oral impacts affected with anterior tooth loss is higher than those with posterior tooth loss. Moreover, anterior tooth loss was related with more impacts regardless of replacement [20]. On the other hand, the study of Tsakos et al. found that the presence of unrestored anterior tooth spaces were not related to OIDP of British older people [68].

- Occluding pairs [6, 13, 45, 55, 66, 68, 69]: From systematic review, the number of occluding pairs is an important predictor of OHRQoL. The unfavorable of impacts sharply rose when the number of teeth dropped to less than 20 teeth [6]. Moreover, occluding pairs is the better representing oral function than number of teeth [55]. Subjects with less than 9 occluding pairs were 2.6 times more likely to oral impacts than those with 9 or more pairs [68]. Patients with less than 6 occlusal units reported significant lower OHRQoL than did the counterparts [13]. OHRQoL was statically associated with the number of total and anterior occluding pairs but was controversy in posterior [6]. The level of oral impacts from lower number of posterior occluding pairs was varied. They were total impacts [6, 13, 55, 66, 69], partial impacts (not for social dimension) [6, 45], or no significantly impacts [6].

G. Prosthodontic treatment related

- **Denture status [13-15, 40]:** The prosthetic care was related to improvement of oral well-being in all aspect except pain and chewing ability [13]. The study of Dable et al. found that there was a significant change in the QoL after their prosthodontic rehabilitation [14]. Complete denture can enable better OHRQoL both in a short time after treatment and long period of time [15]. On the other hand, the study of Songpaisan concluded that complete denture did not have statically impact to OHRQoL [40].

- **Type of denture [16, 47, 70-72]**: Patient treated with removable/complete denture had 1.9 times of problem rated than those treated with fixed prosthodontics [16]. The study of Hwang et al. found that the mean OIDP scores of subject with complete denture, removable partial denture, and fixed partial denture/natural teeth were 5.1, 4.3, and 1.3, respectively [47]. The completely edentulous patients showed better oral health, OHRQoL and satisfaction with their dentures than the partially edentulous patients [70]. Furthermore, implanted-retained overdentures provide a proper OHRQoL in edentulous elderly patients especially in mandibular comfort [71, 72].

- **Quality of denture [66, 68, 73, 74]:** Better quality of removable denture was related to better OHRQoL status, and depended on age, gender, or number of missing teeth [73]. Greek edentulous persons with inadequate denture adaptation, inadequate denture retention, and denture overextension were 2.59, 2.41, and 2.51 times more likely to present oral impacts than those without denture deficiencies, respectively [66]. Furthermore, British edentulous persons with inadequate denture adaptation and inadequate denture retention were 1.92, and 2.04 times more likely to show oral impacts than those without denture problems,

respectively [68]. The stability of mandibular complete denture had a significant effect on OHRQoL whereas the retention had not [74].

- Dental maintenance [75]: The denture adhesives/cleansers and a tooth brush experienced had positive impacts on eating, cleaning, sleeping and enjoying contact with people statistically [75].

- Prosthetic/dental treatment needs [4, 12, 13, 16, 76]: The subjects seeking prosthetic rehabilitation had higher impacts of OHRQoL than those who were not seeking any dental treatment [13]. General population had lower OHRQoL than patients of treatment group who sought fixed prostheses, removable denture and complete denture [16]. Normative need (the professional, administrator or social scientist defines as the need in any given situation), which associated with perceived needs for denture (this reflects the individual's own assessment of their requirements for health care) or OHRQoL [12]. The number of patients with normative needs was twice that of those with perceived needs [76]. Thus, clinical status and OHRQoL should be assessed simultaneously when assessing dental needs [4].

- Satisfaction to prostheses [40, 70, 77]: Satisfaction of the complete denture was significantly negatively correlated with OHRQoL [40, 70]**.** Older subjects who were satisfied with their removable dentures had well-being OHRQoL than those who were not satisfied with their dentures [77].

Satisfaction to prosthodontic treatment

Patient's satisfaction and/or acceptance with prostheses is complex consideration [70]. Moreover, satisfaction and expectation are one dimension of OHRQoL [3]. Various factors could affect different aspect of QoL as well as satisfaction. They can be classified factors that influence the removable denture's satisfaction into 2 types. The first type is the direct factor inducing the functioning of dentures i.e. chewing ability, comfort, esthetics, speech and retention. The second type is patient-related factors which influence the final result i.e. personality, attitude, dentures experiences and motivation for wearing dentures [78].

Meanwhile, these factors in complete denture are age, sex, psychological factors, patient's personality, patient's attitude, and dentist-patient relation, expectation, oral health, salivary flow, denture quality, method of construction, adaptability [40, 70, 74, 79-81].

The followings are some main variables which correlated with satisfaction to prosthodontic treatment.

A. **Demographic factors [15, 40, 82]:** The female is associated with a negative self-perception of oral health and adaption to new dentures [82]. Older patient has high satisfaction with dentures and lower impairments than the younger [15, 40].

B. **Psychological factors [14, 17, 79-81, 83, 84]**. The patient's personality with more neurotic, less stable, less intelligent, more self-centered and more careful might less satisfaction to conventional complete denture [17, 80, 84] The patient's satisfaction directly depends on their emotional and mental status [14].

The study of Jonkman et al. confirmed that patient's previous attitude toward wearing dentures is the most important factor in immediate denture treatment [81]. Many studies emphasized that psychological factors play an important role in prognosis of treatment [79]. Furthermore, the express need might relate to satisfaction in complete denture wearers [83].

C. **Previous denture experience, satisfaction and expectation [79-81, 84]:** Junkman et al. reviewed that previous denture experience, years of denture experience, and the numbers of previously worn dentures were the factors that correlated with denture satisfaction [81]. Moreover, past prosthetic history correlated with patient satisfaction such as the unsatisfied with the lower existing complete denture might be useful to predict that unsatisfied patients with new one [79, 81]. On the contrary, expectation before dental treatment is important to satisfaction rates after treatment [84]. However, there is no statically significant correlation between expectation and satisfaction scores after completed treatment in the study of Bellini et al. [80].

D. **Dentist-patient relationship [15, 80, 84]:** The dentist-patient relationship has been shown to be related to patient satisfaction with dental treatment [15, 80]. It is result to incorrect evaluation of satisfaction when the impaired relationship was presented [84].

E. Status of satisfaction evaluator [75, 84, 85]: The dentists consider the successful of removable partial dentures from technical standpoints whereas the patients evaluate from personal satisfaction [85]. The participants have greater satisfaction with their dentition and dentures than the dentist's estimation [75].

Meanwhile, patients had higher expectations than the dentists and the dental technician [84].

F. Health, Oral health, OHRQoL [17, 40, 75, 81]: Better in patient's health [81], higher in remaining teeth [75], and better OHRQoL [17, 40] effect to higher satisfaction to their dentures. Interestingly, the study of Al-Omiri et al. concluded that patient's satisfaction with different aspects of their dentition and prosthetic rehabilitations might have positive effect on their OHRQoL and oral impacts. This in turn might improve patient's daily living and dental perceptions [17].

G. **Denture quality [18, 40, 70, 74, 75, 81, 84, 85]:** Association between satisfaction and denture quality have been demonstrated [40, 75, 81] but some study demonstrated that is unrelated [74, 84]. The completely edentulous showed better satisfaction with their dentures than the partially edentulous [70, 75]. Maxillary denture esthetics acts as the predictor for complete denture's satisfaction whereas predictor for removable partial denture is maxillary denture comfort [70]. The design and material of denture not affect patient's general satisfaction [85]. Moreover, different in denture-making technique is not affect OHRQoL and satisfaction [18].

H. **Adaptability and time [8, 9, 15, 80, 81, 86]:** Patient's adaptation to their dentures depends on psychosocial, emotional factors, and pre-treatment expectation. It is affect satisfaction to denture [8, 80]. Budtz-Jorgensen classified three groups of elder patients for diagnostic treatment plan; those who are well-adapted, poorly adapted, and no experienced to existing complete denture. Then choose the appropriate type of treatment to individuals; reline, rebase, copy denture, new construct, and referral to specialist or no treatment [9]. The study of Stober et al. proved that long adaption period in edentulous patient was significantly

improved in satisfaction and OHRQoL [15]. The meticulous monitoring/follow-up of patients after insert denture and providing a good balance of occlusion can minimize chewing difficulties for enable better QoL [81, 86].

Evaluate the satisfaction of prostheses

Patient satisfaction can measure as a global self-rating of OHRQoL according to Slade [29]. The general question was asked to individual for evaluation overall oral health and oral well-being [22, 87]. This can be developed to assessment the satisfaction of prosthodontic treatment.

The literatures have shown many kinds of format in evaluating satisfaction such as

- 100-mm Visual Analogue Scale (VAS) [13, 74, 79, 80, 84, 87].

- Likert-scale [15, 29, 40, 70, 75, 78, 81, 83, 85, 88].

- The Dental Impacts On Daily Living (DIIDL) [17].

- Semi-structured interview method (Qualitative study) [86].

However, patient satisfaction should be asked both from patients and clinicians to list and to order factors which related to success of treatment outcome [18].

CHAPTER III
METHODOLOGY

Population and Sample

Target population

Thai adults and elders who sought and obtained prosthodontic care

Sample

The newly-registered patients who seeks and obtains prosthodontic care at Under-graduated Prosthodontics Clinic (UG clinic) and Post-graduated Prosthodontics Clinic (PG clinic), Department of Prosthodontics, Faculty of Dentistry, Chulalongkorn University from 1st June 2012 to 31st October 2013 (18 months) according to the following inclusion and exclusion criteria as follows:

- Inclusion criteria

1) Newly registered patient with new prosthodontic treatments in the 1st semester of academic year 2012 and completed these treatments in the 2nd semester of academic year 2013 in either UG or PG clinic.

2) The informed consent was obtained.

3) The subjects are able to completely follow throughout the study.

- Exclusion criteria

1) The subjects are unable to communication in Thai language.

2) Newly-registered patient who assigned to obtain with complicated treatment; full mouth rehabilitation, maxillofacial prostheses, dental implants and long-span conventional bridge (with more than 5 units).

.

Study population

Data were derived from a cohort of 746 patients (510 subjects from UG clinic and 236 subjects from PG clinic) who completion baseline information before prosthodontic treatment. Finally, after treatment completed, data of 664 patients (467 subjects from UG clinic and 197 subjects from PG clinic) were collected for this study.

Data collection

Primary outcome

The Thai version of Oral Impacts on Daily Performances (Thai-OIDP) index [32] was used for assessing OHQoL at three different periods of assessment i.e., the first dental visit (T_0), first recheck visit (T_1) and completed visit (T_2). The subjects were face-to-face interviewed by a single trained interviewer.

Secondary outcome

The 100-mm VAS horizontal line was used for assessing satisfaction after prosthodontic treatment (T_1).

Other covariates

The baseline questionnaire covered a wide range of topics comprising of general information, medical and dental history, oral status, and prosthodontic factors before treatment (T_0).

- **Socio-demographic characteristics**; sex, age, marriage status, education status, occupation, and personal income per month.

- **Medical history**; systemic disease, drug allergy, concerning, factor for dental treatment, and Activities of Daily Living status (ADL.) if who aged equal to 60 years old.

- **Natural teeth status;** the number of NT which range from 0 to 28 excluding third molar, the number POP, the number of NT-POP status, and the location (site) of tooth loss.

Because World Health Organization (WHO) proposed a goal that elderly people should have at least 20 NT [89]. World Dental Federation (FDI) recommended that more than half of individuals of 65 years and above should have 20 or more teeth [90]. In Thailand, Department of Health, Ministry of Public Health determined the Strategic Planning for 2009-2011 that recommended elderly population should have at least 20 NT and 4 posterior occluding pairs (POP) [90].

- **Prosthodontic treatment**; chief complaint, previous prosthodontic treatment, type of prostheses need (normative need), and dental visiting routine.

Informed written consent was obtained from all subjects before interview and they understood that the data from the interview did not influence the clinical grade of dental student/special trainee.

Data Analysis

Data from participants were categorized into three age groups; $\leq$ 44, 45-59 and $\geq$ 60 years old. Any information missing even one record were excluded from this research.

Data were analyzed using the Statistics Package for the Social Sciences (SPSS) for Windows version 17.0 (SPSS Inc., Chicago, IL, USA.). Descriptive analysis was performed. The OIDP scores at T_0 and VAS scores at T_1 were analyzed by the Mann-Whitney U Test and the Kruskal-Wallis Test. Moreover, the Friedman Test and Wilcoxon Signed Ranks Test were used for analyzing the OIDP scores between

periods of assessment. Statistical significance was set at the 5% level ($p<.05$). All processes were performed by one individual.

Ethical consideration

The study protocol was approved by the Ethics committees of Faculty of Dentistry, Chulalongkorn University on April 20, 2012 (No. 019/2012).

CHAPTER IV
RESEARCH RESULTS

Characteristics of study population

Finally, six hundred and sixty four participants (467 subjects from UG clinic and 197 subjects from PG clinic) at the Faculty of Dentistry, Chulalongkorn University were completely recorded in all items. The participants of this study included 302 (45.5%) male and 362 (54.5%) female. The subjects were 18-84 years old with average age of 53.9±13.4 years. The number of participants who were ≤ 44, 45-59 and ≥ 60 years old were 132 (19.9%), 280 (42.2%), and 252 (37.9%) respectively. Fifty seven percent of the subjects were married and 36.7% had the highest study at secondary school level. Forty one percent of them had at least one systemic disease. The most common systemic diseases were hypertension (55.5%), diabetes (18.2%), and kidney disease (7.6%). Four percent of the subjects had a xerostomia which was a concerning factor for dental treatment and 7.4% had history of drug allergy. Moreover, 7.1% and 0.1% of the elderly subjects had semi and full dependent status of basic Activities Daily Living (ADL.) respectively.

The association between of variables and the overall OIDP scores

The data were analyzed in 3 groups according to age; ≤ 44, 45-59 and ≥ 60 years old. Some important variables of which related to OIDP scores of the subjects were summarized in Table 7 and 8.

Table 7 : The distribution of overall OIDP scores (mean/median) among participants in Under-graduated clinic (N=467) according to age group at T_0

Variable	≤ 44 years old (N=84, 18.0%)		45- 59 years old (N=205, 43.9%)		≥ 60 years old (N= 178, 38.1%)	
	N (%)	OIDP scores	N (%)	OIDP scores	N (%)	OIDP scores
Socioecco-demographic characteristics						
• ***Gender ;*** Male	35(41.7)	7.8/6^{i,iii}	95(46.3)	21.8/12^{i,ii}	73(41.0)	33.0/23^{ii,iii}
Female	49(58.3)	16.9/6	110(53.7)	24.6/13.5	105(59.0)	27.5/17
• ***Education;*** Up to primary level	7(8.3)	9.6/10	74(36.1)	19.9/10	90(50.6)	25.5/16
Secondary level	31(36.9)	17.3/8^{i,iii}	85(41.5)	26.1/15^{i,ii}	70(39.3)	36.0/25^{ii,iii}
At least tertiary level	46(54.8)	10.8/4^{i}	46(22.4)	23.4/10^{i}	18(10.1)	26.9/12
• ***Working status;*** Economically inactive	26(48.7)	15.8/0^{i,iii}	86(42.0)	18.5/10^{i,ii}	115(64.6)	27.8/17^{ii,iii}
Economically active	58(51.3)	11.9/9^{i,ii}	119(58.0)	26.7/17^{i}	63(35.4)	33.4/25^{ii}
• ***Personal income (Baht/month)***						
None	28(33.3)	14.2/6^{i}	58(28.3)	19.8/8	60(33.7)	28.6/21^{i}
1-10,000 Baht	25(29.8)	16.8/10	60(29.3)	23.0/15	81(45.5)	29.2/19
More than 10,000 Baht	31(36.9)	9.2/4^{i,ii}	87(42.4)	25.8/15^{i}	37(20.8)	33.1/24^{ii}
Prosthodontic treatment						
• ***Previous prosthodontic treatment;*** Yes	12(14.3)	18.3/15	60(29.3)	32.7/21^{A}	92(51.7)	30.9/22
No	72(85.7)	12.2/5^{i,iii}	145(70.7)	19.4/10^{A,i,ii}	86(48.3)	28.6/20.5^{ii,iii}
• ***Type of prostheses need (normative need)***						
Complete or Single denture only	-	-	32(15.6)	33.3/21^{a}	69(38.8)	34.0/25^{a}
Removable partial denture only	29(34.5)	23.9/15^{a}	111(54.1)	28.2/20^{b}	95(53.4)	29.8/23^{b}
Fixed partial denture only	55(65.5)	7.4/0^{a}	62(30.2)	8.8/2^{a,b}	14(7.9)	8.8/3.5^{a,b}
Natural teeth status						
• ***NT;*** ≥ 20 NT	74(88.1)	12.5/5.5	53(25.9)	14.0/10^{a}	17(9.6)	21.7/17
< 20 NT	10(11.9)	17.2/11	120(58.5)	24.5/12^{b}	92(51.7)	28.1/20.5
Edentulous at upper, and/or lower	-	-	32(15.6)	33.3/21^{a,b}	69(38.8)	34.0/25
• ***POP;*** ≥ 4 POP	76(90.5)	13.1/5.5	95(46.3)	16.0/7^{a}	39(21.9)	22.6/16
< 4 POP	8(9.5)	12.9/10.5	78(38.0)	28.0/19.5^{a,b}	70(39.3)	29.6/22
Edentulous at upper, and/or lower	-	-	32(15.6)	33.3/21^{b}	69(38.8)	34.0/25
• ***NT and POP status***						
≥ 20 NT and ≥ 4 POP	65(77.4)	11.4/5	32(15.6)	7.2/5^{a,b,c}	9(5.1)	22.8/20
≥ 20 NT and < 4 POP	6(7.1)	17.2/14	8(3.9)	22.3/15^{a}	3(1.7)	32.3/21
< 20 NT and ≥ 4 POP	11(13.1)	23.1/12	64(31.2)	20.4/9^{d}	30(16.9)	22.6/14
< 20 NT and < 4 POP	2(2.4)	0/0	69(33.7)	28.4/20^{b}	67(37.6)	29.4/23
Edentulous at upper, and/or lower	-	-	32(15.6)	33.3/21^{c,d}	69(38.8)	34.0/25
• ***Location (site) of tooth loss***$^{\#}$						
Only at anterior	4(11.4)	66/84.5	12(5.9)	70.5/77.5^{a,b,c}	7(3.9)	75.6/80^{a,b,c}
Only at posterior	13(37.1)	16.5/15	41(20.3)	18.4/10^{a,d}	24(13.5)	29.0/21^{a}
Both anterior and posterior	18(51.4)	15.8/9	117(57.9)	18.8/7^{b,e}	78(43.8)	22.1/16.5^{b,d}
Edentulous at upper, and/or lower	-	-	32(15.8)	33.3/21^{c,d,e}	69(38.8)	34.0/25^{c,d}

$^{\#}$ not include those without tooth loss

^{A} indicate statistical significance (p<.05) between variable-subgroups; Mann-Whitney U Test

^{a,b,c,d,e} A pair of statistically significant difference (p<.05) among variable-subgroups; Kruskal-Wallis Test

^{i,ii} A pair of statistically significant difference (p<.05) among age-groups; Kruskal-Wallis Test

Table 8: The distribution of overall OIDP scores (mean/median) among participants in Post-graduated clinic (N=197) according to age group at T_0

Variable	≤ 44 years old (N=48, 24.4%)		45- 59 years old (N=75, 38.1%)		≥ 60 years old (N= 74, 37.6%)	
	N (%)	OIDP scores	N (%)	OIDP scores	N (%)	OIDP scores
Socioecco-demographic characteristics						
• ***Gender ;*** Male	22(45.8)	10.1/5.5^{i,ii}	34(45.3)	22.4/18^{i}	43(58.1)	24.3/15^{A,ii}
Female	26(54.2)	15.5/2.5^{I,II}	41(54.7)	23.7/20.0^{i}	31(41.9)	34.5/25^{A,ii}
• ***Educationt;*** Up to primary level	8(16.7)	25.4/25	16(21.3)	22.8/24	38(51.4)	28.2/18
Secondary level	19(39.6)	12.2/2^{i,ii}	36(48.0)	23.7/19^{i}	20(27.0)	26.5/17.5^{ii}
At least tertiary level	21(43.8)	9.1/0^{i,ii}	23(30.7)	22.4/15^{i}	16(21.6)	32.2/20^{ii}
• ***Working status;*** Economically inactive	34(70.8)	16.8/10^{A}	20(26.7)	19.4	30(40.5)	31.8/22.5
Economically active	14(29.2)	3.9/0^{A,i,ii}	55(73.3)	24.5/24^{i}	44(59.5)	26.4/15^{ii}
• ***Personal income (Baht/month)***						
None	22(45.8)	15.4/11	16(21.3)	20.6/15	25(33.8)	26.8/15
1-10,000 Baht	16(33.3)	14.4/1.5^{i}	21(28.0)	18.9/15^{ii}	27(36.5)	34.1/25^{i,ii}
More than 10,000 baht	10(20.8)	5.5/0^{i}	38(50.7)	26.8/25^{ii}	22(29.7)	25.1/17.5^{i,ii}
Prosthodontic treatment						
• ***Previous prosthodontic treatment;*** Yes	3(6.3)	21.7/10	23(30.7)	21.4/20	46(62.2)	28.2/20
No	45(93.8)	12.4/3^{i,ii}	52(69.3)	23.9/18^{i}	28(37.8)	29.2/15^{ii}
• ***Type of prostheses need (normative need)***						
Complete or Single denture only	-	-	6(8.0)	17.7/18	29(39.2)	35.0/25
Removable partial denture only	7(14.6)	21.1/12	27(36.0)	29.4/24	15(20.3)	25.1/15
Fixed partial denture only	39(81.3)	12.0/0	25(33.3)	17.8/12	9(12.2)	15.3/10
Single and Removable partial	-	-	4(5.3)	22.8/27.5	12(16.2)	33.7/22
Single and Fixed partial denture	-	-	1(1.3)	18.0/18	-	-
Removable and Fixed partial	2(4.2)	5.0/5	12(16.0)	23.3/25	9(12.2)	20.1/25
Natural teeth status						
• ***NT;*** ≥ 20 NT	46(95.8)	13.1/2.5	32(42.7)	19.0/13.5	8(10.8)	12.5/7.5
< 20 NT	2(4.2)	11.0/11	32(42.7)	28.5/24.5	25(38.8)	23.8/15
Edentulous at upper, and/or lower	-	-	11(14.7)	19.6/21	41(55.4)	34.6/25
• ***POP;*** ≥ 4 POP	43(89.6)	12.6/2	29(38.7)	23.8/18	7(9.5)	14.3/15
< 4 POP	5(10.4)	16.4/12	35(46.7)	23.7/15	26(35.1)	22.9/15
Edentulous at upper, and/or lower	-	-	11(14.7)	19.6/21	41(55.4)	34.6/25
• ***NT and POP status***						
≥ 20 NT and ≥ 4 POP	43(89.6)	12.6/2	26(34.7)	18.7/12.5^{ii}	7(9.5)	14.3/15^{iii}
≥ 20 NT and < 4 POP	3(6.3)	20.0/25	6(8.0)	18.2/13.5	1(1.4)	0/0
< 20 NT and ≥ 4 POP	-	-	9(12.0)	38.0/25	1(1.4)	25.0/25
< 20 NT and < 4 POP	2(4.2)	11.0/11	23(30.7)	24.7/24	24(32.4)	23.8/15
Edentulous at upper, and/or lower	-	-	11(14.7)	19.6/21	41(55.4)	34.6/25
• ***Location (site) of tooth loss***$^{\#}$						
Only at anterior	3(10.7)	29.7/39	4(5.5)	50.3/53^{a,b}	1(1.4)	0/0
Only at posterior	18(64.3)	26.2/24	27(37.0)	14.8/10^{a,c}	9(12.2)	16.1/15
Both anterior and posterior	7(25.0)	8.6/8	31(42.5)	29.4/24^{c}	23(31.1)	24.0/15
Edentulous at upper, and/or lower	-	-	11(15.1)	19.6/21^{b}	41(55.4)	34.6/25

$^{\#}$ not include those without tooth loss

^{A} indicate statistical significance (p<.05) between variable-subgroups; Mann-Whitney U Test

^{a,b,c} A pair of statistically significant difference (p<.05) among variable-subgroups; Kruskal-Wallis Test

^{I,II} A pair of statistically significant difference (p<.05) among age-groups; Kruskal-Wallis Test

The trend of the overall OIDP scores in each subgroup increased with higher in age of subjects. There were no significant differences between the overall OIDP scores in subgroups of socio-demographic variables in all age groups among UG participants ($p \geq .05$). Meanwhile, there were significant differences between the overall OIDP scores in subgroups of gender and working status in some age groups among PG participants.

On the contrary, there was no significant difference between the OIDP scores in subgroups of previous prosthodontic treatment and type of prostheses need factor between subgroups in all age groups among PG participants. However, type of prostheses factor was the only factor which affects the OIDP scores in subgroups in all age groups among UG participants.

It should be noted that patient who had more NT, POP or NT-POP might have higher OIDP scores in $\leq$ 44 years old group. Meanwhile, edentulous patient had the highest OIDP scores in $\geq$ 60 years old group. Furthermore, there were significant differences between the overall OIDP scores in subgroups of NT, POP, and NT-POP variables in 45-59 years old group among UG participants whereas these relations were not presented among all PG participants.

Moreover, the highest overall OIDP scores might present only in anterior tooth loss group except edentulous group among elderly PG group are highest instead. Therefore, the location of tooth loss might be the most powerful factor that related to OHRQoL. It enabled to categorize both UG and PG participants who had oral problems.

The relationship between the periods of time and the OIDP scores

From table 9, the overall OIDP scores (mean/median) in UG participants at T_0, T_1 and T_2 were 23.9/15.0, 10.3/5.0, and 0.1/0, respectively whereas those in PG participants were 22.7/15.0, 6.5/5.0, and 0.2/0, respectively. The prosthodontic treatment could reduce oral problems and provide better OHRQoL in severity aspect. The result of both UG and PG participants showed not only the mean overall OIDP scores which were significant difference between 3 periods of assessment (T_0, T_1 and T_2) but also including of 8 activities in UG participants and 7 activities in PG participants except carrying major work/physical activity.

When considering the OHRQoL at T_0 by excluding other variables, we found that the average of entire OIDP score at T_0 in UG participant (23.9) was slightly higher than PG participant (22.7). Moreover, the scores in speaking, sleeping, and enjoying contact with people were significantly different. Eating and speaking were the first and second activities which were affected by oral problems. Interestingly, it should be noted that overall OIDP scores and OIDP scores in eating and speaking at T_1 of UG and PG subjects were significantly different.

Table 9 : The OIDP scores (mean/median) among participants at different periods

	Under-graduated clinic			Post-graduated clinic		
	T_0	T_1	T_2	T_0	T_1	T_2
Overall OIDP	23.9/15[a,c]	10.3/5[a,b,ii]	0.1/0[b,c]	22.7/15[a,c]	6.5/0[a,b,ii]	0.2/0[b,c]
1. Eating	9.5/10[a,c]	6.3/5[a,b,ii]	0.1/0[b,c]	10.1/10[a,c]	3.9/0[a,b,ii]	0.1/0[b,c]
2. Speaking	6.5/0[a,c,i]	2.6/0[a,b,ii]	0/0[b,c]	4.4/0[a,c,i]	0.9/0[a,b,ii]	0/0[b,c]
3. Cleaning teeth	1.6/0[a,c]	0.1/0[a,b]	0/0[b,c]	1.4/0[a,c]	0.1/0[a]	0/0[c]
4. Sleeping	0.1/0[a,c,i]	0/0[a]	0/0[c]	0.5/0[a,c,i]	0/0 [a]	0.1/0[c]
5. Maintaining usual emotional state	1.7/0[a,c]	0.9/0[a,b]	0/0[b,c]	2.9/0[a,c]	1.3/0[a,b]	0/0[b,c]
6. Smiling	3.0/0[a,c]	0.3/0[a,b]	0/0[b,c]	2.4/0[a,c]	0.1/0 [a]	0/0[c]
7. Enjoying contact with people	1.7/0[a,c,i]	0.1/0[a,b]	0/0[b,c]	0.8/0[a,c,i]	0.1/0[a]	0/0[c]
8. Carrying major work/physical activity	0.4/0[a,c]	0/0[a]	0/0[c]	0.3/0	0.1/0	0/0

[a,b,c] A pair of statistically significant difference (p<.05) between periods of assessment; Friedman Test

[i] A pair of statistically significant difference (p<.05) between setting groups at T_0; Mann-Whitney U Test

[ii] A pair of statistically significant difference (p<.05) between setting groups at T_1; Mann-Whitney U Test

Furthermore, the comparison of average overall OIDP and OIDP-Daily Performances scores among total participants and affected participants were shown in Table 10.

Table 10: The mean/median of OIDP scores among participants vs. affected person at different periods

	Under-graduated clinic						Post-graduated clinic					
	T_0		T_1		T_2		T_0		T_1		T_2	
	Total	Person affected	Total	Person affected	Total	Person affected	Total	Person affected	Total	Person affected	Total	Person affected
Overall OIDP	23.9/15[a,c]	33.3/24	10.3/5[a,b,ii]	14.4/10	0.1/0[b,c]	2.7/2	22.7/15[a,c]	30.2/25	6.5/0[a,b,ii]	16.1/11.5	0.2/0[b,c]	5.3/2
1. Eating	9.5/10[a,c]	14.2/15	6.3/5[a,b,ii]	9.3/5	0.1/0[b,c]	0.1/0	10.1/10[a,c]	15.3/15	3.9/0[a,b,ii]	10.1/10	0.1/0[b,c]	3.7/2
2. Speaking	6.5/0[a,c,i]	13.2/10	2.6/0[a,b,ii]	8.6/6	0/0[b,c]	0/0	4.4/0[a,c,i]	13.7/15	0.9/0[a,b,ii]	9.2/6	0/0[b,c]	0/0
3. Cleaning teeth	1.6/0[a,c]	7.9/5	0.1/0[a,b]	5.3/2.5	0/0[b,c]	0/0	1.4/0[a,c]	10.6/10	0.1/0[a]	12.5/12.5	0/0[c]	0/0
4. Sleeping	0.1/0[a,c,i]	5.5/4	0/0[a]	0/0	0/0[c]	0/0	0.5/0[a,c,i]	12.1/13.5	0/0[a]	0/0	0.1/0[c]	15/15
5. Maintaining usual emotional state	1.7/0[a,c]	10.1/9	0.9/0[a,b]	6.7/6	0/0[b,c]	1.8/2	2.9/0[a,c]	13.4/13.5	1.3/0[a,b]	9.9/9.5	0/0[b,c]	0/0
6. Smiling	3.0/0[a,c]	12.7/10	0.3/0[a,b]	5.2/5	0/0[b,c]	0/0	2.4/0[a,c]	13.1/10	0.1/0[a]	6.3/5	0/0[c]	0/0
7. Enjoying contact with people	1.7/0[a,c,i]	11.3/10	0.1/0[a,b]	4.3/3	0/0[b,c]	0/0	0.8/0[a,c,i]	13.0/13.5	0.1/0[a]	13.5/13.5	0/0[c]	0/0
8. Carrying major work/physical activity	0.4/0[a,c]	16.2/20	0/0[a]	4.0/0	0/0[c]	0/0	0.3/0	16.3/17.5	0.1/0	10.0/10	0/0	0/0

[a,b,c] A pair of statistically significant difference (p<.05) between periods of assessment; Friedman Test

[i] A pair of statistically significant difference (p<.05) between setting groups at T_0; Mann-Whitney U Test

[ii] A pair of statistically significant difference (p<.05) between setting groups at T_1; Mann-Whitney U Test

The relationship between the periods of time and daily performances that affected by the oral impacts, main symptoms and main oral impairments

At baseline (T_0), about 70% of UG subjects (Table 11) and PG subjects (Table 12) had at least one daily performance affected by the serious oral impact during the past 6 months. The detail of main symptoms and main oral impairments among UG and PG participants was nearly similar. Functional limitation was the main symptom for eating and speaking (more than 60%). Meanwhile, dissatisfaction with appearance was the main symptom for smiling, enjoying contact with people, and carrying major work/physical activity (more than 50%). Moreover, tooth loss was the major main oral impairment for all the daily performances (more than 40%) except cleaning teeth and sleeping.

Table 11: Daily performances affected by the oral impacts according to OIDP, main symptoms and main oral impairments at different periods in Under-graduated clinic (N=467)

Daily performances	Periods of time		
	T_0	T_1	T_2
OIDP scores > 0 [N (%)]	**335(71.7)**	**333(71.3)**	**22(4.7)**
Physical performances			
1. Eating: N(%)	**312(66.8)**	**320(68.5)**	**17(3.6)**
-Main symptoms: N(%)	*Functional limitation 229(65.2)* *Pain 110(31.3)*	*Pain 228(65.0)* *Discomfort 77(21.9)*	*Functional limitation 16(64.0)* *Pain 6(24.0)*
-Main oral impairments: N(%)	*Tooth loss 164(47.0)* *Ill-fitting denture 105(30.1)*	*Chewing pain from denture 270(76.9)* *Bulky denture ... 63(17.9)*	*Chewing pain from denture 19(76.0)* *Gum pain 6(24.0)*
2. Speaking: N(%)	**229(49.0)**	**140(30.0)**	**2(0.4)**
-Main symptoms: N(%)	*Functional limitation 222(87.7)* *Discomfort 30(11.9)*	*Functional limitation 107(64.8)* *Discomfort 50(30.3)*	*Discomfort 2(100.0)*
-Main oral impairments: N(%)	*Tooth loss 169(67.6)* *Ill-fitting denture 76(30.4)*	*Bulky denture 137(85.1)* *Ill-fitting denture 18(11.2)*	*Ill-fitting denture 2(100.0)*
3. Cleaning teeth: N(%)	**60(12.8)**	**9(1.9)**	-
-Main symptoms: N(%)	*Discomfort 53(64.7)* *Pain 30(36.6)*	*Discomfort 9(100.0)*	-
-Main oral impairments: N(%)	*Food retention 54(67.5)* *Tooth sensitivity 16(20.0)*	*Gum pain 8(80.0)* *Food retention 2(20.0)*	-
Psychological performances			
4. Sleeping: N(%)	**6(1.3)**	-	-
-Main symptoms: N(%)	*Pain 4(66.67)* *Functional limitation 1(16.7)*	-	-
-Main oral impairments N(%)	*Toothache 4(66.67)* *Food retention 1(16.7)*	-	-
5. Maintaining usual emotional state: N(%)	**80(17.1)**	**63(13.5)**	**5(1.1)**
-Main symptoms: N(%)	*Functional limitation 57(50.4)* *Discomfort 17(16.3)*	*Pain 62(89.9)* *Discomfort 2(7.2)*	*Pain 5(100.0)*
-Main oral impairments: N(%)	*Tooth loss 47(43.1)* *Ill-fitting denture 36(33.6)*	*Chewing pain from denture 44(56.7)* *Bad occlusion from denture 28(35.4)*	*Gum pain 4(80.0)* *Toothache 1(20.0)*
6. Smiling: N(%)	**112(24.0)**	**26(5.6)**	-
-Main symptoms: N(%)	*Dissatisfaction with appearance 112(100.0)*	*Dissatisfaction with appearance 26(100.0)*	-
-Main oral impairments: N(%)	*Tooth loss 111(83.3)* *Ill-fitting denture 17(12.9)*	*Poor esthetics denture 26(100.0)*	-
Social performances			
7. Enjoying contact with people: N(%)	**71(15.2)**	**7(1.5)**	-
-Main symptoms: N(%)	*Dissatisfaction with appearance 65(91.5)* *Functional limitation 18(8.5)*	*Dissatisfaction with appearance 7(100.0)*	-
-Main oral impairments N(%)	*Tooth loss 63(78.8)* *Poor esthetics denture 9(11.3)*	*Poor esthetics denture 7(100.0)*	-
8. Carrying major work/ physical activity: N(%)	**12(2.6)**	**2(0.4)**	-
-Main symptoms: N(%)	*Dissatisfaction with appearance 11(78.6)* *Discomfort 3(21.4)*	*Pain 2(100.0)*	-
-Main oral impairments: N(%)	*Tooth loss 11(78.6)* *Ill-fitting denture 3(21.4)*	*Chewing pain from denture 2(100.0)*	-

Note: The data show only the first and the second rank of Main symptoms and Main oral impairments

Table 12 : Daily performances affected by the oral impacts according to OIDP, main symptoms and main oral impairments at different periods in Post-graduated clinic (N=197)

Daily performances	Periods of time					
	T_0		T_1		T_2	
OIDP scores > 0 [N(%)]	**148(75.1)**		**80(40.6)**		**7(3.6)**	
Physical performances						
1. Eating: N(%)	**130(66.0)**		**76(38.6)**		**6(3.0)**	
-Main symptoms: N(%)	*Functional limitation*	*110(74.3)*	*Pain*	*70(79.5)*	*Discomfort*	*6(75.0)*
	Pain	*41(27.7)*	*Discomfort*	*15(17.0)*	*Functional limitation*	*2(25.0)*
-Main oral impairments: N(%)	*Tooth loss*	*93(64.1)*	*Chewing pain from denture*	*75(85.2)*	*Tooth loss*	*96(46.8)*
	Ill-fitting denture	*47(32.4)*	*Ill-fitting denture*	*10(11.4)*	*Ill-fitting denture*	*86(50.0)*
2. Speaking: N(%)	**63(32.0)**		**19(9.6)**		-	
-Main symptoms: N(%)	*Functional limitation*	*50(63.3)*	*Functional limitation*	*14(63.6)*	-	
	Discomfort	*15(20.0)*	*Discomfort*	*5(22.7)*		
-Main oral impairments: N(%)	*Tooth loss*	*57(68.7)*	*Bulky denture*	*7(70.0)*	-	
	Ill-fitting denture	*22(26.5)*	*Ill-fitting denture*	*3(30.0)*		
3. Cleaning teeth: N(%)	**26(13.2)**		**2(1.0)**		-	
-Main symptoms: N(%)	*Discomfort*	*23(82.1)*	*Pain*	*2(100.0)*	-	
	Pain	*6(21.4)*				
-Main oral impairments: N(%)	*Food retention*	*16(53.3)*	*Gum pain*	*1(50.0)*	-	
	Gingivitis	*7(23.3)*	*Ill-fitting denture*	*1(50.0)*		
Psychological performances						
4. Sleeping: N(%)	**8(4.1)**		-		**1(0.5)**	
-Main symptoms: N(%)	*Pain*	*5(55.6)*	-		*Pain*	*1(100.0)*
	Discomfort	*3(33.3)*				
-Main oral impairments: N(%)	*Toothache*	*6(60.0)*	-		*Toothache*	*1(100.0)*
	Food retention	*2(20.0)*				
5. Maintaining usual emotional state: N(%)	**42(21.3)**		**26(13.2)**			
-Main symptoms: N(%)	*Discomfort*	*23(46.9)*	*Pain*	*14(46.7)*	-	
	Functional limitation	*8(16.3)*	*Discomfort*	*12(40.0)*	-	
-Main oral impairments: N(%)	*Tooth loss*	*21(39.6)*	*Chewing pain from denture*	*23(76.7)*	-	
	Ill-fitting denture	*18(32.1)*	*Bad occlusion from denture*	*4(13.3)*		
6. Smiling: N(%)	**35(17.8)**		**4(2.0)**		-	
-Main symptoms: N(%)	*Dissatisfaction with appearance*	*40(93.0)*	*Dissatisfaction with appearance*	*2(100.0)*	-	
	Discomfort	*2(4.7)*				
-Main oral impairments: N(%)	*Tooth loss*	*28(66.7)*	*Poor esthetics denture*	*2(100.0*	-	
	Poor esthetics denture	*10(23.8)*				
Social performances						
7. Enjoying contact with people: N(%)	**12(6.1)**		**2(1.0)**		-	
-Main symptoms: N(%)	*Dissatisfaction with appearance*	*9(52.9)*	*Dissatisfaction with appearance*	*2(100.0)*	-	
	Functional limitation	*3(17.6)*				
-Main oral impairments: N(%)	*Tooth loss*	*14(77.7)*	*Poor esthetics denture*	*2(100.0)*	-	
	Ill-fitting denture	*2(11.1)*				

Note: The data show only the first and the second rank of Main symptoms and Main oral impairments

Table 12 (continued)

Daily performances	Periods of time				
	T_0		T_1		T_2
8. Carrying major work/ physical activity: N(%)	**4(2.0)**		**1(0.5)**		-
-Main symptoms: N(%)	*Dissatisfaction with appearance*	*4(80.0)*	*Pain*	*1(100.0)*	-
	Discomfort	*1(20.0)*			
-Main oral impairments: N(%)	*Tooth loss*	*3(60.0)*	*Chewing pain from denture*	*1(100.0)*	-
	Poor esthetics denture	*2(40.0)*			

Note: The data show only the first and the second rank of Main symptoms and Main oral impairments

When considered the frequency aspect of OHRQoL, the data from Table 11 and 12 showed that 333 UG subjects (71.3%) and 80 UG subjects (40.6%) had symptoms at least one daily performance affected at T_1 after using the prostheses. After completing of prosthodontic treatment (T_2), the percentage of both UG and PG subjects who had oral impacts were less than 5%. However, the numbers of UG subjects who had oral problems from prostheses at first recheck visit (T_1) were equal to before treatment (T_0) whereas the numbers of PG subjects who received oral problems at T_1 were half of before treatment (T_0).

There were similar of main symptoms-main oral impairments in each activity after using denture at T_1 among UG and PG participants. When the main symptoms was focused, functional limitation was the main symptom of speaking (more than 40%) and dissatisfaction with appearance was the main symptoms of smiling and enjoying contact with people (100%) that were the same as T_0. But pain from using prostheses was the main symptoms in eating (more than 65%), maintaining usual emotional state (more than 47%), and carrying major work/physical activity (100%) that instead of previous main symptoms at T_0.

Chewing pain from denture might cause problem in eating (more than 77%), maintaining usual emotional state (more than 57%), and carrying major work/physical

activity (100%). Nevertheless, smiling and enjoying contact with people was the mainly from poor esthetics prostheses (100%). Moreover, main oral impairments in speaking and cleaning teeth/denture were bulky denture (more than 70%) and gum pain (more than 50%), respectively

It was interesting that all subjects had no problem from denture in sleeping at T_1. Moreover, subjects had no oral impacts that affect the cleaning teeth, smiling, enjoying contact with people and carrying major work/physical activity after completed treatment (T_2). Meanwhile, there were very slight oral impacts from pain and/or discomfort of chewing pain from denture (UG subjects) and Ill-fitting denture (PG subjects).

The pattern of changing of OIDP scores over time

When investigating in case by case, the pattern and direction of OIDP scores were shown only in 5 main pattern that reflected the role of prostheses (Figure 5 and 6).

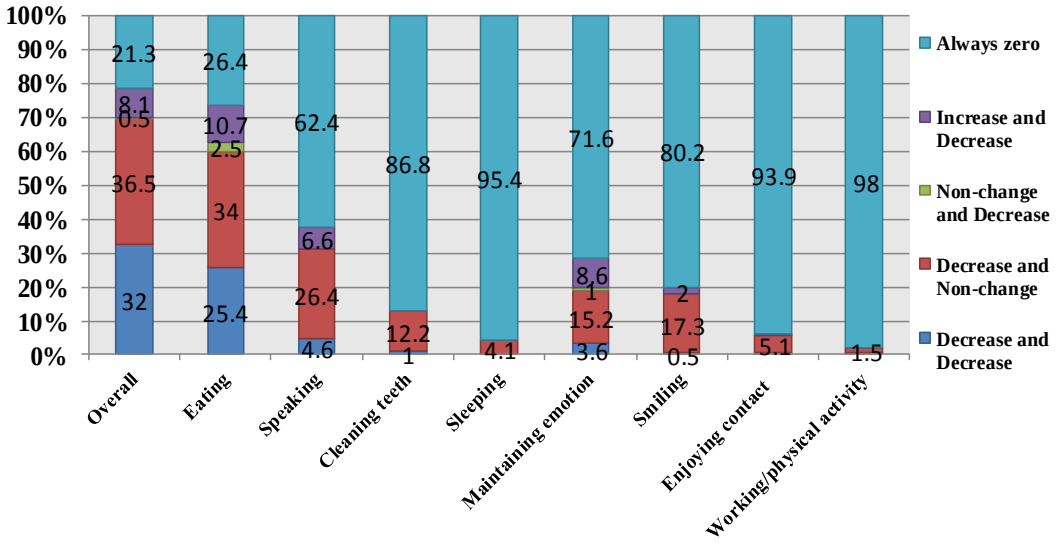


Figure 5: Distribution of OIDP scores on daily performances from T_0 to T_1 and T_1 to T_2 among participants in Under-graduated clinic (N=467)

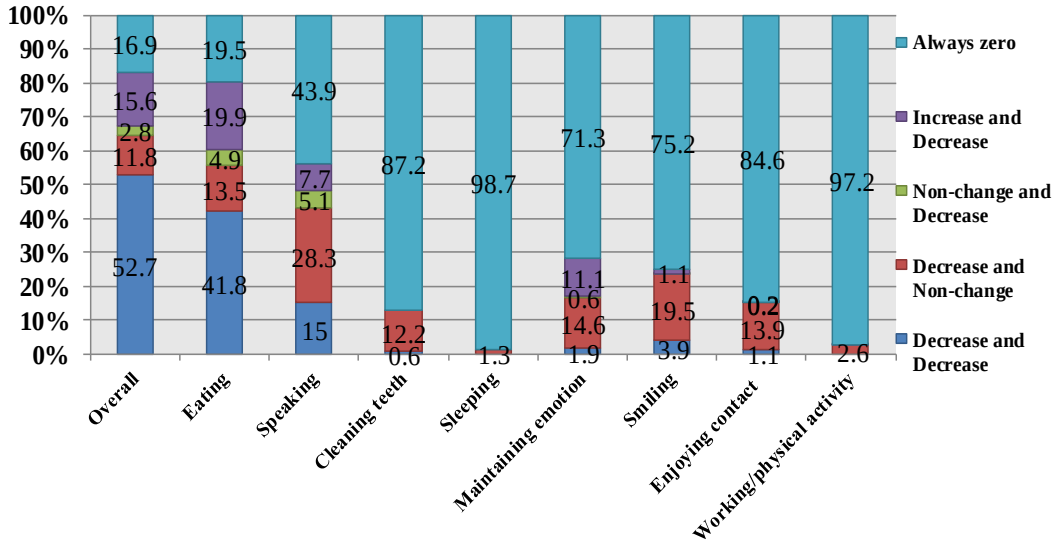


Figure 6: Distribution of OIDP scores on daily performances from T_0 to T_1 and T_1 to T_2 among participants in Post-graduated clinic (N=197)

Both UG and PG participants who had the prostheses impacts were mostly found in majority (more than 80%), eating (more than 75%), and speaking (more than 37%). Meanwhile, the most of proportion of them had OIDP zero scores all three periods in others daily performances. Additionally, the OIDP scores decreased at T_0 to T_1 and unchanged at T_1 to T_2 (zero scores in both T_1 and T_2) in all activities. The prosthodontic care can initial the reduction of the oral impacts at T_1 in affected person. However, it is interesting that the OIDP scores increased at T_0 to T_1 and decreased at T_1 to T_2 were presented in some activities especially eating and maintaining usual emotional state. These reflected the oral problem occurred during treatment process among some participants.

The association of variables to satisfaction scores

The average of VAS scores after using prostheses at T_1 according to the setting of participants was summarized in Table 13. UG participants had significant higher overall VAS scores than PG participants including most of the subgroups; natural teeth status, prosthodontic treatment, and OHRQoL variables ($p<.05$).

When observing at NT, POP and NT-POP status, the edentulous subgroup had the highest scores among subgroups in each variable. Subjects who had only posterior missing had the lowest satisfaction among site of tooth loss factor. Trend of VAS scores which related to type of prostheses were quite similar to NT, POP and NT-POP status. The previous prostheses history was the only one of the variable that affected the satisfaction in PG subjects.

When considered OHRQoL of subjects, both oral impacts before treatment and oral impacts from denture at T_1 or T_2 were not related to the satisfaction of prosthodontic treatment. PG subjects with oral problems at T_0 had VAS scores lower than whom without problems whereas it was converse in PG subjects. Furthermore, UG subjects who had experienced denture problems and/or oral problems from denture had lower VAS scores than whom without impacts whereas it was converse in PG subjects.

Table 13: The distribution of VAS scores (mean/median) of satisfaction to prosthodontic treatment among participants

Variable	Under-graduated clinic		Post-graduated clinic	
	N (%)	VAS scores	N (%)	VAS scores
Overall	**467(100.0)**	**88.9/90[i]**	**197(100.0)**	**92.0/95[i]**
Natural teeth status				
• ***NT;*** ≥ 20 NT	144(30.8)	90.1/90[i]	86(43.7)	91.4/92.5[i]
< 20 NT	222(47.5)	89.7/90[i]	59(29.9)	92.0/90[i]
Edentulous at upper, and/or lower	101(21.6)	90.2/90[i]	52(26.4)	92.9/96.5[i]
• ***POP;*** ≥ 4 POP	210(45.0)	89.7/90[i]	85(43.1)	91.9/91[i]
< 4 POP	156(33.4)	90.0/90[i]	60(30.5)	91.3/92.5[i]
Edentulous at upper, and/or lower	101(21.6)	90.2/90[i]	52(26.4)	92.9/96.5[i]
• ***NT and POP status***				
≥ 20 NT and ≥ 4 POP	106(22.7)	89.7/90[i]	76(38.6)	92.0/94.5[i]
≥ 20 NT and < 4 POP	17(3.6)	90.2/90	10(5.1)	86.7/90
< 20 NT and ≥ 4 POP	105(22.5)	89.8/90	10(5.1)	90.5/90
< 20 NT and < 4 POP	138(21.6)	90.0/90[i]	49(24.9)	92.4/95[i]
Edentulous at upper, and/or lower	101(21.6)	90.2/90[i]	52(26.4)	92.9/96.5[i]
• ***Location (site) of tooth loss[#]***				
Only at anterior	23(51.5)	89.2/90	8(24.6)	92.6/97.5
Only at posterior	78(78)	88.2/90[i]	54(30.9)	90.9/92.5[i]
Both anterior and posterior	213(51.3)	90.5/90[i]	61(34.9)	91.7/90[i]
Edentulous at upper, and/or lower	101(4.3)	90.2/90[i]	52(29.7)	92.9/96.5[i]
Prosthodontic treatment				
• ***Previous prosthodontic treatment;*** Yes	164(35.1)	90.2/90[i]	72(36.5)	93.4/98.5[A,i]
No	303(64.9)	89.4/90[i]	125(63.5)	91.2/90[A,i]
• ***Type of prostheses need (normative need)***				
Complete or Single denture only	101(21.6)	90.2/90[i]	35(17.8)	92.0/91[i]
Removable partial denture only	235(50.3)	89.8/90[i]	49(24.9)	91.9/100[i]
Fixed partial denture only	131(28.1)	90.0/90[i]	73(37.1)	91.7/90[i]
Single and Removable partial denture	-	-	16(8.1)	94.6/99.5
Single and Fixed partial denture	-	-	1(0.5)	95.0/95
Removable and Fixed partial denture	-	-	23(11.7)	90.8/90
OHRQoL				
• ***Oral impacts at baseline***				
With impacts	335(71.7)	90.0/90[i]	148(75.1)	91.5/92.5[i]
Without impacts	132(28.3)	89.8/90[i]	49(24.9)	93.4/95[i]
• **Oral impacts from prostheses**				
With impacts (OIDP scores at T_1 or $T_2 > 0$)	334(71.5)	89.9/90[i]	83(42.1)	92.6/100[i]
Without impacts	133(28.5)	90.1/90[i]	114(57.9)	91.6/90[i]

[#] not include those without tooth loss

[A] indicate statistical significance (p<.05) between variable-subgroups; Mann-Whitney U Test

[i] A pair of statistically significant difference (p<.05) between UG and PG groups; Mann-Whitney U Test

CHAPTER V
DISCUSSION

Socio-demographic characteristics and OHRQoL

Participants who sought and obtained prosthodontic treatment at Prosthodontic Department in this study aged range between 18-84 years; however most of participants were elderly patients. This study categorized participants into three age groups; $\leq$ 44, 45-59 and $\geq$ 60 years old as age influences OHRQoL [52] and followed the Thai national survey that these age groups represent middle- age adults, late adults, and older adults, respectively [11]. Our finding is consistent with other previous studies that the increase in age the higher OHRQoL [19, 20, 44].

It is also noted that female participants have slightly higher OIDP scores than male participants but it is not significantly different. This finding is similar to the OHRQoL survey among general Thai adults [44] and the older adults in Northern Thailand[20].

Prosthodontics-related factors and OHRQoL

The finding in this study is consistent with other previous studies that patients who have had prostheses or experienced prosthodontic treatments have higher OIDP scores than those without any experiences of prosthodontic treatments [51, 76]. This may be explained by that those patients have OHRQoL from tooth loss and may suffered by problem of current prostheses [45]. It should be take this aspect into account before providing the treatment to these patients in particular with its oral impacts.

Furthermore, patients who have the higher number of tooth loss and need removable dentures have higher OIDP scores than those with few numbers of tooth loss and need fixed prostheses as revealed in Youdying et al. [76]. After excluding the patients who obtained mixed type of prostheses, the rank of the OIDP scores is complete/single denture, removable partial denture and fixed partial denture, respectively. This finding is consistent with other previous studies [13, 16], therefore the treatment should achieve their OHRQoL especially those with edentulousness and needed for either complete or single denture.

Remaining teeth status and OHRQoL

The difference in number of remaining teeth effects on OIDP scores. Thus, we classified OIDP scores into 4 levels as indicated in the previous study among Thai elderly who has tooth loss; the zero group (score = 0), the low OIDP impact (score = 0.1-7.9), the moderate OIDP impact (score = 8.0-15.9) and the high OIDP impact (score ≥16.0) [20]. Considering the number of remaining teeth (<20 teeth vs. ≥20 teeth), those patients with less number of remaining teeth have higher oral impacts as shown in our study. In addition, those with <4 POP have the higher oral impacts than those with ≥4 POP. However, in our study this pattern is certain only in the late adult group.

Moreover, regarding to the site of tooth loss, those patients with tooth loss at anterior teeth have higher oral impacts than others especially in the aspect of embarrassment, which is similar to study of Leake et al. [92]. In our study the monotonic dose-response for the trend of OIDP scores among patients is clear when we measure through the site (location) of tooth loss rather than considering number of remaining teeth and POP as suggested by other studies [6, 20]. Therefore, for the

patients who have tooth loss and its oral impacts, we should concern several aspects for achieving their OHRQoL, i.e., number of remaining teeth, POP, and location of its loss.

The OHRQoL of prosthodontic treatment

As the aims of prosthodontic treatments are eliminate of oral illness, preserve of oral health, restore oral function on mastication, aesthetics and comfort, and provide psychological-social well-being [9, 94]. The improvement of OHRQol (in all three dimensions, i.e., physical, psychological, and social performances) among patients who obtained prosthodontic treatment in our study corroborates the aims of prosthodontic treatment which is similar to other studies [13, 15, 16, 96].

The overall OIDP scores was decreasing from high OIDP impact level (score $\geq$16.0) into low level (score = 0.1-7.9) after complete treatment. Moreover, the percentage of participants who affected by its oral impairment reduced from approximately 70% to 5% .Thus, prosthodontic treatment improves the prevalence and its intensity of oral impacts among patients with tooth loss and seek for care. This aspect is important when the health policy or stakeholders plan for dental care delivery in particular with prosthodontic treatment.

Pattern and direction of OHRQoL in prosthodontic treatment process

Although at the first recheck visit (T_1) representing the immediate effect of prosthodontic treatment, the overall OIDP scores among patients decrease significantly [15, 16, 96]. However, there are some patients have the increase OIDP scores at this phase. After investigating its cause, pain and chewing discomfort from

denture are the most common main symptoms and oral impairments, respectively. This is the aspect should take into account when prosthodontic treatment is delivered to the patients [13, 16, 40, 85].

Meanwhile, the completed visit (T_2) was considered as the period of adaption of prostheses among patients. There is very slightly oral impact in both prevalence and its intensity among patients as revealed in this study. Its main symptom and oral impairments are “functional limitation” and “discomfort” from denture which is similar to other previous study [9].

The prevalence and magnitude of OIDP among Thais

It might be observed that the score of each activity at T_0 in UG participants is higher than PG participants except eating, sleeping and maintaining emotional status. The PG participants who have general disease/medical condition can get indirect impacts to OHRQoL. For example, antihypertensive drug has side effect to patient such as xerostomia, gingival hyperplasia, salivary flow and mucosa irritation. These symptoms will lead to discomfort or pain when eating, chewing, and swallowing including disturbing to sleeping/relaxing [59-62].

These might be due to different number and condition of remaining functional teeth. Older patients may have dental caries and/or periodontal disease that risk to extracting tooth with is fast and at low expense for treatment. Furthermore, lack of preventive dentistry knowledge in the past, poor socio-economic-education status, and limitation of access to health service in old generation act as barrier for treatment which lead to tooth loss [95, 96]. Therefore,

we found higher prevalence and magnitude of oral impacts in almost activity of older person.

The severity and frequency were calculated in form of OIDP score which reflected to the magnitude of oral impairment. The mean of overall OIDP score of UG/PG participants in three age groups are 13.1/13.0, 23.3/23.1, and 29.8/28.6, respectively. Comparing its mean of overall OIDP score with previous studies among Thai younger adult [19] and Thai elder [20] were 7.3 and <16, respectively that are lower than the in this study.

Meanwhile, the proportion of participants in three aged groups who had impacts affecting at least one activity of UG/PG participants in this study is consistent with other previous study among Thais.

Additionally, top-three activities which patients in this study affected were eating, speaking and smiling. In previous studies among Thai younger adult [19] and Thai elder [20] are eating, emotional stability, and smiling, respectively. It might be concluded that the physical and psychological performances in Thai population's OHRQoL were mostly affected. In particular eating has the highest prevalence (more than 40%) and magnitude (moderate level OIDP impact) that conform to the discomfort chewing was the most common reported (15.8%) among Thai adults [44]. Suggesting that prosthodontic care should focus on improvement of OHRQoL in difficulty or discomfort to eating (chewing, swallowing and enjoying food) [86].

Satisfaction to prosthodontic treatment

As shown in this study that assessment of satisfaction after complete treatment most of patients (90%) in both UG and PG participants rated the VAS score more than 80 reflecting to the high level of satisfaction. In the other words, whether

or not the providers have more clinical experience, satisfaction to care can be achieved [13, 94]. Additionally, the motivating/inhibiting factors of seeking health care process i.e. the confidence in lasting reputation the facility, short periods of time after recently obtained denture, considerateness to dental student/specialist trainee, cost and time consuming for treatment, cleanness of instrument, standard of service, facility in dental clinic, location of dental hospital and patient's health-personality-attitude might indirectly influence their satisfaction [12, 99].

Application of the use of OHRQoL in dental education

As shown that OIDP scores at T_1 of patients in UG clinic (approximately 20%) increase when compare with the baseline, this issue need to take into account when delivery of prosthesis to the patients. In the other words, concerning the complete of prostheses prior to delivery to patients is necessary; otherwise it might cause some impacts to the patient's quality of life.

Assessment of OHRQoL at before and after complete the prosthodontic treatment should be part of standard of care and apply for understanding patient's perspective which is the goal of treatment. Because of this measure can retrieve the well-being in physical, psychological, and social aspects of patients [1-3]. Moreover, this is indirect pathway to initiate good communication as shown in humanized care paradigm. The positive patient-dentist relationship will be developed and brings to the success of prosthodontic care, eventually. [1-3].

Strengths, Limitation, and Implication of the study

This is the first longitudinal study that investigates OHRQoL among patients who have tooth loss and have both perceived- and normative need for prosthodontic treatments. The strengths of our study are a large number of

participants than previous longitudinal studies and cover several aspects regarding to patient-center perspectives.

There are some limitations in this study regarding to the interpretation of its findings. First, the study populations in this study are patients who seek for care and have normative treatment of care, in addition to the facility-based patients interviewing. Further study should investigate OHRQoL among Thai populations with tooth loss whether or not they seek for care, which is necessary for implementing prosthodontic care delivery system.

Secondly, this study investigates OHRQoL of patients at the short period of assessment. The longer period of recall such as 6 or 12 months should be considered in further study to prove the improvement of OHRQoL among patients with tooth loss and have both perceived- and normative need [82].

There are several dimensions to be considered in investigating OHRQoL and patient's satisfaction. Meanwhile, the use of 100-mm VAS form to assess satisfaction of patients in this study is only single aspect and at the point of time (T_1). Further study should carefully consider other sociocultural, psychological, clinical variables, oral health behavior and expectation when assessing need or success of prosthodontic care among patients.

Findings of this study are important to oral health policy of the Thai dental care system in order to achieve equality and efficiency of dental care delivery to its populations. That is, patients who have OHRQoL caused by tooth loss and they also have both perceived- and normative need for care gain their OHRQoL after achieving their needs. This might suggest that in the system with limited resources for care, identifying those who have both needs should be prioritized in the dental care delivery. In addition, as OHRQoL paradigm can reflect the patient's perspectives

especially their oral health impacts on life, and it can convey to the understanding between patients and providers. Hence, applying this aspect in the process of care can improve the patient-dentist relationship [1-3, 13].

CHAPTER VI
CONCLUSION

This study found that there are oral health impacts on daily life among patients who have tooth loss. Of those have both perceived-, and normative need, their OHRQoL can be improved after obtaining prosthodontic care and achieve their needs. OHRQoL is the simple measure which can develop the understanding of patients' perspectives and positive relationship between patient and provider. These are the goals of oral health care. Therefore, an application of OHRQoL assessment in process of treatment provision is crucial and necessary.

REFERENCES

1. Gherunupong, S., J *Oral Health-Related Quality of Life: Part I Concepts & Background.* Journal of Health Science, 2007. **16** p. 17-25.
2. Inglehart, M.R., Bagramian, R.A., *Oral Health-Related Quality of Life: An introduction.*, in *Oral Health-Related Quality of Life*, M.R. Inglehart, Bagramian, R.A., Editor. 2002, Quintessence Publishing Co: Chicago. p. 1-6.
3. Sischo, L. and H.L. Broder, *Oral health-related quality of life: what, why, how, and future implications.* J Dent Res, 2011. **90**(11): p. 1264-70.
4. Sheiham, A., Tsakos G, *Oral Health Need Assessments.*, in *Community Oral Health.* 2007, Quintessence Publishing Co: Chicago. p. 59-79.
5. Gherunupong, S., *Oral Health-Related Quality of Life: Part II Index for Adult.* Journal of Health Science, 2007(16): p. 306-317.
6. Gerritsen, A.E., et al., *Tooth loss and oral health-related quality of life: a systematic review and meta-analysis.* Health Qual Life Outcomes, 2010. **8**: p. 126.
7. Emami, E., et al., *The impact of edentulism on oral and general health.* Int J Dent, **2013**: p. 498305.
8. Stephen, A.E.B., A.B., *Tooth Loss, Dental Caries, and Quality of Life: A public Health Perspective* in *Oral Health-Related Quality of Life* M.R. Inglehart, Bagramian, R.A., Editor. 2002, Quintessence Publishing Co.: Chicago. p. 65-78.
9. Jorgenson, E.B.M., *Caries, Tooth Loss, and Conventional Tooth Replacement for Older Patients*, in *Improving Oral Health for the Elderly,* I.B. Lamster, Northridge, Mary E., Editor. 2008: 273-302. p. 273-302.
10. Hobdell, M., et al., *Global goals for oral health 2020.* Int Dent J, 2003. **53**(5): p. 285-8.
11. Health., M.o.P.H.D.o.H.D.o.D.P., *The 7th National Oral Health Survey in Thailand 2012.* 2013, Bangkok The Veteran Organization Publishing.
12. Krisdapong, S., Laksana, K., Worakanchana, T., Suraprasert, P., Sirivanichsuntorn, P., *Comparisons of normative needs, oral health-related quality of life and perceived needs for denture in a group of elderly Thais.* J Dent Assoc Thai 2007. **57**: p. 98-106.
13. Montero, J., et al., *Self-perceived changes in oral health-related quality of life after receiving different types of conventional prosthetic treatments: a cohort follow-up study.* J Dent, 2013. **41**(6): p. 493-503.

14. Dable, R.A., et al., *Assessment of Oral Health Related Quality of Life Among Completely Edentulous Patients in Western India by Using GOHAI.* J Clin Diagn Res, 2013. **7**(9): p. 2063-7.
15. Stober, T., et al., *Association between patient satisfaction with complete dentures and oral health-related quality of life: two-year longitudinal assessment.* Clin Oral Investig, 2012. **16**(1): p. 313-8.
16. John, M.T., et al., *Oral health-related quality of life in patients treated with fixed, removable, and complete dentures 1 month and 6 to 12 months after treatment.* Int J Prosthodont, 2004. **17**(5): p. 503-11.
17. Al-Omiri, M.K. and J. Karasneh, *Relationship between oral health-related quality of life, satisfaction, and personality in patients with prosthetic rehabilitations.* J Prosthodont, 2010. **19**(1): p. 2-9.
18. Ellis, J.S., N.D. Pelekis, and J.M. Thomason, *Conventional rehabilitation of edentulous patients: the impact on oral health-related quality of life and patient satisfaction.* J Prosthodont, 2007. **16**(1): p. 37-42.
19. Adulyanon, S., J. Vourapukjaru, and A. Sheiham, *Oral impacts affecting daily performance in a low dental disease Thai population.* Community Dent Oral Epidemiol, 1996. **24**(6): p. 385-9.
20. Srisilapanan, P. and A. Sheiham, *The prevalence of dental impacts on daily performances in older people in Northern Thailand.* Gerodontology, 2001. **18**(2): p. 102-8.
21. Organization, W.H., *The World Oral Health Report 2003: continuous improvement of oral health in the 21st century – the approach of the WHO Global Oral Health Program.* 2003: Geneva.
22. Bennadi, D. and C.V. Reddy, *Oral health related quality of life.* J Int Soc Prev Community Dent, 2013. **3**(1): p. 1-6.
23. Locker, D., *Measuring oral health: a conceptual framework.* Community Dent Health, 1988. **5**(1): p. 3-18.
24. Organization., W.H., *International classification of impairments, disabilities, and handicaps: a manual of classification relating to the consequences of disease.* 1980: Geneva. p. 205.
25. Organization, W.H.O.I.G.W.H., *International classification of impairments, disabilities, and handicaps: a manual of classification relating to the consequences of disease*. 1980. p. 205.
26. Al Shamrany, M., *Oral health-related quality of life: a broader perspective.* East Mediterr Health J, 2006. **12**(6): p. 894-901.

27. Wilson, I.B. and P.D. Cleary, *Linking clinical variables with health-related quality of life. A conceptual model of patient outcomes.* JAMA, 1995. **273**(1): p. 59-65.
28. Services., U.D.o.H.a.H., *Oral Health in America: A Report of the Surgeon General.,* M. Rockville, Research, 2000., Editor. 2000, National Institutes of Health, National Institute of Dental and Craniofacial Research: USA.
29. Slade, G.D., *Assessment of Oral Health-Related Quality of Life* in *Oral Health-Related Quality of Life*, M.R. Inglehart, Bagramian, R.A., Editor. 2002, Quintessence Publishing Co.: Chicago p. 29-43.
30. Slade, G.D., et al., *Conference summary: assessing oral health outcomes-measuring health status and quality of life.* Community Dent Health, 1998. **15**(1): p. 3-7.
31. Locker, D. and F. Allen, *What do measures of 'oral health-related quality of life' measure?* Community Dent Oral Epidemiol, 2007. **35**(6): p. 401-11.
32. Slade, G.D. and A.J. Spencer, *Development and evaluation of the Oral Health Impact Profile.* Community Dent Health, 1994. **11**(1): p. 3-11.
33. Adulyanon, S., Sheiham, A., *Oral Impacts on Daily Performances.*, in *Measuring oral health and quality of life.,* G.D. Slade, Editor. 1997, Chapel Hill: University of North Carolina. p. 151-60.
34. Robinson, P.G., et al., *Validity of two oral health-related quality of life measures.* Community Dent Oral Epidemiol, 2003. **31**(2): p. 90-9.
35. Montero, J., et al., *Comparative validity of the OIDP and OHIP-14 in describing the impact of oral health on quality of life in a cross-sectional study performed in Spanish adults.* Med Oral Patol Oral Cir Bucal, 2011. **16**(6): p. e816-21.
36. Montero, J., et al., *Oral health-related quality of life of a consecutive sample of Spanish dental patients.* Med Oral Patol Oral Cir Bucal, 2011. **16**(6): p. e810-5.
37. Slade, G.D., *The Oral Health Impact Profile.,* in *Measuring oral health and quality of life*, G.D. Slade, Editor. 1997, University of North Carolina: Chapel Hill. p. 93-104.
38. Gherunpong, S., G. Tsakos, and A. Sheiham, *Developing and evaluating an oral health-related quality of life index for children; the CHILD-OIDP.* Community Dent Health, 2004. **21**(2): p. 161-9.

39. Chaiphotchananaphong, N., *Validity of the Thai version of the Oral Health Impacts Profile in Thai patient.,* in *Department of Prosthodontics at Faculty of Dentistry.* 2012, Chulalongkorn University.
40. Songpaisan, Y., *Satisfaction and oral health related impact to quality of life of edentulous seniors after wearing complete dentures at Bangyai hospital, Nontaburi,Thailand.* Journal of health promotion and environmental health., 2007(jul-sep): p. 31-45.
41. Krisdapong, S., et al., *Setting oral health goals that include oral health-related quality of life measures: a study carried out among adolescents in Thailand.* Cad Saude Publica, 2012. **28**(10): p. 1881-92.
42. Srisilapanan, P. and A. Sheiham, *Assessing the difference between sociodental and normative approaches to assessing prosthetic dental treatment needs in dentate older people.* Gerodontology, 2001. **18**(1): p. 25-34.
43. Krisdapong, S., A. Sheiham, and G. Tsakos, *Oral health-related quality of life of 12- and 15-year-old Thai children: findings from a national survey.* Community Dent Oral Epidemiol, 2009. **37**(6): p. 509-17.
44. Yiengprugsawan, V., et al., *Oral Health-Related Quality of Life among a large national cohort of 87,134 Thai adults.* Health Qual Life Outcomes, 2011. **9**: p. 42.
45. Somsak, K., *The effects on number of natural teeth and number of posterior occluding pairs on the Oral Health-Related Quality of Life in Thai elderly patients.*, in *Department of Prosthodontics at Faculty of Dentistry,* 2013. Chulalongkorn University.
46. Slade, G.D., *Oral health-related quality of life is important for patients, but what about populations?* Community Dent Oral Epidemiol, 2012. **40 Suppl 2**: p. 39-43.
47. Hwang, S.J., et al., *Relationship between oral impacts on daily performance and chewing ability among independent elders residing in Daejeon City, Korea.* Gerodontology, 2012. **29**(2): p. e481-8.
48. Cohen-Carneiro, F., R. Souza-Santos, and M.A. Rebelo, *Quality of life related to oral health: contribution from social factors.* Cien Saude Colet, 2011. **16 Suppl 1**: p. 1007-15.
49. Lahti, S., L. Suominen-Taipale, and H. Hausen, *Oral health impacts among adults in Finland: competing effects of age, number of teeth, and removable dentures.* Eur J Oral Sci, 2008. **116**(3): p. 260-6.

50. Tubert-Jeannin, S., et al., *Validation of an oral health quality of life index (GOHAI) in France.* Community Dent Oral Epidemiol, 2003. **31**(4): p. 275-84.
51. McGrath, C. and R. Bedi, *Why are we "weighting"? An assessment of a self-weighting approach to measuring oral health-related quality of life.* Community Dent Oral Epidemiol, 2004. **32**(1): p. 19-24.
52. Kida, I.A., et al., *Psychometric properties and the prevalence, intensity and causes of oral impacts on daily performance (OIDP) in a population of older Tanzanians.* Health Qual Life Outcomes, 2006. **4**: p. 56.
53. Steele, J.G., et al., *How do age and tooth loss affect oral health impacts and quality of life? A study comparing two national samples.* Community Dent Oral Epidemiol, 2004. **32**(2): p. 107-14.
54. Taylor, G.W., Nyquist, L.V., Borgnakke, W.S., Woolfolk, M.W., *Effect of Race and Ethnicity on Oral Health-Related Quality of Life.,* in *Oral Health-Related Quality of Life*, M.R. Inglehart, Bagramian, R.A., Editor. 2002, Quintessence Publishing Co.: Chicago. p. 123-138.
55. Zeng, X., et al., *Relationship between dental status and Oral Impacts on Daily Performances in older Southern Chinese people.* J Public Health Dent, 2010. **70**(2): p. 101-7.
56. Marita, R.I., Susan, F.S., Feanne, C.S., *Oral Health- Related Quality of Life: Does Gender Matter*, in *Oral Health-Related Quality of Life*, M.R. In Inglehart, Bagramian, R.A., Editor. 2002, Quintessence Publishing Co.: Chicago. p. 111-121.
57. Walter, M.H., et al., *Oral health related quality of life and its association with sociodemographic and clinical findings in 3 northern outreach clinics.* J Can Dent Assoc, 2007. **73**(2): p. 153.
58. Mesas, A.E., S.M. de Andrade, and M.A. Cabrera, *Factors associated with negative self-perception of oral health among elderly people in a Brazilian community.* Gerodontology, 2008. **25**(1): p. 49-56.
59. Heydecke, G., John, P.G., *Impact of Medical Conditions on Oral Health and Quality of Life: A public Health Perspective*, in *Oral Health-Related Quality of Life.,* M.R. Inglehart, Bagramian, R.A. Editor. 2002, Quintessence Publishing Co,. Chicago. p. 139-152.
60. Nikbin, A., et al., *Oral health-related quality of life in diabetic patients: comparison of the Persian version of geriatric oral health assessment index and oral health impact profile: descriptive-analytic study.* J Diabetes Metab Disord, 2014. **13**(1): p. 32.

61. Nasir, E.F., M.C. Marthinussen, and A.N. Astrom, *HIV/AIDS-related attitudes and oral impacts on daily performances: a cross-sectional study of Sudanese adult dental patients.* BMC Health Serv Res, 2013. **13**(1): p. 335.
62. Schimmel, M., et al., *Oral health-related quality of life in hospitalised stroke patients.* Gerodontology, 2011. **28**(1): p. 3-11.
63. Acharya, S. and K.C. Pentapati, *Work stress and oral health-related quality of life among Indian information technology workers: an exploratory study.* Int Dent J, 2012. **62**(3): p. 132-6.
64. Srisilapanan, P., Malikaew, P., and Sheiham A., *Number of teeth and nutritional status in Thai older people.* Community Dent Health, 2002. **19**(4): p. 230-6.
65. Yiengprugsawan, V., et al., *Factors associated with self-reported number of teeth in a large national cohort of Thai adults.* BMC Oral Health, 2011. **11**: p. 31.
66. Tsakos, G., W. Marcenes, and A. Sheiham, *The relationship between clinical dental status and oral impacts in an elderly population.* Oral Health Prev Dent, 2004. **2**(3): p. 211-20.
67. Inukai, M., et al., *Association between perceived chewing ability and oral health-related quality of life in partially dentate patients.* Health Qual Life Outcomes, 2010. **8**(5): p. 118.
68. Tsakos, G., et al., *Clinical correlates of oral health-related quality of life: evidence from a national sample of British older people.* Eur J Oral Sci, 2006. **114**(5): p. 391-5.
69. Montero, J., et al., *Impact of prosthodontic status on oral wellbeing: a cross-sectional cohort study.* J Oral Rehabil, 2009. **36**(8): p. 592-600.
70. Gjengedal, H., et al., *Self-reported oral health and denture satisfaction in partially and completely edentulous patients.* Int J Prosthodont, 2011. **24**(1): p. 9-15.
71. Awad, M.A., et al., *Oral health status and treatment satisfaction with mandibular implant overdentures and conventional dentures: a randomized clinical trial in a senior population.* Int J Prosthodont, 2003. **16**(4): p. 390-6.
72. Preciado, A., et al., *Differences in impact of patient and prosthetic characteristics on oral health-related quality of life among implant-retained overdenture wearers.* J Dent, 2012. **40**(10): p. 857-65.
73. Inukai, M., et al., *Does removable partial denture quality affect individuals' oral health?* J Dent Res, 2008. **87**(8): p. 736-9.

74. Yamaga, E., Y. Sato, and S. Minakuchi, *A structural equation model relating oral condition, denture quality, chewing ability, satisfaction, and oral health-related quality of life in complete denture wearers.* J Dent, 2013. **41**(8): p. 710-7.
75. Wu, J.H., et al., *Effects of denture maintenance on satisfaction levels of Taiwanese elderly using removable partial dentures: a pilot study.* Gerodontology, 2012. **29**(2): p. e458-63.
76. Youdying, W., *The analysis of elderly patients at Faculty of Dentistry, Chulalongkorn University during 2007-2009 and its implementation to develop the prosthodontic treatment guideline.* in *Department of Prosthodontics Faculty of Dentistry.* 2011, Chulalongkorn University.
77. Wong, M.C. and A.S. McMillan, *Tooth loss, denture wearing and oral health-related quality of life in elderly Chinese people.* Community Dent Health, 2005. **22**(3): p. 156-61.
78. Celebic, A. and D. Knezovic-Zlataric, *A comparison of patient's satisfaction between complete and partial removable denture wearers.* J Dent, 2003. **31**(7): p. 445-51.
79. Kawai, Y., et al., *The use of existing denture-satisfaction ratings for a diagnostic test to indicate prognosis with newly delivered complete dentures.* J Prosthodont Res, 2009. **53**(4): p. 176-9.
80. Bellini, D., et al., *Patients' expectations and satisfaction of complete denture therapy and correlation with locus of control.* J Oral Rehabil, 2009. **36**(9): p. 682-6.
81. Jonkman, R.E., et al., *An analysis of satisfaction with complete immediate (over)dentures.* J Dent, 1997. **25**(2): p. 107-11.
82. Panek, H., et al., *Follow-up visits as a measure of adaptation process to removable prostheses.* Gerodontology, 2006. **23**(2): p. 87-92.
83. McNaugher, G.A., I.C. Benington, and R. Freeman, *Assessing expressed need and satisfaction in complete denture wearers.* Gerodontology, 2001. **18**(1): p. 51-7.
84. Marachlioglou, C.R., et al., *Expectations and final evaluation of complete dentures by patients, dentist and dental technician.* J Oral Rehabil, 2010. **37**(7): p. 518-24.
85. Knezovic Zlataric, D., et al., *A survey of treatment outcomes with removable partial dentures.* J Oral Rehabil, 2003. **30**(8): p. 847-54.

86. de Souza e Silva, M.E., C.S. de Magalhaes, and E. Ferreira e Ferreira, *Complete removable prostheses: from expectation to (dis)satisfaction.* Gerodontology, 2009. **26**(2): p. 143-9.
87. Ozhayat, E.B., et al., *A method for assessment of quality of life in relation to prosthodontics. Partial edentulism and removable partial dentures.* J Oral Rehabil, 2007. **34**(5): p. 336-44.
88. Kandelman, D., P.E. Petersen, and H. Ueda, *Oral health, general health, and quality of life in older people.* Spec Care Dentist, 2008. **28**(6): p. 224-36.
89. Petersen, P.E. and T. Yamamoto, *Improving the oral health of older people: the approach of the WHO Global Oral Health Programme.* Community Dent Oral Epidemiol, 2005. **33**(2): p. 81-92.
90. *Global goals for oral health in the year 2000. Federation Dentaire Internationale.* Int Dent J, 1982. **32**(1): p. 74-7.
91. Leake, J.L., R. Hawkins, and D. Locker, *Social and functional impact of reduced posterior dental units in older adults.* J Oral Rehabil, 1994. **21**(1): p. 1-10.
92. Saement, D.P.A., T. C., *Oral Health-Related Quality of Life: And Older Adults*, in *Oral Health-Related Quality of Life.,* M.R.B. Inglehart, R.A., Editor. 2002, Quintessence Publishing Co.: Chicago. p. 99-109.
93. Pearson, N.K., et al., *The effect of a domiciliary denture service on oral health related quality of life: a randomised controlled trial.* Br Dent J, 2007. **203**(2): p. E3; discussion 100-1.
94. Davis, E.L., et al., *Expectations and satisfaction of denture patients in a university clinic.* J Prosthet Dent, 1986. **55**(1): p. 59-63.
95. Gherunpong, S., Puangsaard, Y., Minsrisukkul, P., Wanjarrurat, P., Purthivarawong,S., and Suphanantachat, S., *Oral health-related quality of life and perceived need for denture in a group of elderly Thais with normative denture need.* J DentAssoc Thai, 2007. **57**(1): p. 13-22.
96. Somkotra, T., *Inequality in oral health-care utilisation exists among older Thais despite a universal coverage policy.* Australas J Ageing, 2013. **32**(2): p. 110-4.

APPENDIX

Content

Page

คุณภาพชีวิตในมิติสุขภาพช่องปากและความพึงพอใจของผู้ป่วย
ต่อการรักษาทางทันกรรมประดิษฐ์ คณะทันตแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

<u>คำชี้แจง</u>

1. แบบสอบถามฉบับนี้มีจุดประสงค์เพื่อศึกษาคุณภาพชีวิตในมิติสุขภาพช่องปากและความพึงพอใจ ต่อการรักษาทาง ทันตกรมประดิษฐ์ ขณะก่อนและหลังได้รับการรักษา ในรูปแบบของดัชนี Oral Impacts on Daily Performances (OIDP) ฉบับภาษาไทย และ Visual Analogue Scale (VAS)
2. ข้อมูลส่วนตัวของท่านทั้งหมด ผู้วิจัยจะเก็บเป็นความลับที่สุด
3. แบบสอบถามฉบับนี้ใช้เวลา 5-10 นาที
4. แบบสอบถามฉบับนี้มีทั้งหมด 5 หน้า แบ่งออกเป็นสามส่วน คือ
    - ส่วนที่ 1 : ข้อมูลทั่วไปของอาสาสมัคร
    - ส่วนที่ 2 : เกี่ยวกับผลกระทบที่เกี่ยวข้องกับฟัน เหงือก ช่องปาก หรือ ฟันปลอมของท่าน <u>ในช่วง 6 เดือนที่ผ่านมา</u>
    - ส่วนที่ 3 : ความพึงพอใจต่อฟันปลอมหลังได้รับการรักษาในครั้งนี้

หากท่านมีปัญหาหรือข้อสงสัยประการใด สามารภสอถามรายละเอียดเพิ่มเติมได้จาก
ทันตแพทย์ปีย์เมธ บุญมีขาว
นิสิตบัณฑิตศึกษา คลินิกบัณฑิตศึกษา ภาควิชาทันตกรรมประดิษฐ์
คณะทันตแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
หมายเลขโทรศัพท์ 08-9483-0342 หรือ Prosthemate@hotmail.com

☐ UG ☐ PG ☐ PGS CODE.....

นิสิต/ทพ. ผู้รับผิดชอบ.....โทรศัพท์.....หลักสูตร.....ชั้นปี.....

- บน ☐ CD ☐ RPD Cl. I or II ☐ RPD Cl. III or IV ☐CR..... ☐ BR.....
- ล่าง ☐ CD ☐ RPD Cl. I or II ☐ RPD Cl. III or IV ☐CR..... ☐ BR.....

“อาสาสมัครได้รับทราบถึงขั้นตอนการทำวิจัยนี้แล้ว และยินยอมที่จะร่วมการวิจัย โดยการตอบแบบสอบถามนี้"

วันที่...../...../.....

ส่วนที่ 1 : แบบสอบถามข้อมูลทั่วไป

<u>คำชี้แจง : กรุณาทำเครื่องหมาย ✓ลงใน ☐ และเติมคำ ตามความเป็นจริง</u>

ชื่อ-สกุล..... HN .....

วันเดือนปีเกิด...../...../..... โทรศัพท์.....

ที่อยู่ที่ติดต่อได้.....

1. เพศ ☐ ชาย ☐ หญิง

2. อายุ ..... ปี

3. สถานภาพสมรส ☐ โสด ☐ สมรส ☐ หย่า/แยกกันอยู่

4. วุฒิการศึกษา ☐ ไม่ได้ศึกษา ☐ ประถมศึกษา/เทียบเท่า ☐ มัธยมศึกษา/เทียบเท่า ☐ ปริญญาตรี/เทียบเท่า ☐ สูงกว่าปริญญาตรี

5. อาชีพ ☐ ว่างงาน ☐ ค้าขาย/ธุรกิจส่วนตัว ☐ พนักงานรัฐวิสาหกิจ ☐ ลูกจ้าง ☐ รับราชการ ☐ นักศึกษา ☐ พ่อบ้าน/แม่บ้าน ☐ อื่นๆระบุ.....

6. รายได้ต่อเดือน ☐ ไม่มีรายได้ ☐ น้อยกว่า/เท่ากับ 10,000 บาท ☐ 10,001-30,000 บาท ☐ 30,001 บาทขึ้นไป

7. ท่านเคยใส่ฟันปลอมมาก่อนหรือไม่ อย่างไร

☐ ไม่มีฟันปลอม ☐ มีและใช้อยู่ ใช้งานได้ดี

☐ มีและใช้อยู่ แต่ใช้งานไม่ดี เพราะ.....

☐ มีแต่ไม่ได้ใช้ เนื่องจาก .....

8. ปกติแล้ว ท่านได้ไปตรวจฟัน หรือ ฟันปลอมกับทันตแพทย์หรือไม่

☐ ไม่ได้ไปหาทันตแพทย์เลย ☐ ไปหาเฉพาะเมื่อมีปัญหา มีอาการจ็บปวด

☐ ไปหาเป็นประจำ ปีละ 1 ครั้ง ☐ ไปหาเป็นประจำ ปีละ 2 ครั้งหรือมากกว่า

ส่วนที่ 2 : แบบสอบถามคุณภาพชีวิตในมิติสุขภาพช่องปาก

CODE..... ☐ T_0 ☐ T_1 ☐ T_2

วันที่...../...../.....

<u>คำชี้แจง</u> : กรุณาทบทวนผลกระทบที่ท่านได้รับจากปัญหาเกี่ยวกับฟัน เหงือก หรือฟันปลอมของท่าน <u>ในช่วง 6 เดือนที่ผ่านมา</u> แล้วตอบคำถามกับผู้สัมภาษณ์

กิจกรรมในชีวิตประจำวัน	ความถี่	ความรุนแรง	อาการหลัก				สาเหตุหลักทางช่องปาก	คะแนน
การกินอาหาร								
การพูด								
การทำความสะอาดช่องปากหรือฟันปลอม								
การพักผ่อน รวมทั้งการนอนหลับ								
การรักษาอารมณ์ จิตใจให้เป็นปรกติ ไม่หงุด หงิด รำคาญ								
การยิ้ม หัวเราะ อวดฟันได้โดยไม่อายใคร								
การออกไปพบปะผู้คน ญาติสนิท มิตรสหาย								
อายุ < 60 ปี "การทำงานหลัก ประกอบอาชีพ"								
อายุ > 60 ปี "การประกอบกิจกรรมเบาๆทั่วไป เช่น ทำงานบ้าน ทำความสะอาดบ้าน ทำอาหาร"								
			Pain	Discom	Fn Limit	Dissat.	อื่นๆ	

CODE.....

วันที่...../...../.....

ส่วนที่ 3 : ความพึงพอใจต่อฟันปลอม

<u>คำชี้แจง</u> : กรุณาลากเส้นจากซ้ายไปขวาให้ยาวตรงกับปริมาณความพึงพอใจของท่าน ที่มีต่อฟันปลอมในการรักษาครั้งนี้

.....

ขอบพระคุณท่านเป็นอย่างสูงที่ให้ความร่วมมือในการตอบแบบสอบถาม

รูปแบบคะแนนความถี่และความรุนแรงของปัญหาที่ใช้คำนวณในดัชนีโอไอดีพี

คะแนน <u>ความถี่</u> ของปัญหาที่เกิดขึ้นในช่วง 6 เดือนที่ผ่านมา

คะแนน	ความบ่อยของปัญหา (เกิดขึ้นซ้ำๆ, <u>เดือนละครั้งขึ้นไป</u>)	จำนวนวันโดยรวม (เกิดขึ้น<u>น้อยกว่าเดือนละครั้ง</u>)
1	-	1-5 วัน
2	เดือนละ 1-2 ครั้ง	6-15 วัน
3	สัปดาห์ละ 1-2 ครั้ง	16-30 วัน
4	สัปดาห์ละ 3-4 ครั้ง	1-3 เดือน
5	ทุกวัน หรือเกือบทุกวัน (5 ครั้งขึ้นไปต่อสัปดาห์)	มากกว่า 3 เดือน

คะแนน <u>ความรุนแรง</u> ของปัญหาที่ไปกระทบกระเทือนชีวิตประจำวัน

คะแนน	ความรุนแรง
0	ไม่กระทบกระเทือนชีวิตประจำวัน
1	เล็กน้อยมาก
2	เล็กน้อย
3	ปานกลาง
4	รุนแรง
5	รุนแรงมาก

VITA

Name: Mister Peamate Boonmekhao

Date of Birth: June 18, 1983

Place of Birth: Bangkok, Thailand

Nationality: Thai

Mailing address: 289 Soi. Petchakaseam 28 Yak 22 Kuhaswan Pasricharean Bangkok Thailand

Contacts Home: 0-2467-4826

Mobile: 08-9483-0342

E-mail: Prosthemate@hotmail.com

Academic Qualification

2007: Doctor of Dental Surgery (DDS) Mahidol University, Bangkok, Thailand

Work Experience and current Position

2007 - 2010: Working as Head of Dental department,Thasae Hospital, Chumphon, Thailand

2010 - present: Studying Master of Science Program in Prosthodontics Faculty of Dentistry, Chulalongkorn University Bangkok, Thailand