Chapter 1

Introduction

1. Background

Human resources play an important role in the delivery of adequate dental health care. A sufficient number and type of appropriate dental personnel are essential in operating a good oral health care system. Over the past two decades, the World Health Organization (WHO) has urged member countries to estimate the optimal number of dental personnel required to meet their respective country's needs (Joint WHO/FDI Working Group, 1989). Because of dynamic changes in the Thai social and economic system, the number and type of appropriate dental personnel needed has been revised several times. There have been at least three national studies showing variations in the manpower estimates. For example, between 1971 and 1993 there have been reports on required dentists per population ranging from 1:4,033 to 1:15,727 (Dental Division of the Department of Health, 1986; Dental School Administrator Organization of Thailand, 1993; Tumkhosit, 1979; Udompanich, 1990; Yuktanant, 1972-1973). The major factor creating these variations was the method of calculation used. Each study utilized a different source of input, as well as different calculation assumptions. A study in 2009, regarding the number of dentists required per population, suggested a ratio of 1:4,231 (The Ministry of Public Health, 2009). This 2009 study's estimate was calculated using the "adjusted health need method"

and assuming that an arbitrary proportion of the population would receive some type of dental treatment. No other factors were considered.

In Thailand, comprehensive methods, that include complex factors, for calculating the number of dentists needed per population, rarely have been used. The WHO has indicated that determining and achieving the right "mix" of health personnel are major challenges for most health care organizations and health care systems (Buchan and Dal Poz, 2002; WHO, 2000). The term 'skill mix' refers to the mixture of posts in the establishment, the mixture of employees in a post, the combination of skills available at a specific time, or the combination of activities that comprise each role, rather than the combination of different job titles (Buchan and O'May, 2000a). Determination of the right job profile for each type of health care personnel, can assist in making a health care program more cost effective (Buchan, 1999).

In Thailand, recent changes in the educational curriculum for dental nurses have had an impact on the skill-mix of the dental workforce. Prior to 2010, Thai dental nurses became qualified to practice through attendance at one of eight, 2-year, dental nurse programs after graduating from high school. However, in 2010, two of the eight dental nurse programs converted their curricula to a four-year undergraduate degree program. The new dental nurse curriculum places less emphasis on curative work, more emphasis on health promotion and disease prevention, and is designed to produce dental nurse graduates who are more skillful than their counterparts who are not enrolled in such programs (Praboromrajchanok Institute, 2009). Previous studies on the future needs of Thai dental manpower failed to address the new educational

changes in some of the dental nurse programs. Therefore, the results of these studies may contain erroneous estimates, especially in regard to the dental health care needs of school age children. Thus, it appears that re-examination of the dental health manpower needs of Thai school age children with respect to incorporation of the dental nurses' new role of health promotion and disease prevention is needed.

Fostering quality of life (QoL) and well-being of patients is the ultimate goal of health care delivery systems. As a result, a number of oral health-related QoL indices have been developed to assess whether this goal has been achieved within an oral health care system (Hebling and Pereira, 2007). Unfortunately, oral health-related quality of life (OHRQoL) has not been a factor included within the dental work force estimates done throughout Thailand. Previous dental workforce estimates have been based solely on a medical model and tended to use clinical conditions as the basis of calculations. Since these estimates have failed to address the perceptions of the health care recipients and have been based solely upon normative needs, or number of services required, they have been limited (Sheiham and Spencer, 1997). Thus, future dental workforce estimates need to include, as a factor, health care recipients' perceptions of their OHRQoL.

Over the past 20 years the demographics of Thai dentists have changed. For example, the proportion of female dentists has dramatically increased from being almost equal to the number of male dentists, in 1989, to there being over three times as many newly registered female dentists, in 2005, than newly registered male dentists (Vichawut et al., 2007). According to the American Dental Association, (2001) the changing gender demographics of dentists may influence the overall delivery of dental care throughout a country. It has been shown that female dentists tend to more

often practice part-time than their male counterparts (Spencer et al., 1998; Ayes et al., 2008). As has been reported in other countries, such a change can lead to an overall decrease in the availability and provision of dental care (Katrova, 2004; Naidoo, 2005). Through inclusion of gender composition, as a changing factor in dental manpower need estimates, a more accurate forecast of future workforce needs may be determined. The inclusion of the gender, as a factor in manpower calculations of human dental resources, in Thailand, previously, has not been accomplished. Therefore, this study aimed to estimate the trends and optimal dental workforce needs, for the next 20 years, throughout Thailand, via use of new factors to achieve acceptable oral health care delivery and quality of life of Thai schoolchildren.

2. Aim and Objectives of the Study

2.1 Aim

To estimate the number of Thai dentists and dental nurses needed, by 2030, to maintain the oral health needs and quality of life of Thai schoolchildren.

2.2 Objectives

1. The objective of this study was to compare the number of dentists and dental nurses needed in the future (using manpower requirements in the year 2030 for illustrative purposes) to treat dental diseases in Thai schoolchildren, estimated by the traditional normative dental health need method and the number estimated using two adjusted health need models, based on the sociodental approach and the annual estimated increment of dental caries.
2. To compare the time male and female dentists in Thailand spend on specific dental tasks.

3. To estimate, over the next 30 years, the number and proportion of dentists and dental nurses that will be required to treat and maintain the dental health needs of children in the Thai school system.

3. Conceptual Framework

The factors influenced manpower in this study were classified into 2 categories: (1) factors related to patients' need assessment and (2) factors related to productivity of dental personnel.

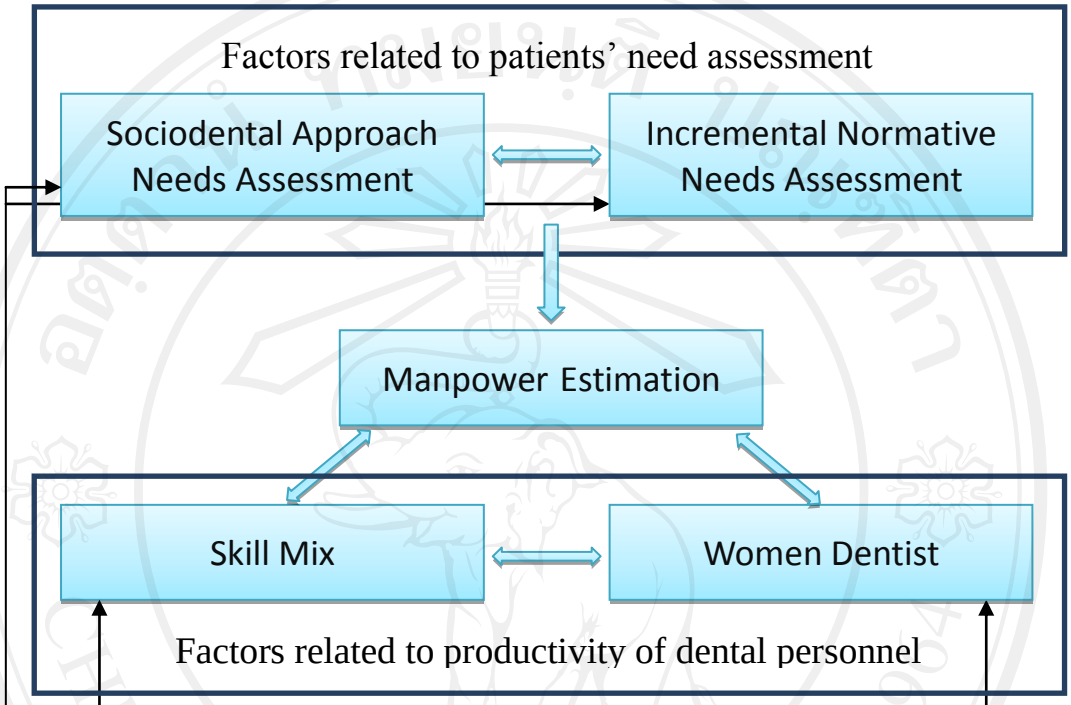
The first category concerned on assessing oral health needs of patients by the more accurate measures compare to the currently used one. Incorporating sociodental approach into the currently wide-using normative needs is accepted as the multi-dimension on health assessing tool. This assessment is supposed to be more accurate and more realistic than assessment using normative needs alone. Another point related to patients' need assessment proposed by this study is incremental normative need versus entire normative need. This study proposed health planner to use incremental normative need instead of entire normative need in the manpower estimating process. Because entire normative need was equivalent to all diseases accumulated from the past thus it did not make sense transform this amount of need into manpower requirement.

The second category concerned on dental workforce productivity. Male to female changing proportion among dental professionals was concerned as potential factor on overall productivity of the health service system. Some authors suggested lower productivity of dental services was found related to higher proportion of female dentist. As a result, the present similar number of dentists to the past was possible to

provide different dental treatment productivity if male and female dentists had different productivity.

Another related issue related to productivity of dental manpower in this study was types of dental personnel. According to skill mix concept, it is possible, and more economic, to deliver some appropriate dental tasks to auxiliaries. Assigning simple tasks to high potential dental personnel wastes resources and ineffective. The alternatives on mix of staffs were considered to influence requirements of dental manpower in the future.

From the above mentions, conceptual framework of the study is presented as following:



Objective 1: To estimate and compare the number of dentists needed by the year 2030 to treat dental diseases in the Thai schoolchildren
Method: Epidemiology study of schoolchildren assessing normative need and sociodental approach adjusted need

Objective 2: To compare the time male and female dentists in Thailand spend on specific dental tasks
Method: Literature review and Questionnaire assessing time for dental treatment used by male and female dentists

Objective 3: To estimate, over the next 30 years, the number and proportion of dentists and dental nurses that will be required to treat and maintain the dental health needs of children in the Thai school system.
Methodology: Questionnaire assessing time for dental treatment used by dental nurses