



Orthodontic research and publications in Thailand

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Orthodontic research in Thailand has been established since the launching of the postgraduate program in Orthodontics at Chulalongkorn University in 1982. Thus far one hundred and eleven researches from four dental schools were completed and some of them were published in Thai Dental Journals. Regarding the method of the study, these research efforts can be classified into 3 categories: experimental research (37%), descriptive research (35%), and analytic research (28%) (Figure 1).

DESCRIPTIVE RESEARCH

In the early days, most of Thai orthodontic research was confined to descriptive studies dealing with oral examination (15%), study models (24%) and radiographic images (61%) including lateral cephalograms, PA films, and hand wrist films (Figure 2).

Regarding the lateral and PA cephalogram research, the aim of the early research was to establish cephalometric norms for Thai patients. These include angular and linear measurements of Tweed, Steiner,

Ricketts, Wits, McNamara and Bjork analyses and lastly proportional analysis of Sassouni.

The hand wrist film is studied to find the maturation indicators especially at the spurt of growth of Thai children.

In the point of view as a reader, editor, and Member of the Editorial board of Dental Journals in Thailand, these cephalometric research efforts presented fundamental inconsistencies with regard to the methodology used. For example, the cephalometric norm values for each age were obtained from different sampling represented by multiple age groups and the standard deviation of each norm was excessively high compared to the mean indicating a very wide variation among the population studied. Thus, diagnosis based on these clinical norms must be made with caution.

In addition, sampling of population was not representative of the Thai population as most of the participants were selected from Bangkokian people. Also, sample size was too small often less than 30 individuals and thus conclusion on the clinical norm is often inappropriate.

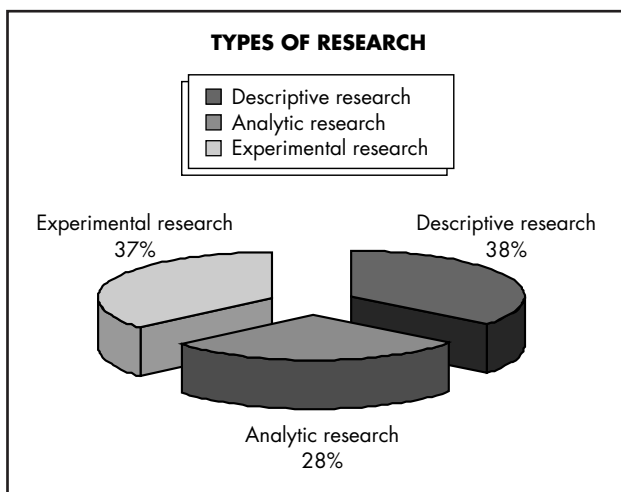


Figure 1. Types of orthodontic research in Thailand.

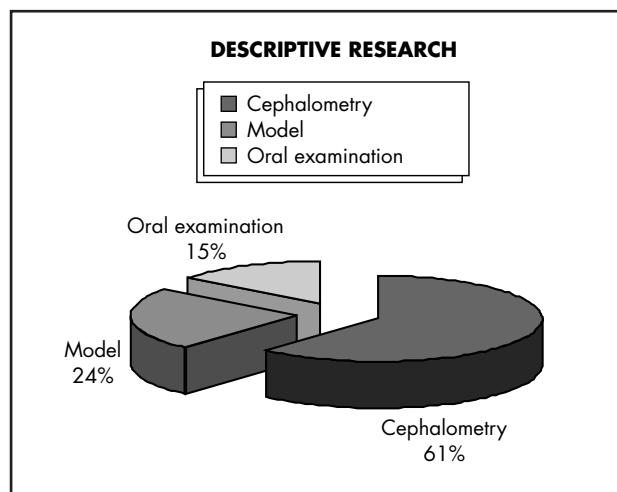


Figure 2. Material used for descriptive research.

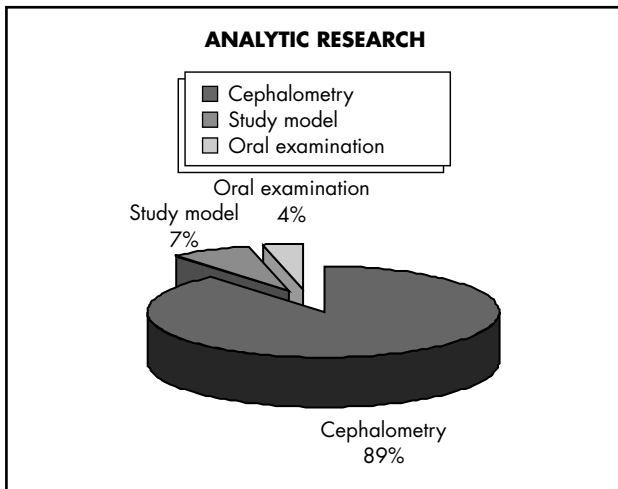


Figure 3. Material used for analytic research.

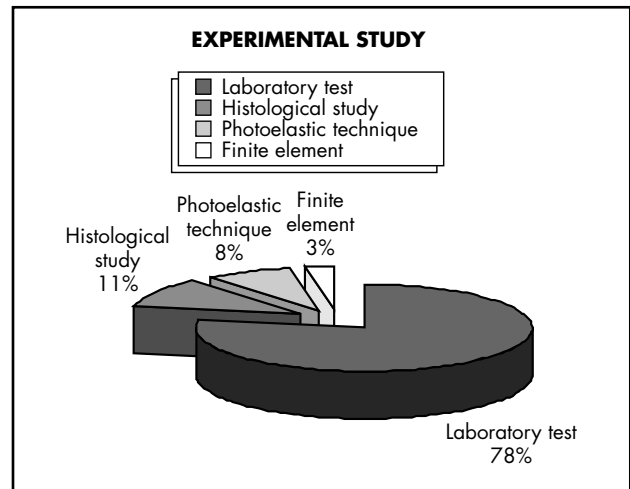


Figure 4. Methods used for experimental research.

The study of models was employed for investigations on malocclusions, standard arch form and arch size, Bolton tooth size ratio analysis, as well as prediction of unerupted tooth size.

ANALYTIC RESEARCH

Research in this field aim at elucidating the proper differential diagnosis of skeletal malocclusion as well as revealing the outcome of various mechanics. The materials used for analytic research are cephalometry (81%), study model (7%) and clinical examination (4%) (Figure 3).

The major weakness of this research section is the fact that most of the studies in the filed are retrospective. The data derived from the files of patients treated in dental schools and private clinics causing variations among treatment procedures, sampling characteristics, experience of the operator and standardization of cephalometric X-ray films. Conclusions of the treatment effects are still questionable due to inhomogeneous sample, and lack of control group with similar malocclusion to clarify the effect due to growth and treatment mechanics.

EXPERIMENTAL RESEARCH

The experimental researches in Thailand can be classified into 4 groups: laboratory test on orthodontic materials (78%), histological study of tissue response to tooth movement (11%), photoelastic study of stress

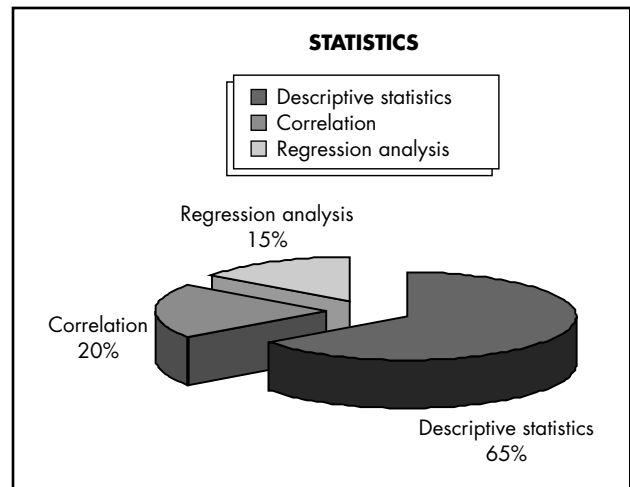


Figure 5. Statistics used in orthodontic research.

distributions (8%) and finite element applied to the evaluation of tooth movement (3%) (Figure 4). Laboratory tests of orthodontic materials involve comparative studies of bond strength of various types of brackets, adhesives, different enamel preparations, evaluation of static friction produced by different types of bracket and wire, and evaluation of force degradation of elastic modules. Histological studies are undertaken to describe alveolar bone response to orthodontic force. Photoelastic technique is applied to study the stress



distribution in various orthodontic appliances, or tissues.

Regarding statistics used in Thai orthodontic research, most of the researches used descriptive statistics (65%) followed by correlation (20%) and regression analyses (15%) (Figure 5).

Although several orthodontics research efforts have been undertaken, the publications resulted in the international literature are few due to the language

barrier, or the validity of material and method and limitation of the scope of the study. Cooperation between institutes for exchanging knowledge and technology may result in higher rate of publication in acknowledged international periodicals.

Most of orthodontic research published in Thai language in the past appeared in *Thai Dental, University Journal*, and the *Journal of Orthodontics*, which was launched in 2001.