RELATIONSHIP BETWEEN FACIAL PROPORTION, SIX MAXILLARY ANTERIOR TEETH RATIO AND GENDER IN BANGLADESHI POPULATION

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RELATIONSHIP BETWEEN FACIAL TYPES, SIX MAXILLARY ANTERIOR TEETH RATIO AND GENDER IN BANGLADESHI POPULATION

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ABSTRACT

Objectives: The aims of this study were to determine the distribution of facial types and to compare the crown width/length ratio of six maxillary anterior teeth in two different facial groups in a Bangladeshi population.

Methods: Measurements were done in 70 male and 70 female Bangladeshi adults. A facial index was used to determine broad, average, and narrow facial types. Crown width/length ratio of six maxillary anterior teeth were measured from the study models. Percentage of each facial type was determined. Descriptive statistics and independent t- test were used to compare the crown width/length ratio between different facial types. Dahlberg test was used for error measurement and power test was performed to evaluate the power of the study.

Results: There were no patients with broad facial type. 55.71% of the subjects represented narrow faces and 44.28% represented average faces. For males, 57.14% were narrow face and 42.85% were average face. For females, 54.28% were narrow face and 45.71% were average face. In the male group, the mean crown width/length ratio and standard deviation of the central incisors, lateral incisor and canine in the narrow face group were 0.921 mm±0.078 mm, 0.878 mm±0.172 mm, and 0.896 mm±0.097 mm, respectively. For the average face group, the ratios were 0.914 mm±0.087 mm, 0.865 mm±0.112 mm, and 0.885 mm±0.073 mm. In the female group, the narrow face showed the ratio of 0.965 mm±0.107 mm, 0.898 mm±0.138 mm, and 0.912 mm±0.087 mm. The average face group ratios were 0.989 mm±0.166 mm, 0.898mm±0.092 mm, and 0.910 mm±0.087 mm, respectively. There was no significant difference in the mean crown width/length ratios of maxillary anterior teeth between narrow and average facial groups ($p>.05$). There was a significant difference in the mean crown width/length ratios of maxillary central incisor teeth between male and female facial groups ($p<.05$).

Conclusion: Crown width/length ratios of six maxillary anterior teeth obtained from this study can serve as a guideline for selection of appropriate tooth size and shape of anterior teeth for the Bangladeshi population.

KEY WORDS: FACIAL INDEX / CROWN WIDTH/LENGTH RATIO / MAXILLARY ANTERIOR TEETH

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CHAPTER I
INTRODUCTION

1.1 Background

Esthetics is the primary consideration for patients seeking prosthetic treatment. The oral cavity should not only considered from a standard point of view to achieve the goal of natural esthetic expression. Because it is also essential to make a thorough study of the facial landmark as these facial factors are significant in producing a pleasing harmonies facial expression in esthetic restorations.

The variety of face shape is almost limitless. According to anthropologists, the face is divided as broad, average and narrow by facial index which was introduced by J Koll-man in 1890. However, this may help to identify the race in each region as well as help to see the clinical diagnosis for evaluating the facial morphometric (1).Different anthropometric studies performed with various populations such as Caucasians, Negroid,Arabic,Indian and have detailed their the facial types following this facial index (2-5). Now the most influential factors contributing to a harmonious anterior dentition for denture are proper size and shape of the tooth, and arrangement of these teeth in relation to facial landmarks of different facial types, particularly the maxillary central incisors are mostly viewed from the front (6-8). Lombardi et al, (1973) was the first to emphasize the importance of dental proportion with different facial types (9), the author mentioned that there is a recurring ratio noted between all teeth with face from the central incisor to the first premolar. Levin et al (1978) (10) and, more recently, other authors (11) (Qualtrough and Burke 1994) indicated that the most harmonious recurrent teeth proportion is 1: 1.618 between central incisor to lateral incisor in relation with face but conflicting reports indicated that the majority of beautiful smiles did not have this dental proportions (12,13).

So that recently, the ‘‘recurring esthetic dental and facial proportion’’ concept was introduced, stating that clinicians may use a teeth proportion of their own

choice, as long as it remains consistent with the facial types presence in their population (12).

Now regarding teeth proportion, the gender variations in the dimensions of the anterior teeth have been noted in most racial groups, with men exhibiting wider anterior teeth than women in North American, Japanese, and Chinese and Black population. But facial type's variations in the dimensions of the anterior teeth have not been noted yet (14-20).

Several anatomic measurements have been proposed to aid in determining the correct size and shape of the anterior teeth in relation to the face, among them there is inter commissural width, bizygomatic width, inter alar width, and inter pupillary distance are mostly discussed (21-25),Certain authors have proposed a relationship between the width of the maxillary central incisor with the inter pupillary distance and bizyg

Nevertheless, no publish data exist about the facial types of Bangladeshi population and different types of facial types has any significant influence in teeth proportion or not.

It's important to determine the facial types of Bangladeshi population because most of the study conducted on Caucasian population, mentioning their facial types and describes the gender comparisons of teeth proportion.

1.2 Benefit of this study

The data obtain from this study would be a helpful to provide the prevalence of facial type and criteria for selecting the artificial anterior teeth for Bangladeshi population and will be helpful as a guideline for the manufacturers of artificial teeth to produce the most aesthetic form of artificial teeth for different population.

1.3 Objectives of the study

This study aimed to determine the prevalent facial types among Bangladeshi young adults according to facial index and compare the mean

width/length proportion of six maxillary anterior teeth among different facial types. All the objectives are mentioned below:

- To determine facial pattern of male and female in population.
- To determine the difference of six maxillary anterior teeth ratio among different face group in male and female.
- To compare six maxillary anterior teeth ratio between male and female in the same group of facial proportion.

1.4 Statements of hypothesis

- There are no differences of mean width/length teeth ratio of maxillary six anterior teeth between broad, average and narrow face group.
- There is no gender influence in teeth ratio among male and female.

1.5 Research question

Research question for the study was, what is the generalized pattern of facial type's presence in Bangladeshi population and is there any difference presence in teeth proportion between different facial types?

CHAPTER II
LITERATURE REVIEW

Selection of suitable size of artificial teeth for edentulous patient and arranging these teeth in natural and esthetic appearance are an essential part in the success of complete denture fabrication. Pre-extraction records such as diagnostic casts, photographs and roentgenograms are valuable guides for the dentist. They serve as excellent aids in both selecting and arranging anterior teeth. When pre-extraction records are not available the size and form of the face, the size and form of the maxillary cast and anatomical landmarks may be used as a guide for tooth selection. The dentist should have the responsibility for selecting artificial teeth by using all the available information as a guide. This duty should not be forced to dental technicians.

Several studies have been conducted in the past 4-5 decades for the proper arrangement and natural esthetic appearance of the anterior teeth in the complete denture construction (2-4). Before attempting to achieve the goal of natural and pleasing expression with complete denture, it is essential to make a thorough study of the normal facial anthropology and facial landmark (1). The form of the face has a great influence on esthetic outcome of denture, which also depends on proper selection of size, form and shade of artificial teeth. It is also important to understand the relationship between facial anthropology and human tooth form. Considering these issues,

These topics are reviewed under the following subheadings:

1. Evidence of human anthropological relationship with tooth form
2. History of selections of artificial teeth

2.1 Evidence of human anthropological relationship with tooth form

The subject of mans blood-relationship to the anthropoid apes is very important. Quite a number of years ago, while living in London, J Leon William (26) he was deeply impressed with the lack of critical concerning tooth form in relation to race, he determined to take the study with laudable curiosity to see what might come of it. He had long observed that most obvious variation in human teeth occur in the upper central incisors and the first step in his investigation was to secure a large collection of these teeth form from different parts of the world. In the course of a year he found himself in possession of more than thousand specimens.

A superficial examination showed wide and marked variation in form in all races. He then set about sorting and arranging these teeth for convenient examination was to press the lingual surfaces in to sheets of black wax. The outline of these teeth was thus very clearly seen against a black back ground. It soon becomes apparent that there are three very distinct forms of human central incisors. In his study the author has seen that the proximal sides of the teeth are parallel for one –half or more of the length of the crown. The most striking effect of this in the mouth is to reduce the inter-proximal spaces, as the teeth are in contact for more than one half the length of the crown. And the author observed that the proximal sides of the teeth rapidly converging from the incisal edge to the cervical or root end of the crown. Lastly the author observed a distinguishing peculiarity that, there is a double curve most frequently appearing on distal proximal surface of the crown but sometimes seen on the mesial surface and occasionally though not often ,on both mesial and distal surface.

Distinguishing these teeth as of the first, second and third class respectively. There are also other minor but distinct feature peculiar to each of these forms to which attention should be directed .The labial surface of the crown in class 1 are usually very regularly curved both mesio-distally and cervico-incisally. The labial surfaces of those in class II are generally much flatter than in either of the other classes and are often shoved-shaped ,the central portion of the labial surface often being lower than the sides and curved of marked gracefulness ,including the double curve mentioned distinguish the teeth of class III. Naturally, the inter-proximal spaces are very marked in class II and class III when compared with class I.

The author's next step was an examination of the skulls in the large and fine collection of the museum of the royal college of surgeon of London. There he found in all racial or people groups represented when the group contained any considerable number of skull, the racial types of teeth which he had isolated in his collection. The racial types of teeth which author expected to find were nonexistent. Instead all races have three types of teeth, with certain minor racial variation.

The further preeminently significant fact that these three types of teeth, even more strongly marked in their leading characteristics, are found in the gorilla, the orange- utan and the chimpanzee has such a direct bearing on the controversy now in progress as to pre-human ancestor of man that it seems an opportune time to call the attention of the scientific world to the fact here with presented (27).

Three typical forms Figure 2.1 of teeth have been demonstrated in all races, these typical forms are somewhat more evident and more frequently seen in primitive than in more modern and amalgamated race.

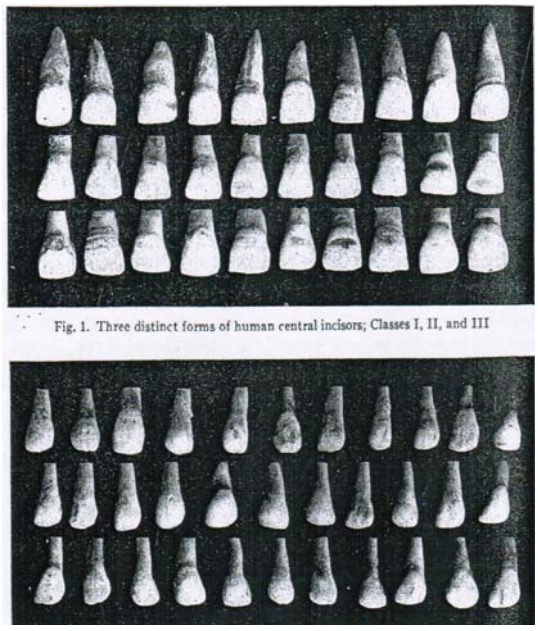


Fig. 1. Three distinct forms of human central incisors; Classes I, II, and III

Figure 2.1: The variation of teeth forms

In Fig.2.2 shows three skulls of native Australian, another very primitive people. The left specimen shows a slightly modified class I incisor. The other two are very fine specimens of class II and class III. In all of the enlarged views the same

order of placement is followed as in the preceding illustration, that is, class I at the top, class II in the middle, class III at the bottom (Fig.2.3 A, B, C)

Figure 2.2: native Australians

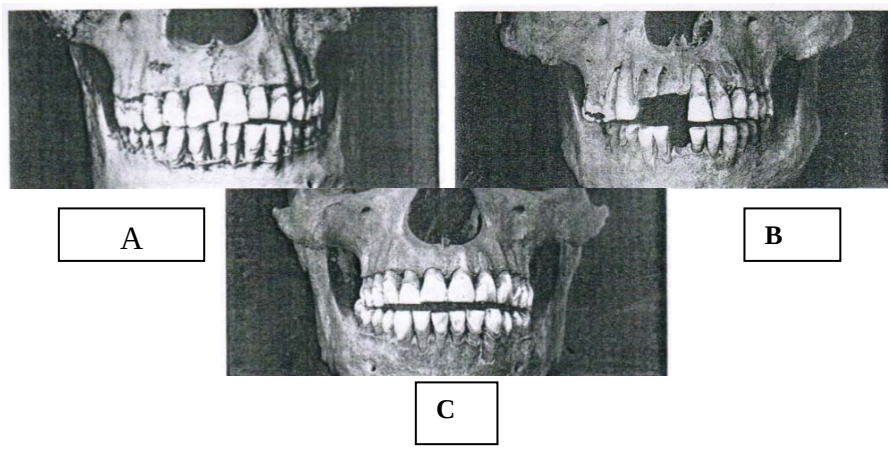


Figure 2.3: A, native Australian; class I, slightly modified B, native Australian; class II C, native Australian; class III

In Fig 2.4, three Egyptians skulls of third and fourth dynasties are shown. In the enlarged view Fig.2.5 A, B, C class I and class III have fine typal specimen are shown, while class II is shown in a slightly modified form.

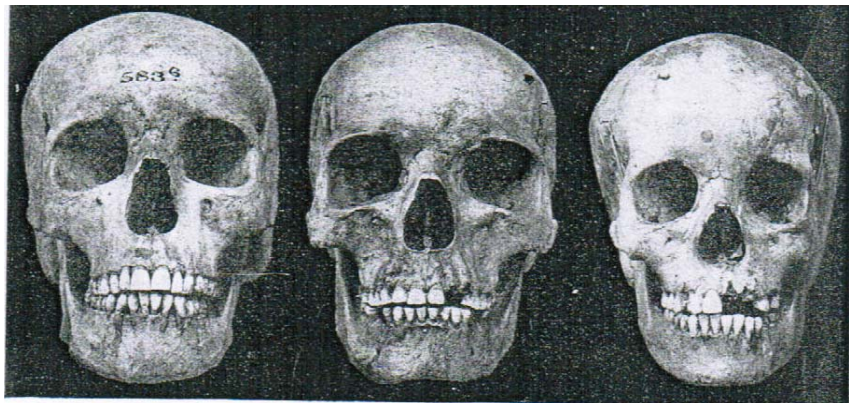


Figure 2.4: Ancients Egyptians

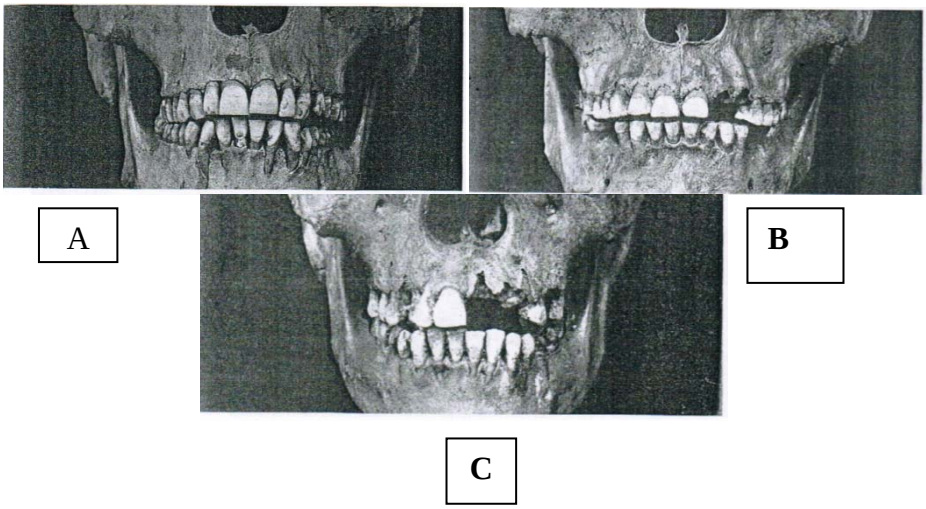


Figure 2.5 A, Ancient Egyptian; Class I. Perfect typal specimen B, Ancient Egyptian; Class II. Slightly modified and worn C, Ancient Egyptian; Class III. Perfect typalspecimen

In Fig 2.6, there are eight distinct people are shown. These skulls vary considerably in size and shape, but the teeth are all class III some of them purely typal in form and other slightly modified. The people represented, beginning at the left top are Australian, Sandwich Islander, Ancient Egyptian, Kaffir, Chinese, African, New Hebridean, Hindoo.

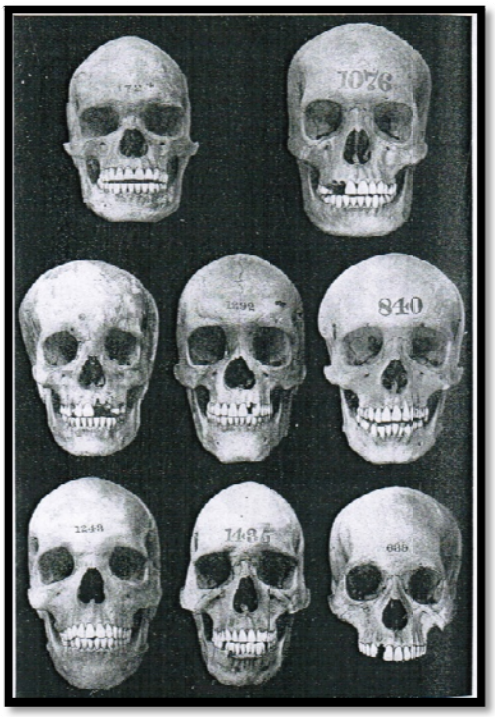


Figure 2.6: All of class III: Australian, Sandwich Islander, Ancient Egyptian, Kaffir, Chinese, African, New Hebridean, Hindoo.

In Fig 2.7, shows nine specimens of class I type. Beginning at the top and reading from left to right, they represent: Spaniard, Sandwich Islander, New Habridean, German, Javanese, Hindoo, Fiji, Italian, and Ancient Egyptian. All people, ancient and modern, have three types of teeth. The author found two plates showing in skulls,especially interesting, as in addition to presenting the three types of teeth in two widely different races, one of them savage and the other modern civilized, they show a more refine form of tooth in the savage race.

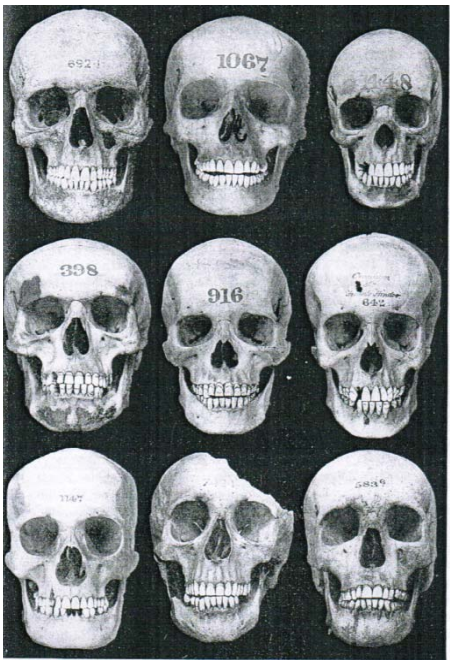


Figure 2.7: all of class I: Spaniard, Sandwich Islander, New Habridean, German, Javanese, Hindoo, Fiji, Italian, and Ancient Egyptian.

As the nine skulls shown here were these important fact of three distinct types of teeth in all three of great apes should have over looked so long. In Fig. 2.8 Orang-Utan the three types were perfectly represented. In the Gorilla Fig.2.9 class I and class II is presented by modified form .In the Chimpanzee skulls Fig. 2.10 classes I and class II are finally represented while III is a modification.

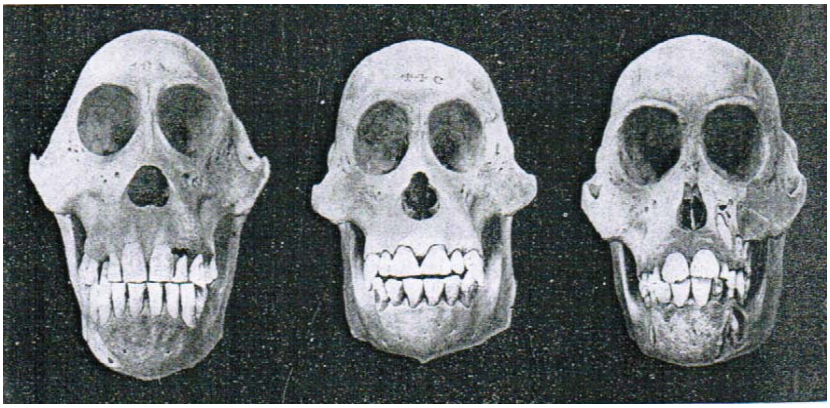


Figure 2.8: Orang-Utan; classes I, II, and III.

Figure 2.9: Gorilla; class I, II and III

Figure 2.10: Chimpanzee skulls; class I, II. And III is a modification

In addition to this very striking homology between the teeth of man and the teeth of the apes in all major feature that have pointed out. There is another curious resemblance worthy of note that there is a far greater variation in the teeth of class I in man, in proportion of width to length, than in either of the other two classes. This is much more clearly seen in the outline drawing, which is accurately made from natural teeth. Owning to a mistake in placement the order of the classes is reversed.

In Fig.2.11, these show considerably enlarged photographs of different races of men and the anthropoid apes.

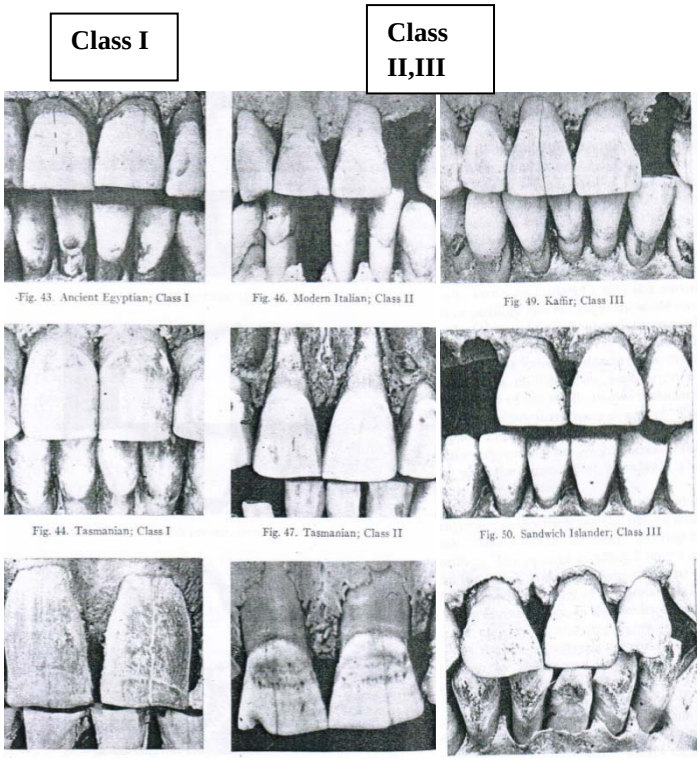


Figure 2.11: Differences of races of men, and anthropoid; classes I,II and III

In the first column of Figure 2.11, beginning at the top, ancient Egyptian, Tasmanian, Orang -utan, all showing the class I type of tooth. In the second column Tasmanian, modern Italian, and Chimpanzee, all strongly marked teeth of the class II type. In the third column, kariff, sandwich islander and gorilla all three exhibiting beautiful type specimens of class III type of teeth. In the gorilla photograph the left central was lost as may be seen by referring to the smaller photograph of this same specimen

After study all the skulls J Leon Williams reached to a conclusion that the tooth can be classified in 3 classes. Class I, class II and class III. Class I is characterized by parallel or nearly parallel lines which represent the proximal surface of these teeth for half of their length from incisal edges, in class II these lines converge so markedly that they would meet is most instances, at a point near the end of the root. These converging lines are sometimes nearly straight, but usually there is a slight convexity of the mesio-proximal surface and slight concavity of the distal surface. Class III characterized by a delicate double curved line on its disto-proximal surface

and sometimes, though less frequently on mesial surface. All of the surfaces and angles of the teeth of this class are more rounded and graceful than in either of the other two classes.

2.2 History of selections of artificial teeth

Theories have been made throughout the decades for selection of artificial teeth such as temperamental theory, geometric theory, law of harmony, dentogenics theory.

2.2.1 Temperamental theory

Probably the oldest theory for the choice of frontal artificial teeth is the temperamental theory[26]. This theory was not based scientific facts, it was based on Hippocrates philosophy from the 5th century BC, who divided humans in to four types and was used in the last century, before the theory of Leon William. Patients were divided in to sanquinic, lymphatic, neurotic and biliar types, depending on their temperament. It was believed that certain types of personality could be described by certain physical characteristics. However, problems arose in deciding on whether behavior is typical or atypical for any of the temperament. Artificial teeth for certain temperament were produced in different shapes from different dental factories. The teeth were of varying forms, so that this method had to be characterized as unreliable.

Before the temperamental theory was established, the choice of the artificial teeth was left to the subjective judgment therapist. The dental industry produced a small range of different tooth forms and therefore aesthetic success was always questionable. But it is true that the temperamental theory has great historical significance in dentistry, as it was the first theory on the choice of artificial teeth.

2.2.2 William theory (geometric)

The temperamental theory was replaced by William's theory of harmony. It was in 1914 Leon William (27) proposed his theory which became famous under the name of geometric theory, which determines the tooth form according to the face shape by connecting the shape of the tooth and the face. Williams believed that the

contour line of upper central incisor has to be of opposite direction from the contour line of face. William had a great influence in development of aesthetic in removable prosthodontics with his theory of harmony between the tooth and the facial form. The outline form could be determined by drawing the patients face on paper or by using a stencil to super imposed outline form on to patients face. Williams's theory proposed that a close relationship between face, tooth, arch, and alignment, termed the "Esthetic triangle". This geometric theory has been supported by a number of other workers. Leon William's classification, although not scientifically correct in all details, is undoubtedly the simplest and most useful guide in the selection of artificial teeth. Especially as it was accepted by the majority dental companies which manufacture artificial teeth.

According to the Williams(27), the shape of the upper central incisors in accordance with the form of the face. If one central upper incisor is increased in size and rotated upside down and superimposed to the face in such a way that the incisal edge is parallel to the eyebrows and the cervical part of the tooth is parallel to the lower part of the face, then the forms of the tooth and the face would be identical (Fig.2.12).

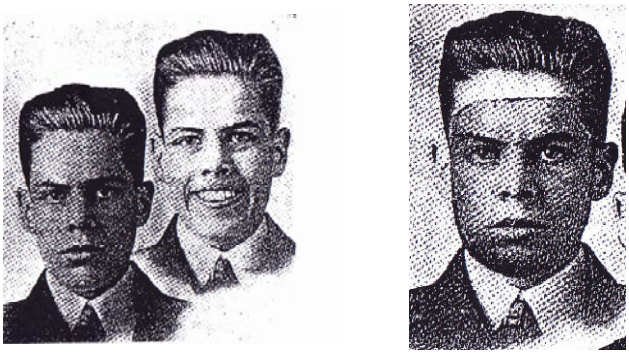


Figure 2.12: A, The face form in repose and the upper central incisor fully exposed. B, The one of the central incisors photograph onto photograph of the face is repose. And identity of the face form and tooth form.

For simplicity, Williams classified all forms in three basic forms: tapering, ovoid and square (Fig.2.13) (27). To find out which form is suitable for each individual, it is necessary to imagine a line running on each side of the face downward 2.5 cm anterior to the tragus of the ear and through the angle of lower jaw. If the lines

are parallel, then the face form is square, if the line converge toward the chin, then the face form is tapering and if the line diverge towards the chin then the face is ovoid. William demonstrated subjectively that similar teeth existed in dissimilar skulls after the study of thousands of skull on royal college of surgeons in London. He proposed to the manufacturer of artificial teeth that three and four sizes of each three types of tooth forms be manufactured and organized for systemic selection by the dentist. This system is exemplified by the trubyte bioform system. (Dentsply international Inc. York, Pa) of tooth selection by face and tooth form harmony. The theory of Leon Williams was adopted by almost all prosthodontics textbook in the whole world.

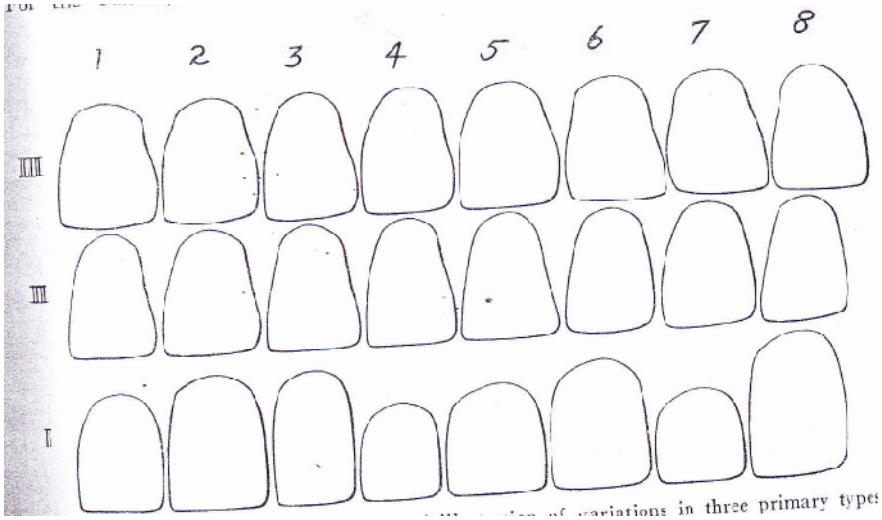


Figure 2.13: Reproduction of Williams' original illustration of variations in three primary types.

2.2.3 Dentogenic theory

Frush and Fisher (28) introduced the term dentogenics to the dental profession in the early 1950.The term originated to describe the art, practice, and techniques used to achieve esthetics goals in prosthodontics. The main goal was to give the patient a personalized denture, which led to development of the sex, personality and age (SPA) factor (Fig.2.14). The authors described in several articles the importance of the SPA factors and its application to the selection and arrangement of denture teeth in several articles. The authors believed that roundness, smoothness, and softness as feminine, should be reflected in dentures for women, just as masculine, vigor, and boldness should be reflected in denture for men. The authors also believed

that the patient's personalities could be incorporated in to their dentures by selecting a delicate, medium pleasing or vigorous arrangement of denture teeth. The age factor was accomplished by using lighter shades for younger patients and darker shades for older patients, incorporating wear in artificial dentition, and using more diastemas for older patients to simulate that which often occurs in the natural dentition.

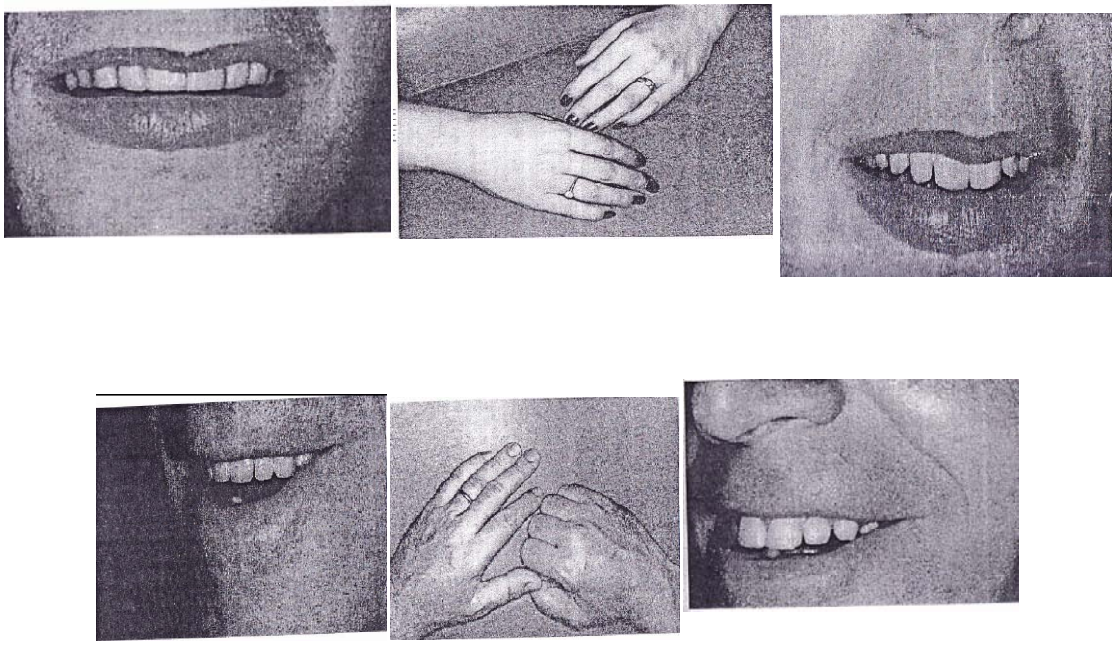


Figure 2.14: The dentogenic restoration theory induces the harmony between the denture and gender (upper is female and lower picture is male)

The original concept of these dentogenics restorations belong to Wilhelm Zech, a sculptor in Switzerland. He had observed that, though the efforts of the dentist in artificial dentures represented a form of sculpturing, they were devoid of the artistic principles and interpretations of the sculptor. He saw them as mechanical interpretations and reasoned that it was possible for the sculptor to express vigor and delicacy, vigor representing essentially masculinity, and delicacy, femininity, in his works of art. It should also be possible then for the dentist to do so in his artificial denture. So he applied sculpturing to teeth and achieved the effect of sex identity. This was an integral part of his thinking that led to the whole concept of "dentogenic restorations." Just as the sculptor, with his hammer and chisel, can create the beautiful

feminine image of a Venus de Milo or the masculine form of a Thinker, thus can the skilled dentist and technician together create the same flow of masculine or feminine lines in the denture.

2.2.3.1 Faminity expression in denture

How is femininity expressed in the female form? A glance at the schematic feminine form is sufficient to illustrate the roundness, smoothness, and softness that is typical of women (32). In comparison to the masculine form, the feeling of softness is typical of femininity. It is not only a part of the body, but also of the spirit. Typifying compassion and tenderness, sweetness and mother love are cherecteristics of faminity expression. The feminine hand, in most cases, expresses these qualities, and it is apparent that to keep these ideas in mind in shaping the tooth is most appropriate. How does a dentist inject femininity into a denture? An excellent beginning is to select initially a mold, which expresses softer anatomic characteristics, or one which is highly adaptable to being shaped and formed into a delicate type of tooth by certain recommended grinding procedures. The sculptor, in his interpretation of feminity, will keep to the spherical form (Fig.2.15). The authors speak of spherical instead of circular so as to identify the third dimension which is so necessary to dentogenics and which has been minimized in customary esthetic procedures. The sculptor, by using the spherical form imparts a sense of softness to Willium Zechs subject which otherwise would be lacking. The authors mentioned that they could do the same by infusing that feeling of soft femininity into the tooth and into the smile.

Figure 2.15: Denture constructed according dentogenic concepts, reflex the sex personality and the age of patient

Therefore, the selection of a basic shape which has the soft lines expressive of the feminine form, together with effective personality

characteristics, is particularly helpful. Thus, it is apparent that selection of a basic "feminine" tooth form is conditioned by the Personality and Age factors. As an example, the "feminine" molds shown in (Fig.2.16)

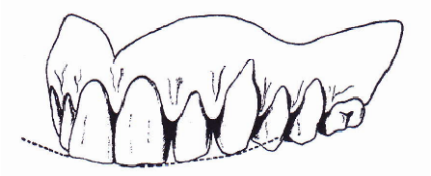


Figure 2.16: Curve suggests softness. Grinding of the incisal line to create this curve expresses femininity

Regardless of how "feminine" a tooth may be, it should be further developed according to the dentist's own interpretation of the degree of femininity which is suitable. Even though the dentist begins with a basically "feminine" mold, he should further harmonize it to the individual patient. Now, all femininity does not have the bloom of the healthy girl of 16 or the beautifully mature young wife of 28. However, there is still femininity in a woman of 60, 70, or 80, and that is where the artist's and sculptor's role is played. For, in the aging, the degree of femininity must be fairly and definitely appraised. A woman of 50 can be a very soft type or she may be quite a vigorous, sturdy type whose restoration must conform to a much more forceful interpretation than the soft feminine type which is so easily classified. Our individual interpretation of femininity in dentogenics is accomplished by definite grinding procedures of the denture teeth. The grinding of the incisal edges must follow a curve rather than a straight line. Here again, the authors return to the sculptor's illusions where a curve suggests softness, and thus femininity.

2.2.3.2 Musculinity expression in denture

How is masculinity expressed in the artificial denture? This can be answered essentially by asking how masculinity is expressed in the masculine form. A schema of the masculine form, illustrates the cuboidal, hard, muscular, vigorous appearance which is typical of men (Fig.2.17). However, masculinity itself goes beyond the evaluation of the physical appearance. Masculinity expresses aggressiveness, boldness, hardness, strength, action, and forcefulness. This is illustrated by the classic appearance of the male clenched fist. Just as artists and

sculptors are aware of these qualities, so the dentist-artist and dentist-sculptor should be.

Figure 2.17: The appearances of denture with men

A basic tooth form which expresses masculine characteristics shows vigor, boldness, and hardness. The artists and the sculptors, in their basic interpretation of masculinity, impart a sense of harshness and angularity which is typical of the masculine form. Thus, as sex identity becomes an automatic part of our esthetic procedure, the tooth form will automatically transfer a sense of masculinity to the patient's smile.

Just as a basic "feminine" tooth form may be further individualized according to the dentist's own interpretation of the degree of femininity, so may the masculine tooth form be further treated. It is true that some men have a qualifying softness which will guide us to compromise the typical hardness of a masculine tooth interpretation. This is apparent in illustrations of the "masculine" molds which show how personality and age factors condition our selection of a mold for a man. As an example, the mold is less vigorous and younger. This compromise begins with the selection of a basically "masculine" tooth form which is less harsh in its surface design and in its complete form. By sufficient grinding and by further squaring the incisal edge of both the central and the lateral incisors, the effective employment of this basic tooth form can be seen in the man's smile.

The authors become aware immediately of the typical differences which can occur between the masculine and the feminine of both the human form and the tooth form. How does a dentist inject masculinity into a denture?

The preceding evaluation is a constant consideration in effecting masculinity in the three basic parts of a denture, its position which are the tooth, its position, and its matrix.

2.2.4 Sex interpretation by tooth positioning

Positioning of the teeth is necessary in further conveying sex characteristics to a denture. However, definite position cannot be assigned to one sex or the other because other factors than sex must be taken consideration. To enables everyone to simplify and clarify this point we will consider some of the various positions of six maxillary anterior teeth (29).

As a general introductory rule, the positioning of the anterior teeth has to depart from that compact wall of porcelain which is the usual characteristics of "denture look". The mechanistic positioning of all of the six anterior teeth on a regular curve with similar curve with similar long axes and identical incisal length is to contrary to what we see in pleasing natural dentition. Frush and Fisher (31,32) introduce "lively" positions (Fig.2.18) which are harmonious because they are inspired by the most pleasing natural tooth arrangement, but this is not to be confused with unpurposeful "irregular" teeth.

Figure 2.18: The lively position for denture with female (left picture) and male (right picture)

The central incisor- The two positions of the central incisors, set in perfect symmetry are the starting positions for conventional tooth setups .By bringing the incisal edge one central incisor anteriorly,a position is created which is evident but harsh. However, if one of the central incisors moves from the starting position out at

cervical end leaving the incisal edge together, that has created a harmonious, lively position. This is the best noticeable of three positions which are to be described.

The second and more vigorous position is to move one central incisor bodily anterior to the other.

The third position is a combined rotation of the two central incisors with the distal surface forward, with one incisor depressed at the cervical end the other depressed incisally. Of course, these positions can be treated either very softly or more vigorously. Obviously, the softer positioning would be more favorable for women and vigorous more favorable for men.

The lateral incisors- The lateral incisors, being generally narrower and shorter than central incisors, are less apparent; however they can impact a quality of softness of hardness to the arrangement by their positions.

The lateral incisor rotated to show its mesial surface whether slightly overlapping the central incisor or not, gives softness or youthful coquettishness to the smile.

By doing the reverse that is, rotating the lateral incisors mesially the effect of the smile is hardened. This would select the soft positions for the very feminine smile and the hard positions (even emphasized) for the vigorous male. It is important to note position is avoided on both side of the mouth.

The cuspid teeth- The cuspid should never be set with the tip of the teeth out labially further then the cervical end, except in very rare instance where have to harmonize the arrangement with rough or primitive type of patient .In generally it will adopt for the cuspid conjointly the three following positions:(1) Out at cervical end, as seen from the front; (2) rotated show the mesial face (3) almost vertical as seen from the side Fig.2.19.

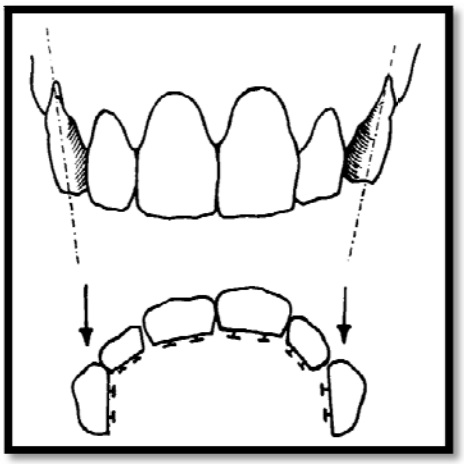


Figure 2.19: The position of the cuspid is of extreme importance. This schema shows the basic position of the cuspid in dentogenic restoration

It is evident that a prominent cuspid eminence gives the cuspid greater importance and therefore gives to the smile a vigorous appearance more suitable to the masculine sex. It becomes apparent that if all the tooth position can be used for both sexes, the degrees of hardness or softness are variable and will depend on the characteristics of hardness or softness by the individual patient.

The third dimension (depth grinding) the “denture look” is due mostly to the flat appearances of the artificial upper anterior teeth, their lack of depth or of body. Due to mechanical obstacle the tooth manufacturer seem unable to create molds which show a spherical or cuboidal mass which is so important to the illusion of life in denture appearances. Thus, the regular row of similar- looking teeth, the wall of porcelain already described, and flat appearances of artificial teeth add a “bridge-facing look” to the denture.

The feeling of that depth is third dimension, for realism. This third dimension is used as well for women (spheroid shape) as for men (cuboidal)(Fig.2.20). The depth grinding is done moderately for both men and women of average proportions and age of the patients for example bodied woman and vigorous men- and on to a point of “bony” appearances exclusively for the most vigorous types of masculinity. Without this factor of perspective or third dimension, the most perfect restoration will lack the touch of authenticity, of life.

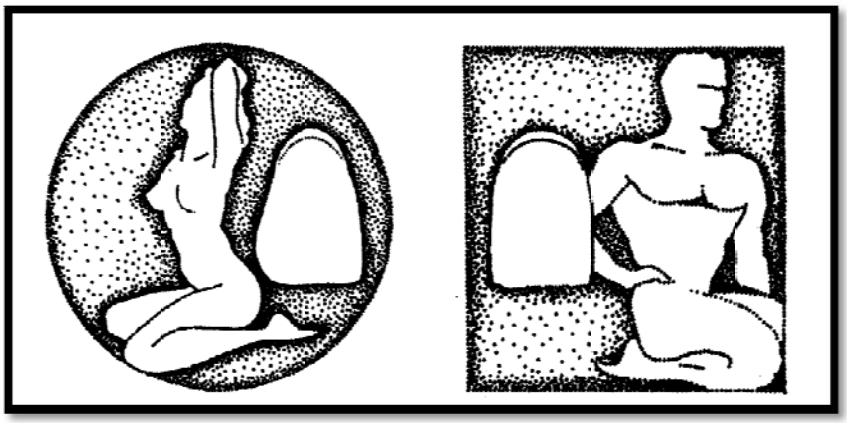


Figure 2.20: The feminine form is spherical; the masculine is cuboidal.

The depth grinding is done on mesial surface of the surface of the central incisors only. Central incisors are widest, almost always the longest, and therefore the most noticeable of six anterior teeth. They must be harmonized with the whole physical personality of the patient: to vigorous patients belong vigorous central incisors; to delicate patients belong delicate central incisors. Neglect of this important point leads the observe to sense that some is wrong, and a doubt is incurred as to the denture.

Manufactured teeth can be used with their technically imposed deficiencies to fool the eye of the observe by creating the third dimension by depth grinding procedures as follows: with a soft stone, the mesial-labial line angle of the central incisors is ground in a definite and flat cut, following the same curve as the mesial contour of the tooth in order to move the deepest visible point of the further lingually. After this cut has been made, a careful rounding and smoothing of sharp angle made by the stone must be accomplished, and a perfect polish must be given to the ground surface so that it cannot be distinguished from a surface produced by a glaze in a porcelain furnace.

It is necessary to develop the desired effect in depth grinding by consideration of these main factors: a flat, thin, narrow, tooth is delicate looking and fits delicate women (little depth grinding); a thick “bony” big-sized tooth, heavily curved on its labial face, is vigorous and to be used exclusively for men (rather severe depth grinding) for average patient, A healthy woman or a less vigorous man, the depth grinding will be an average between delicate and vigorous. The feminine or

masculine characteristics being given by the others tooth shaping. The incisors grinding and the positioning of the teeth.

Depth grinding reduces the width of the central incisors according to the severity of grinding to be accomplished. Therefore, to maintain the normal harmony of contrast in size between the six anterior teeth, a larger size central incisor of the same mold should be selected. Naturally, the same contrast can be made by selecting a smaller lateral incisor and cuspid of same mold.

2.2.5 Personality factor

"Personality" by explaining the precise prosthodontics application of this word in the this word in the three divisions of the personality spectrum

1. Delicate- Meaning, fragile, frail, the opposite of robust

2. Medium pleasing-Meaning normal, moderately robust, healthy and of intelligent appearances.

3. Vigorous – Meaning the opposite of delicate; hard and aggressive in appearances, the extreme male animal, muscular type, almost primitive, ugly.

Prosthodontics inclusion of personality, in above sense, together with the sex and age factors, overcome the other common fault of esthetic endeavor of "over simplification" of esthetic (30).

CHAPTER III
MATERIALS AND METHODS

3.1 Study design

This study is a descriptive cross-sectional analytical study.

3.2 Study population and sample population

The study populations are the people from Dhaka, Bangladesh.

3.3 Study area and Site

Under-graduate student from Bangladesh Dental College, Dhaka.

3.4 Study period

The study period started from August 2012 to October 2012.

3.5 Ethical approval and consent

This study had been granted the approval by the ethic committee from Bangladesh Dental College and hospital. Informed consents were obtained from all subjects prior to their participation.

3.6 Subjects selections

3.6.1 Inclusion criteria

1. Subject is willing to participate in the study

2. No missing maxillary anterior teeth

3. No gingival or periodontal conditions or therapy that would undermine a healthy tissue-to-tooth relationship

4. Mild inter-dental spacing or crowding

5. No anterior restoration

6. No history of orthodontic treatment

7. Age: 18-35 years, both male & female

3.6.2 Exclusion criteria

1. Periodontal disease with inter-proximal gingival recession greater than 2.0 mm

2. Previous history of periodontal surgery

3 Subject is undergoing orthodontic therapy during the study

4. Subject with anterior implant placement

5. Subject with open bite

6. Apparent loss of tooth structure due to attrition, fracture, caries, or restorations

7. Obvious problems that could disfigure or otherwise affect the face and dentition

3.7 Subjects selections

Subjects participating in this study are volunteers from around the country; the solicited is a written announcement to participate in the study. The examination is performed by one of the investigators of the present study. 140 subjects are divided in to 70 male and 70 female. Their arrange age from 18-35 years old and their origins are from all around the country; in other words, they represent no specific region. Informed consent is obtained from all subjects prior to their participation. This study is

performed under the supervision of the research foundation of Bangladesh Dental College under Dhaka University.

3.8 Data collection tools

1. Examination sets:
    - Dental mirror
    - Cotton pliers
    - Cup
    - Explorer
2. Periodontal probe
3. Upper rim lock trays
4. Dental stone type IV
5. Vernier calipers
6. Customized device for facial measurement (fabricated for the sole purpose of this study)

3.9 Sample size

The sample size was calculated using the following formula:

$n = z^2 \square^2 / d^2$

Where: n = Sample size

Z = 1.96 for 95% confidence level

$\square$ = Difference of each data from the mean or standard deviation

d = Difference of mean of the sample from the whole population

Therefore:

$X = 1.\overline{1}625$

S or $\square$ = .0334

$d = (X-\overline{u}) = .005$

Sample size

$n = z^2 \square^2 / d^2$

$= (1.96)^2(.0334)^2 / .005$

n =140 (70 male & 70 female)

3.10 Impression and tooth measurement

Irreversible hydrocolloid impressions (Jeltrate, Caulk, Densply) of the maxillary arches with upper rim lock stock trays and poured with Type IV dental stone (Microstone, whipmix, Inc) according to the manufacturer's specifications. To estimate the size of the anterior teeth, measurements will be made on the obtained casts. A sharp-tipped digital caliper, read to the nearest 0.05 mm, is used to measure the teeth. The width dimension is obtained by measuring the maximum distance between the mesial and distal contact points of the tooth on a line perpendicular to the long axis. Height of the tooth is recorded as the longest distance from the cervical gingival margin to the incisal edge of the tooth on a line parallel to the long axis (Fig.21 A). All of the measurements are made on the labial surface of the tooth; each parameter is measured 3 times and is recorded in millimeters for calculating tooth ratio (Fig.21B) , and the ratio of six maxillary anterior teeth was found by dividing the width by length, then adding the ratio of right and left side to find the mean of each pair

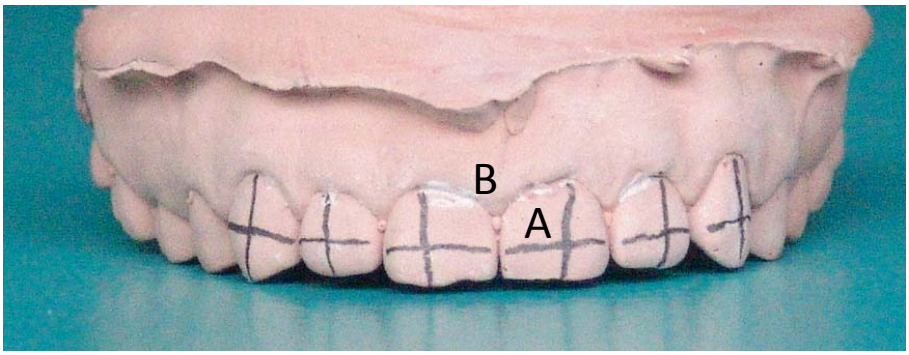


Figure 3.1 A: The position using to measure the six anterior teeth from dental cast. A, in tooth width plane and B, in tooth length plane.

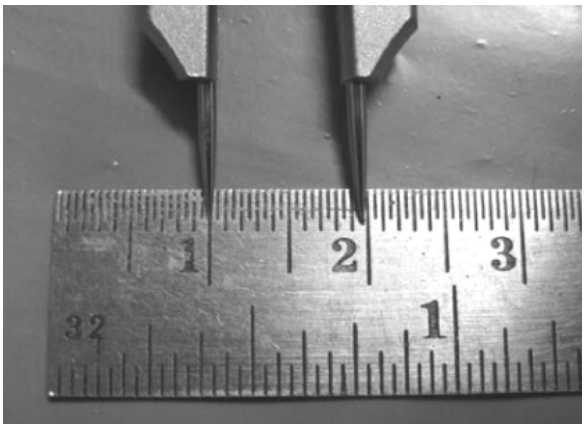


Figure 3.2 B: Reading measured value from the ruler

3.11 Facial measurements

The facial dimension are measured on the subject, The natural postural head position, which in the subject is either seated or standing upright, the patient should be in a rest position for the optimal evaluation of the frontal plane (1,31,32) (Fig:22) .

Figure 3.3: The subject is seated at upright and is asked to look straight ahead and in the rest position

The Zygion on most lateral each arch, Nasion point and Menton were determined by palpation (Fig.23 a), the face beyond upper Nasion point was not

analyzed. Then tangents was drawn from the most lateral point on the soft tissue overlying each zygomatic arch of right and left face contours, then measurements are performed with the customize device (Fig.23 b, Fig.24) and recorded in millimeters for calculating the facial ratio[1,31,32].

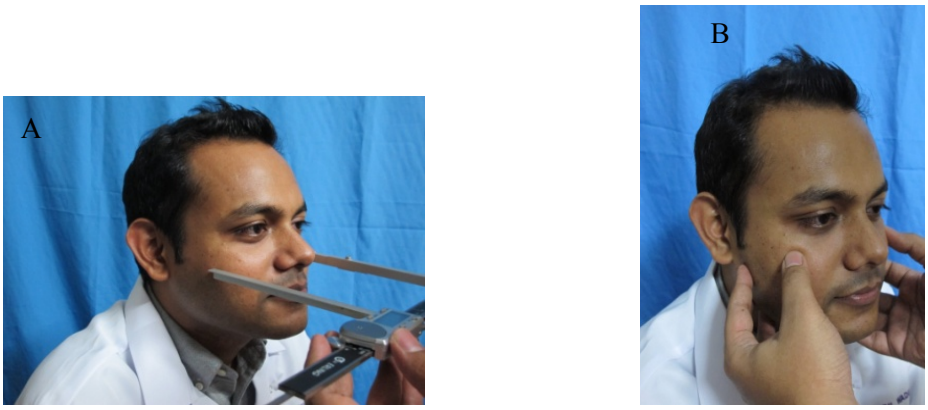


Figure 3.4: A: Palpation of the zygoma bone helps relate the soft tissue contour to the underlying bony morphology and B: face measured of bizygomatics with customized device and reading measured distance with automatic calculator attached with customized device.

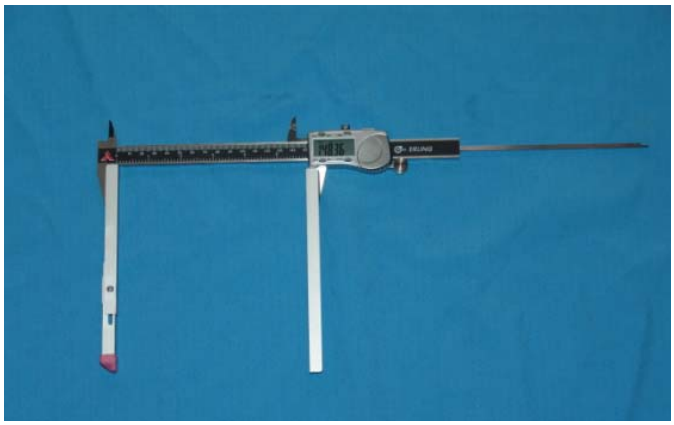


Figure 3.5: Determined the width bi-zygomatic with customized device and measured values

Measurement of the face height is determined by the distance between the Nasion point (the soft tissue point overlying the midpoint of the Naso-frontal suture) and the Menton base (the lowest point in the midline on the lower border of the chin)

then measurements are performed with the special device and recorded in millimeters for calculating the facial ratio (1,31,32) (Fig: 25 a and b).

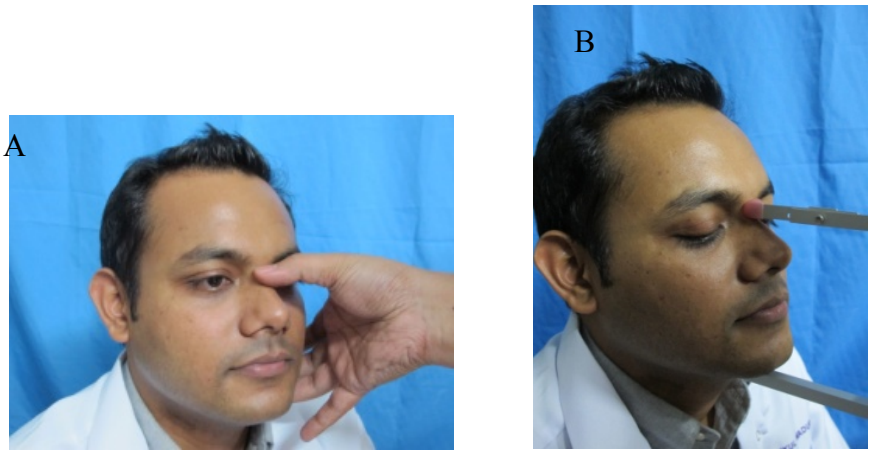


Figure 3.6 :(a)Palpation of soft tissue point (b) Face measured from the Nasion to Menton with customized device and reading measured distance with automatic calculator attached with customized device.

Facial measurements were completed, the data is divided to three criteria of facial classifications, based on facial index as shown on Table 1 (Broad, Average, Narrow) (Fig.26), these criteria allowed a geometric classification of facial types as used in anthropometry to classify face as

- Broad (Euryprosopic) is transversely wider and vertically relatively reduced in height.
- Average (Mesoprosopic) is the average, lying between the two extremes.
- Narrow (Leptoprosopic) is vertically relatively tall and transversely narrow.

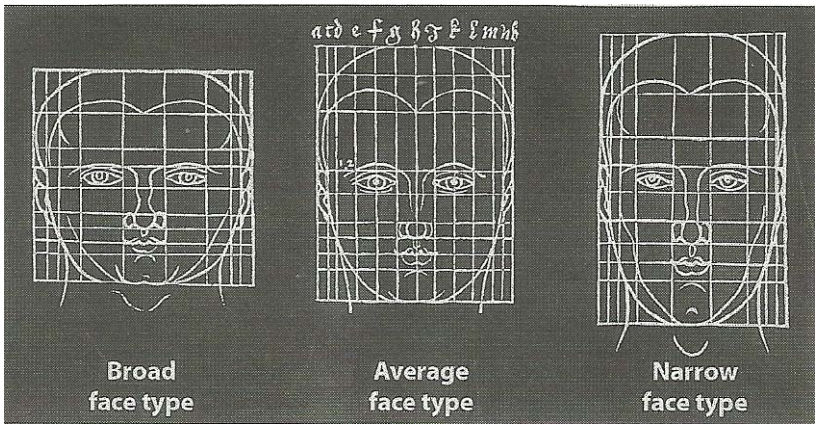


Figure 3.7: (A) Example of classified facial type as observed in frontal view in 1528 by Albrecht Durer.

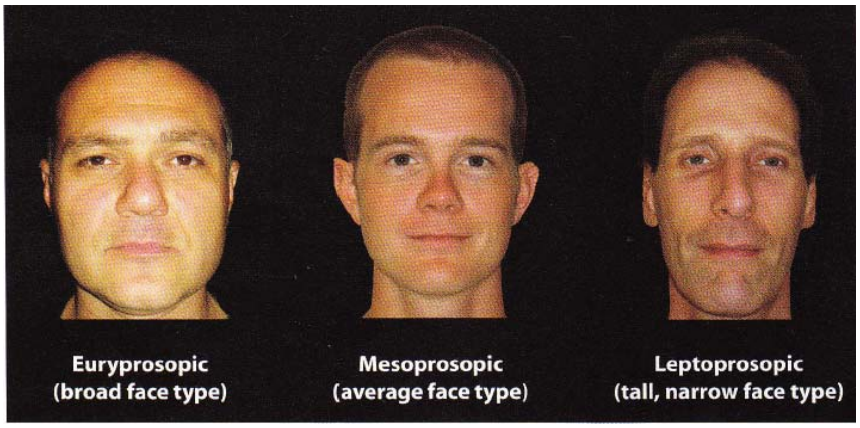


Figure 3.8: (B) The example of facial types as used in anthropometry to classify face

The facial index (index facilis or index of the morphological face height) is a numerical expression of the ratio between the facial height (Nasion to Meton) and the bi-zycomatic facial width (Zygion to Zygion) of a living person (1, 31, 32).

The facial index (FI) is calculated by the following:

FI: facial height (N-Me) multiple by 100, then divided by bi-zygomatic face width (Fig.27)

Table 3.1 The classifications of anatomies face types (1).

Facial type	Facial index	
	Male	Female
Euryprosopic (broad, short face)	< 85	< 80
Mesoprosopic (normoprosopic; average face)	85-90	80-85
Leptoprosopic (tall, narrow face)	□ 90	□ 85

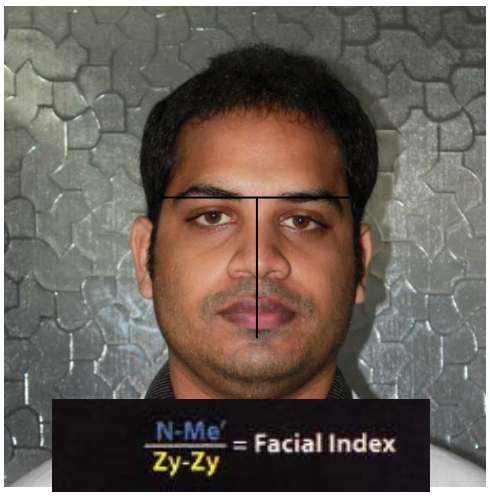


Figure 3.9: Facial index calculation.

3.12 Statistical Analysis

SPSS IBM version 20 (Chicago, USA) was used for the analysis of data. Descriptive statistics was used to calculate the frequency and percentage of facial types. Mean crown width/length ratio of six maxillary anterior teeth, and standard deviation were obtained. The independent t-test was performed to observe the

differences of the ratio of six maxillary anterior teeth between different facial types at 95% confidential level.

3.13 Error measurements

To test reliability of the study, the measurements were repeated for randomly selected 14 subjects (10% of total sample size) at one month apart. The reliability of the method was analyzed by the Dalhberg's formula:

ME = $\sqrt{\sum (x1 - x2)^2/2n}$

Where x1 is the first measurement, x2 the second measurement and n the number of repeated records (Houston WJB, 1983).

3.14 Power of test

The power test using the online website named statistical solution (Statistical Solutions, LLC) was used. Input data from our study which consisted of 4 values are as follows.

mu(0) is "known" mean value for population. , = .901

mu(1) is "expected" mean value from sample =.914

sigma SD is standard deviation = .087

Sample size=140

alpha (a) is 95% CI,

CHAPTER IV
RESULTS

Descriptive result of facial measurement & teeth measurement

55.71% of subjects represent narrow face and 44.28% represents average face. For male, 57.14% represents narrow face and 42.85% represents average face for male, 54.28% represents narrow face and 45.71% represents average face for female .(Table 4.2,Fig 4.1), Figure 29 demonstrated box plot results of mean crown width/length ratio classified by gender of central incisor, lateral incisor and canine. The mean tooth ratio and standard deviation of the six maxillary anterior teeth for narrow face group and average face group in the male and female and their statistical result are presented in (Table 3), (Table 4).

Table 4.1 Number and percentage distribution of different facial type classified by gender.

	Gender		
Facial type	Male	Female	Total (%)
Narrow face	57.14%(N=40)	54.28%(N=38)	55.71%(N=78)
Average face	42.85%(N=30)	45.71%(N=32)	44.28%(N=62)
Broad face	0%(N=0)	(0%)(N=0)	(0%)(N=0)
Total	N=70	N=70	140

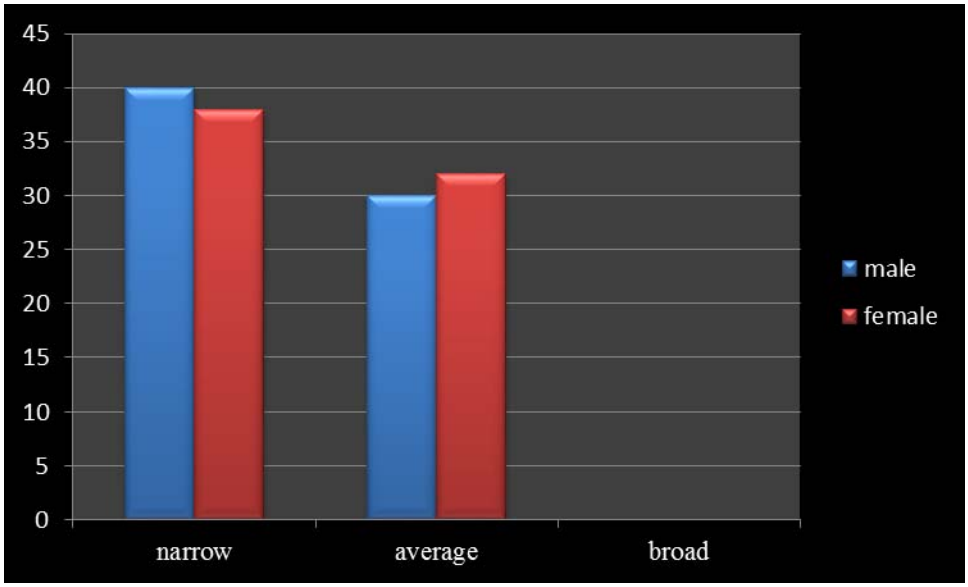
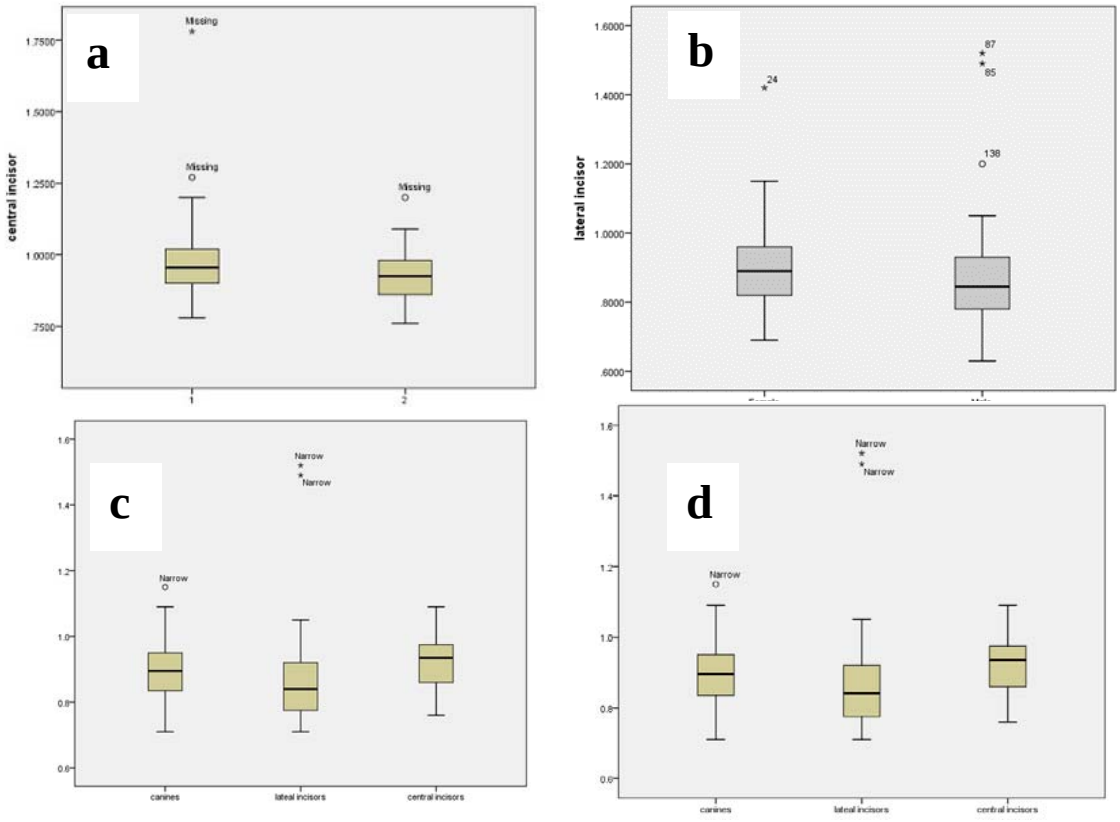


Figure 4.1: Bar diagram distribution of facial types in both gender in total population

Result of Box plot



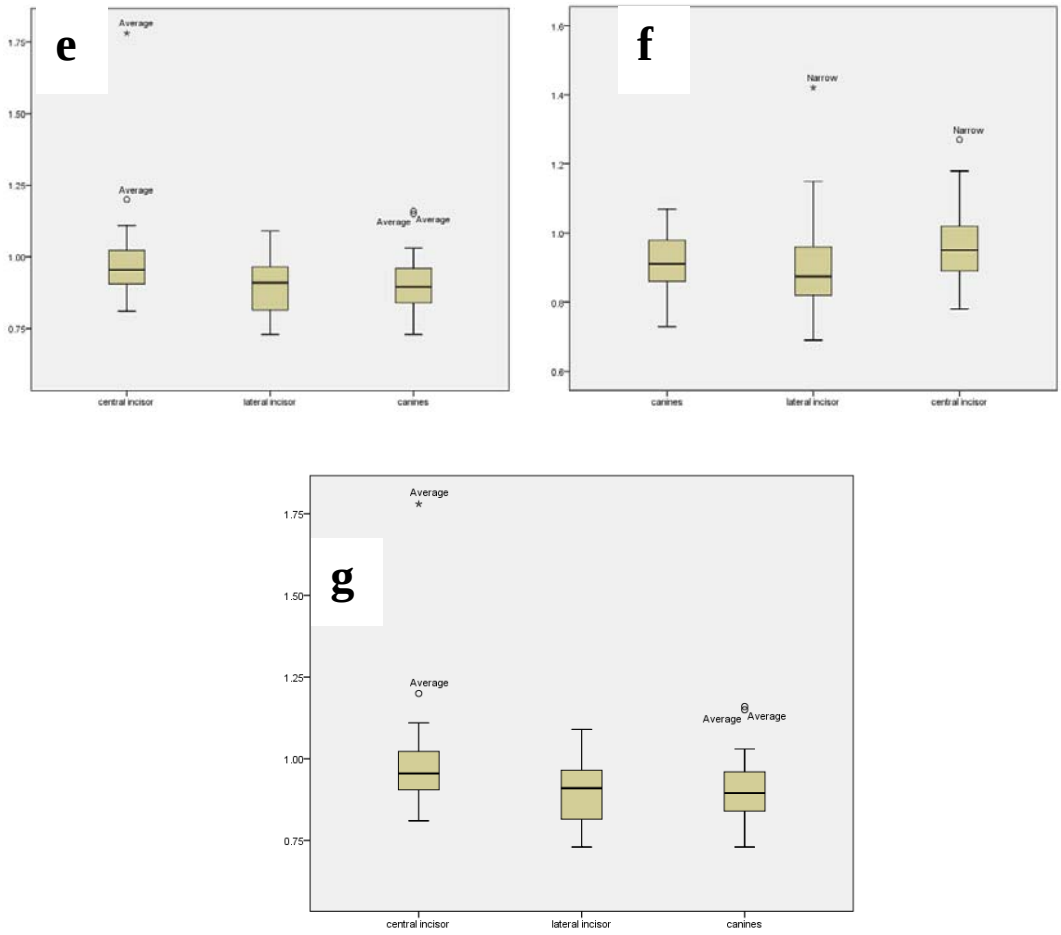


Figure 4.2: (a) crown width / length ratio of central incisors of male & female
(b) crown width / length ratio of lateral incisors of male & female
(c) crown width / length ratio of canine of male & female
(d) crown width / length ratio of central incisors, lateral incisors & canine of narrow facial group in male
(e) crown width / length ratio of central incisors, lateral incisors & canine of average facial group in male
(f) crown width / length ratio of central incisors, lateral incisors & canine of narrow facial group in female
(g) crown width / length ratio of central incisors, lateral incisors & canine of average facial group in female

Table 4.2 Mean crown width / length ratio of maxillary six anterior teeth in male group

	Narrow (N=40)				Average (N=30)			
Teeth	Min	Max	Mean	SD	Min	Max	Mean	SD
width13	6.5	9.1	7.96	0.62	7.1	9	7.91	0.43
length13	7.2	13.3	9.05	1.13	7.1	10.8	8.9	0.85
width12	5.2	8.2	7.19	0.63	5	8	6.96	0.67
length12	6.5	10.5	8.17	1.01	6	10	8.04	1.01
width11	7	10	8.63	0.7	7.1	9.9	8.53	0.66
length11	7	11.6	9.08	1.15	7.8	11	9.19	0.89
width21	7	10	8.55	0.64	7.1	9.6	8.5	0.56
lenght21	7	11.5	8.97	1.19	7.2	10.5	9.25	0.78
width22	5	8.2	7.17	0.72	5	8	7	0.67
lenght22	5.9	10.6	8.1	1.09	6	10	8.1	1.01
lenght23	6.9	13	8.95	1.12	6.5	8.9	7.78	0.55
width23	6.8	9.1	7.99	0.59	7	10.5	8.74	1

Table 4.3 Mean crown width / length ratio of maxillary six anterior teeth in female group

	Male				Female			
	Mini	Max	Mean	Std. Deviation	Mini	Max	Mean	Std. Deviation
width 13	7	9.2	8.25	0.55	7.5	9.7	8.33	0.53
length13	6.9	12.9	9.83	1.19	7	12.3	9.65	1.2
width12	5	8.6	7.06	0.79	4.5	8.2	7	0.85
length12	6.9	11.2	8.7	1.15	7	12.1	8.78	1.08
width11	6.9	10	8.71	0.64	8	10	8.63	0.57
length11	8	12	9.72	1.18	6.5	11.5	9.76	1.07
width21	7.5	10.1	8.69	0.64	6.9	9.9	8.62	0.65
lenght21	7	12.5	9.81	1.26	6.5	11.2	9.5	1.05
width22	5.5	8.9	7.13	0.68	5	8.3	6.9	0.77
lenght22	6.5	12	8.83	1.24	6.2	10.5	8.56	0.98
width23	7	10	8.07	0.57	6	9.5	8.13	0.78
lenght23	6.9	13.1	9.54	1.34	8	12.3	9.57	1.08

Analytic result for six maxillary anterior teeth among narrow and average facial group in male and female:

In male group (Table 5,) there were no significant differences ($p>.05$) in mean crown width/length ratio between narrow face and average facial groups for central incisor, lateral incisor and canine. Similarly, in female group (Table 6) there were no significant differences ($p>.05$) in mean crown width/length ratio between narrow face and average facial groups for central incisor, lateral incisor and canine.

In Narrow facial group (Table 7,) there were significant differences ($p<.05$) in mean crown width/length ratio between male and female for central incisor. Similarly, in Average facial group (Table 8) there were significant differences ($p<.05$) in mean crown width/length ratio between male and female for central incisor.

Table 4.4 Mean SD 95% CI and results of t-test of maxillary anterior teeth in male group.

Teeth	Type of face	N	Mean	SD	95% CI	P
Canine #13 #23	Narrow	40	.896	.097	-.031 - .053	NS
	Average	30	.885	.073	-.029 - .051	
Lateral incisor #12 #22	Narrow	40	.878	.172	-.059 - .085	NS
	Average	30	.865	.112	-.055 - .081	
Central incisor #11 #21	Narrow	40	.921	.078	-.033 - .046	.NS
	Average	30	.914	.087	-.033 - .047	

N = Number of sample; SD =standard deviation; probability; CI = Confidence interval;
NS =not significant (p>0.05)

Table 4.5 Mean SD 95% CI and results of t-test of maxillary anterior teeth in female group.

Teeth	Type of face	N	Mean	SD	95% CI	P
Canine #13 #23	Narrow	38	.912	.087	-.031-.044	NS
	Average	32	.910	.095	-.034-.045	
Lateral incisors #12 #22	Narrow	38	.898	.138	-.040-.057	NS
	Average	32	.898	.092	-.042 -.055	
Central incisor #11 #21	Narrow	38	.965	.107	-.028- .041	NS
	Average	32	.989	.166	.031- .044	

N = Number of sample; SD =standard deviation; probability; CI = Confidence interval;
NS =not significant (p>0.05)

Table 4.6 Mean SD 95% CI and results of t-test of maxillary anterior teeth in Narrow face group.

Teeth	Gender	N	Mean	SD	95%CI	P
Canines #13 #23	Male	40	.896	.097	-.042 - .044	NS
	Female	38	.912	.087	-.042 - .045	
Lateral incisor #12 #22	Male	40	.878	.172	-.057 - .057	NS
	Female	38	.898	.138	-.055 - .055	
Central incisor #11 #21	Male	40	.921	.078	-.090 - .041	S
	Female	38	.965	.107	-.093 - .044	

N = Number of sample; SD =standard deviation; probability; CI = Confidence interval;

NS =not significant (p>0.05)

Table 4.7 Mean SD 95% CI and results of t-test of maxillary anterior teeth in Average face group

Teeth	Gender	N	Mean	SD	95%CI	P
Canines	Male	30	.885	.073	-.017-.023	NS
#13 #23	Female	32	.910	.095	- .017-049	
Lateral	Male	30	.865	.112	.019-.044	
incisor					NS	
#12 #22	Female	32	.898	.092	.019-.039	
central	Male	30	.914	.087	-.007-.021	S
incisor	Female	32	.989	.166	-.007-.014	
#11 #21						

N = Number of sample; SD =standard deviation; probability; CI = Confidence interval;

NS =not significant (p>0.05)

Example Pictures of study findings

Figure 4.3: Male and Female subjects represents the Narrow and Average face.

Error measurements

Dahlberg's formula was used to determine the error. All values are summarized in Table 9. The combined error for any of the variable was small and considered to be within acceptable limit (Houston WJB, 1983).

Table 4.8 Results of Dahlberg test of maxillary tooth width ,tooth length, facial width and height.

Parameter	Dahlberg's test value
1.Canine width	0.0056
2.Canine length	0.0039
3.Lateral incisor width	0.0049
4.Lateral incisor length	0.0047
5.Central incisor width	0.0059
6.Central incisor length	0.0058
7. Facial width	0.0098
8. Facial height	0.0077

Result of power test

The result of the power test was 0.39. The suggested sample size for future study with the power test of 0.80 was 468 subjects.

CHAPTER V
DISCUSSION

Using facial index classification, our study showed that the most common face type in Bangladeshi was narrow face (leptoprosopic) 55.71% followed by the average face (mesoprosopic) 44.28%, without any broad face at all. In present study, the crown width/length ratio of six maxillary anterior teeth was in Bangladeshi population which had never been done before. Our result showed that there was no significant difference in the mean crown width/length ratios of maxillary anterior teeth between the narrow and average facial groups ($p>.05$).

Regarding facial index, the result of our study was different from many authors (2-5). For Turkish, Seher, (2008) who studied 173 healthy young adults (83 females and 90 males) found that 34.10% were classified as broad, 28.32% as average and 37.55% as narrow face. In Nigeria population, the most common prevalence was average face 80 %(Omotoso et al.,2011). Nigham, (2005) conducted study in Iraqi population, found that 80% had a narrow face in which 16% of subjects had a average face and 4% of subjects had a broad face. Another study from India, found that the most dominant type was broad face (78%), average type was 18.20%. and rare type of face was narrow (3.64%) (Uttekarkanan et al, 2012). Therefore, it seemed that high variation of facial types existed among races. All the studies above mentioned are summarized in Table 10.

Table 5.1 Previous study findings with our findings.

Study	Methods for facial measurement	Most prevalent facial types
Our study (2012), Bangladesh	Direct measurement	Narrow and average face
Nagham (2005),Iraq	Direct measurement	Narrow face
Seher (2008), Turkey	Direct measurement	Broad, Average face
Omotoso et al. (2011) Nigeria	Direct measurement	Average face
UttekarKanan, et al. (2012), India	Indirect measurement	Broad face

In our study, (Table 11) the male group have the larger facial measurements than the female group. The measurement of bizygomatic width has found In narrow face group for male 111.52± 15 are greater than female 100.23 ±7.2, and for average group for male are also higher in meausrement(102.56±6.8) then female 99.25±7.1. The result of this study has agreement with another done by Chanpen (2005) on Thai population (33). Her study result shows that bizygomatic measurement for male 136.77±6.76 mm.was higher than female116.77±4.66 .But there is a disagreement with Ngeow and Aljunid (2009) (34), in their study the subjects were composed of 100 young adult Malays of 18-25 year, they measured the bizygomatic width, and their result was 132.5±7.0 mm in male, and 140.1±4.9 mm in female, So we can come to a conclusion from these comparisons that, bizygomatic width of male is wider then bizygomatic width of female even they classified in 2 different facial group like narrow and average. As bizygomatic width has a greater influence on facial index rather than distance between nasion and menton.

Table 5.2 Result of Bizygomatic width measurement, in Narrow and Average facial groups in male and female.
Min = Minimum; Max= Maximum; SD= Standard deviation.

Facial Types		N	Min	Max	Mean	SD
Narrow	Bizygomatic width (Male)	70	95.31	130.40	111.52	15
	Bizygometic width (Female)	70	93.56	135.94	100.23	7.2
Average	Bizygomatics width (Male)	70	90.19	125.19	102.56	6.8
	Bizygometic width (Female)	70	87.36	120.85	99.25	7.1

This study was the first to investigate the mean crown width/length ratio of maxillary anterior teeth between 2 facial group among male and female. Since there was no other study had been done, it was impossible to compare our study with other studies.

In previous study, measurements were made using extracted teeth (Ash, 1984). However, recent investigations attempted to measure the tooth dimensions either on casts or using computer-based images or direct intraoral measurements. In most of these studies, the width of the maxillary central incisor was used to assess racial and gender differences (Isxcan and Kedici, 2003).

The strength of this study was the methodology. In our methodology, it was a direct method. We directly measured from the subjects twice. There was no use of camera or software to evaluate the form of face and teeth in which there was possibility of images distortion that might affect the result of the study.

Limitations of this study were related to power of the study, power test results came out 39%. However, 80% would be considered acceptable for a power full study. The possible reasons which might affect our result are less sample size, limitation of time. The best possible sample size for future study would be 468.

From the past literatures review we have already known about south East Asian, Middle East Asian, African, some parts of Indian and Caucasian population. The benefit of the results obtained from this study will be unique addition of representative population from Bangladesh to the existence literature.

Clinical implications: The results of this study would be useful to clinicians when restoring anterior teeth for any kind of restorations. Basically there are large varieties of size and shape of denture tooth from different manufacturer company. Not all size and shape were equally used because most of the assortment does not represent our population. Manufacturer can use our results to create tooth mold for Bangladeshi population. In addition, there would be much less necessity to make different shape (width/height ratio) mold for different facial types in Bangladesh.

CHAPTER VI
CONCLUSION

55.71% of Bangladeshi represents narrow face and 44.28% represent average face.

In male group, there was no significant differences ($p>.05$) in mean width/length crown ratio (central incisor, lateral incisor, canine) between narrow face and average facial groups.

In female group, there was no significant differences ($p>.05$) in mean width/length ratio (central incisor, lateral incisor, canine) between narrow face and average facial groups.

There is significant differences ($p<0.05$) in mean teeth ratio of central incisors between male & female.

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APPENDIX

Descriptive analysis was describe in term of the frequency of facial type, range, minimum, maximum, mean width and length of six maxillary anterior teeth, standard deviation, the mean crown ratio (width/length) of six maxillary anterior teeth.

Table A1 This table showed the crown ratio (width/length) in male group.

Descriptive statistics of male group

	N	Range	Minimum	Maximum	Mean	Std. Deviation
canines	70	.4400	.7100	1.1500	.891571	.0875700
lateal incisors	70	.89	.63	1.52	.8726	.14909
central incisors	70	.4400	.7600	1.2000	.918143	.0819737
Valid N (listwise)	70					

Table A2 This table showed the crown ratio (width/length) of average and narrow facial type in male group.

Group statistics central incisors,lateral incisors and canine in male group

Type of face		N	Mean	Std. Deviation	Std. Error Mean
canines	narrow	40	.896250	.0972622	.0153785
	average	30	.885333	.0738467	.0134825
lateal incisors	narrow	40	.8783	.17292	.02734
	average	30	.8652	.11212	.02047
central incisors	narrow	40	.921000	.0784399	.0124024
	average	30	.914333	.0876782	.0160078

Table A3 Result of T-test, comparison of male with classification of average and narrow face, no significant differences were found in both genders.

Independent Samples T Test in male group

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
canines	Equal variances assumed	1.799	.184	.513	68	.609	.0109167	.0212639	-.0315149	.0533482
	Equal variances not assumed			.534	67.982	.595	.0109167	.0204518	-.0298945	.0517278
lateal incisors	Equal variances assumed	1.122	.293	.361	68	.719	.01308	.03624	-.05923	.08539
	Equal variances not assumed			.383	66.764	.703	.01308	.03415	-.05509	.08126
central incisors	Equal variances assumed	.001	.972	.335	68	.739	.0066667	.0199272	-.0330974	.0464307
	Equal variances not assumed			.329	58.572	.743	.0066667	.0202502	-.0338600	.0471934

Table A4 This table showed the crown ratio (width/length) in female group.

Descriptive statistics of female group

	N	Range	Minimum	Maximum	Mean	Std. Deviation
canines	70	.43	.73	1.16	.9116	.09040
lateral incisor	70	.7300	.6900	1.4200	.898286	.1191634
central incisor	70	1.0000	.7800	1.7800	.976500	.1372329
Valid N (listwise)	70					

Table A5 This table showed the crown ratio (width/length) of average and narrow facial type in female group.

Group statistics central incisors,lateral incisors and canine in female group

	Type of face	N	Mean	Std. Deviation	Std. Error Mean
canines	narrow	38	.9121	.08731	.01416
	average	32	.9109	.09536	.01686
lateral incisor	narrow	38	.898421	.1389639	.0225429
	average	32	.898125	.0925076	.0163532
central incisor	narrow	38	.965263	.1071432	.0173809
	average	32	.989844	.1669677	.0295160

Table A6 Result of T-test, comparison of female with classification of average and narrow face, no significant differences were found in female group.

Independent Samples T Test In female group

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
canines	Equal variances assumed	.011	.917	.053	68	.958	.00117	.02185	-.04243	.04477
	Equal variances not assumed			.053	63.644	.958	.00117	.02202	-.04282	.04516
lateral incisor	Equal variances assumed	1.485	.227	.010	68	.992	.0002961	.0288002	-.0571738	.0577659
	Equal variances not assumed			.011	64.777	.992	.0002961	.0278498	-.0553274	.0559195
central incisor	Equal variances assumed	.306	.582	-.744	68	.459	-.0245806	.0330331	-.0904971	.0413360
	Equal variances not assumed			-.718	51.081	.476	-.0245806	.0342533	-.0933444	.0441832

BIOGRAPHY

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