

# Direct Vision Comparison of Lip Curvature between Genders in Fully Edentulous Patients

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## Abstract

Upper lip Curvature is a location of the oral commissure relative to the center of upper lip lower border. The aim of this study was to find the relation between gender and lip curvature. A special tool had been made to help in measurement of lip curvature. There was no significant relation between gender and curvature, however upward group was the highest one followed by straight then downward group.

**Keywords:** *lip curvature, gender, patients, Direct vision*

## Introduction

Smile of human being is a complex expression, result from combined effect of facial musculature <sup>1</sup>. A smile express itself mainly in oral and eye region <sup>2</sup>. However, lip curvature define as the position of the corners of mouth relative to the center of lower border of upper lip influenced by the age and gender <sup>3-6</sup>. Upper lip curvature can be divided into three categories according to the positioning of the oral commissure relative to the center of the upper lip lower border, Upward when the oral commissure is higher than the center of the upper lip lower border, straight when the oral commissure and the center of the upper lip lower border at the same level and downward when the oral commissure is lower than the center of the upper lip lower border <sup>6,10-12</sup>, There are higher rate percentage of expressing downward curvature of their lips in both cuspid and gummy smile, and upward curvature in spontaneous smile <sup>3</sup>, however; Upward and straight curvatures are considered more esthetic than the downward curvature <sup>6</sup>. In past a study done by Tjan AH, 1984 to evaluate the aesthetic and smile by visual examination. Many investigations for study lip curvature depended on esthetics of smile used a static pictures or direct measurements <sup>4-7</sup>. while in classical mode, photography captures only photos of fixed smile at certain points that made the smile appear unnatural, even during a posed smile <sup>4-5</sup>. With the development of imaging and the emergence of digital imaging, studies conducted with digital photography showed that smile

could be achieved in more noticeable and less patient interfering way <sup>8,9</sup>. Another research was conducted to determine ways for calculate dynamic smile process and for classification spontaneous smile and upper lip curvature in Chinese Han-nationality youths.

## Materials and Method

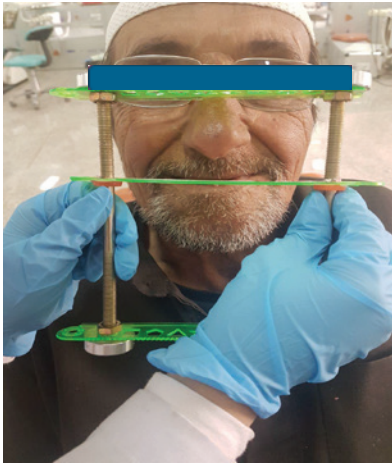
This study based on the examination of edentulous patient in the prosthodontic department of Babylon university collage of dentistry. The Study had been compared the curvature of lip line between male and female of edentulous patient. The number of the examined patients were 52 patients who divided into two groups (26 male and 26 female), those patients have no any systemic disease and their ages range from 45-65years old.

Group number1: edentulous male patient

Group number2: edentulous female patient

A special device had been constructed in this study that consist of three parallel horizontal rulers connected by two vertical rods; the upper and lower rulers are fixed. The upper part was parallel to the interpapillary line, the middle ruler that can move vertically up and down while the down ruler was parallel to the lower border of upper lip line (figure 4&5). The patient set on dental chair in upright position. The examination done by stabilization the middle ruler on the

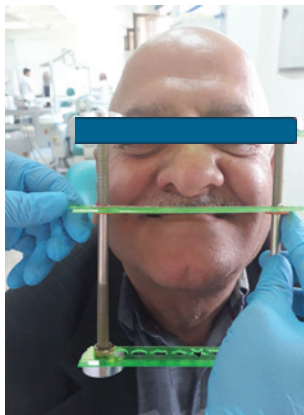
Lower border of the upper lip without smile and then asked the patient to smile and said (cheese) to determine the lip curvature.



**Fig 1** In this picture the position of corner of the mouth upward to the lower border of the upper lip line during smile when patient say cheese or just smile and take the picture at this moment



**Fig 2** In this picture the position of the corner of the mouth parallel to the lower border of the upper lip line during smile



**Fig 3** In this picture the position of the corner of the mouth down to the lower border of the upper lip line during smile

**However;** The primary results that I had, leading me to develop the previous simple device into more developing and complicated device that will give more precise results and multi-uses purpose.

The purpose of this device is to measure:

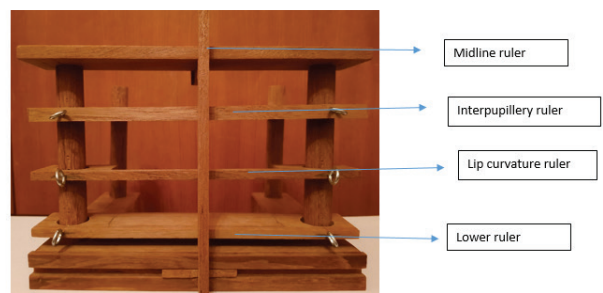
- 1- Midline of face.
- 2- Lip curvature
- 3- Comparing the distance of upper 3<sup>rd</sup> , middle 3<sup>d</sup> and lower 3<sup>rd</sup> of face.

Component of device:

- 1- Upper horizontal ruler must be parallel to interpapillary line
- 2- Middle horizontal ruler parallel to the lower border of upper lip line
- 3- **Lower horizontal ruler.**
- 4- Ruler in midline.

Benefit of device

It help to measure the symmetry of face, lip curvature (upward, straight or downward) and comparing the different parts of face . This idea based on idea of trubyte device that consist of transparent plate, drawn on it eyes, nose and mouth that help to measure the symmetry of face and choosing artificial teeth, however; the trubyte has fixed drawn parts but this device has adjustable ruler that give different measurement special for each patient .



**Fig: modified device.**



Fig 4 1<sup>st</sup> model had been used for lip curvature measurement

### The Results

In Table 1 reveal relation between the number of male and female. Table 2 reveal the relation between gender Frequencies for upper lip curvature in this study. Figure 5 express the Distribution pattern between types of upper lip curvature in male and female in this study while in Table 3 the Chi-Square Tests showed that there is no significant correction between arc smile & gender.

**Table 1** this table showed the frequency of the number of male and female.

Gender	Number
Male	26
female	26

**Table 2** this table showed the frequencies with gender.

Gender	Smile arc			Total
	Upward	Straight	downward	
Male	12	6	8	26
Female	10	8	8	26

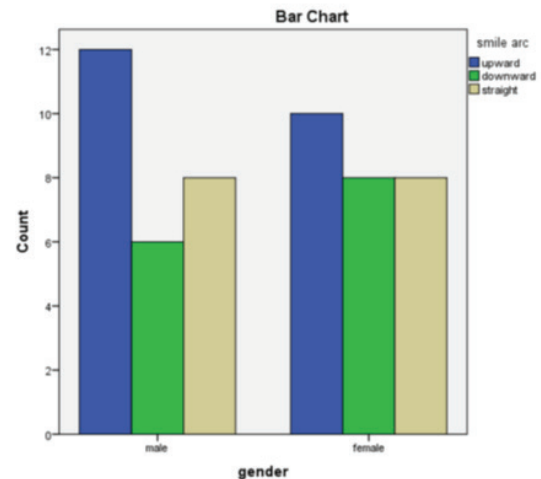


Figure 5 Distribution of different types of upper lip curvature in male and female in this study.

**Table 3:** Chi-Square Tests that appears there is no significant correction between arc smile & gender.

	Asymp. Sig. (2- sided)
<b>Pearson Chi-Square</b>	.792

### Discussion

Smile is the most complex and sophisticated facial expression, formed from synergic action of facial expression muscles <sup>1</sup>. During smile evaluation and anterior esthetic construction, the anatomic and racial variations should be considered in order to achieve better matching results <sup>1</sup>.

In this study table No.2 & figure 6 the result was the highest number in upward groups followed by straight while the lowest were in downward group of the upper lip curvature, This result disagree with Hulsey 10 that had been found the highest number were in straight group.

In table No. 9 had been found there is no significant relation between arc smile & gender, however; there were no theory agree or disagree with the results of this study.

This result may be probably due to age of patients (45years) who seek for dental consultation immediately after losing of their teeth so this patients maintain the activity of the muscle that it responsible for movement of the lip. This agree with (American orthodontics Samir E. Bishara) which found no significant relation between male and female for age groups (15\_ 25 years) and similar trends continued between 25 and 45 years old of age <sup>15</sup>.

However with respect to the ageing of soft tissues there is continual decrease in facial skin elasticity and formation of skin folds and wrinkles due to loss of subcutaneous fat hence this decrease the total facial volume <sup>14</sup>.

### Conclusion

In this study, it had been found that there is no significant relation between arc smile & gender; however, the upward groups had the highest number. The reason may return to age or duration loosing of teeth.

**Financial Disclosure:** There is no financial disclosure.

**Conflict of Interest:** None to declare.

**Ethical Clearance:** All experimental protocols were approved under the University of Babylon and all experiments were carried out in accordance with approved guidelines.

### References

- 1- Rubin LR. The anatomy of a smile : its importance in the treatment of facial paralysis. *Plast Reconstr surg* 1974; 53(4): 384-387.
- 2- Matthews TD. The anatomy of a smile. *J Prosthet Dent* 1978; 39(2): 128-134.
- 3- Sarver DM, Ackerman MB. Dynamic smile visualization and quantification: Part I. Evolution of the concept and dynamic records for smile capture. *Am J Orthod Dentofacial Orthop* 2003 ; 124(1): 4-12.
- 4- Van der Geld P, Oosterveld P, Berge SJ et al. tooth display and lip position during spontaneous and posed smiling in adults. *Acta Odont Scand* 2008; 66(4): 207-213.
- 5- Al-Johany SS, Alqahtani AS, Alqahtani FY. evaluation of different esthetic smile criteria. *Int J Prosthodont* 2011; 24(1): 64-70.
- 6- Dong JK, Jin TH, Cho HW. the esthetics of the smile: a review of some recent studies. *Int Prosthodont* 1999; 12(1): 9-19.
- 7- Tjan AH, Miller GD. Some esthetic factors in a smile. *J Prosthet Dent* 1984; 51(1): 24-28.
- 8- Kang YS, BacYC, Hwang SM et al. a simple and quantitative method for threedimensional measurement of normal smiles. *Ann Plast Surg* 2005; 54(4): 379-383.
- 9- Van der Geld P, Oosterveld P, Van Waas MA. digital videographic measurement of tooth display and lip position in smiling and speech: reliability and clinical application . *am J Orthod Dentofacial Orthop* 2007; 131(3): 301 .el-301 .e8.
- 10- Hulsey CM. An esthetic evaluation of lip-teeth relationships present in the smile, *Am. J. Orthod.* 1970; 57: 132-144.
- 11- Philips E. The anatomy of a smile, *Oral Health.* 1996; 86: 7-13.
- 12- Philips E. The classification of smile patterns, *J. Can. Dent. Assoc.* 65:252-254, 1999.
- 13- Zhi Liang I, Wen-Jie Hu I, Yan-Ling Zhang I and Kwok-Hung Chung.
- 14- Daniele maria gibelli, Chiarella Sforza, Valentina Pucciarelli, Zuzana Caplova.
- 15- Bishara SE, Trender JE, Jakobsen JR. Facial and dental changes in adulthood. *Am J Orthlod Dentofacial Orthop.* 1994; 103:175-186.