

**OBJECTIVE ASSESSMENT OF NASOFACIAL ANGLE IN A SAMPLE OF SYRIAN PRIVATE UNIVERSITY**Eliau Mdwar<sup>1</sup>, Enaam Tawahri<sup>1</sup>, Abdullah Omar<sup>1\*</sup>, Mohammad Rmman<sup>1</sup> and Louei Darjazini Nahas<sup>1,2</sup><sup>1</sup>Faculty of Medicine, Syrian Private University. Damascus, Syria.<sup>2</sup>Department of Surgery Division of Otorhinolaryngology, Faculty of Medicine, Syrian Private University. Damascus, Syria.**\*Corresponding Author: Abdullah Omar**

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**ABSTRACT**

**Aim and background:** the aim of this study is comparing the facial photogrammetric analysis results of our data with the standard ratios in order to find the most prominent objective facial measurements, that leads people to rhinoplasty. **Methods:** ninety lateral view photos (45Male, 45Female) were including in this study, The photos had been analysed by the Auto-cad and editing by the Adope Photoshop. The study designed as A cross-sectional study. **Results:** Nasofacial mean angle before the editing was 34.07 while it was 31.12 after editing, The Minimum measure was 25 before. And 24 after. While 42 was the Maximum measure before editing and the 39 was after. The male mean measure before editing was 34.89 while after the editing was 31.11. The female mean measure before editing was 33.24, while after editing was 31.13. The mean of the participant who did Rhinoplasty were 32.12 before and 30.46 after. The mean of the participant who did not have Rhinoplasty were 34.86 before and 31.39 after. the males who did not have rhinoplasty their mean number was 35.97, the mean of after the editing was 31.91. while females their mean number was 33.68. the mean of after the editing was 30.84. The males who did have rhinoplasty their mean number was 31.92. and after the editing was 28.92. the mean of after the editing was 28.92. while the females mean number was 32.29, the mean of after the editing was 31.79. **Conclusion:** We defined the Nasofacial Angles mean and their standard deviation and its distributions as gender. that's what leads us to focus on the necessity of the facial analyses before undergoing to the plastic operation.

**KEYWORDS:** Nasofacial angle, facial analysis, rhinoplasty, bone landmark.**INTRODUCTION**

Recently, there have been an increased interest in plastic surgery specifically in face plastic surgery.<sup>[1]</sup> Which made the surgeon share their expected surgery results with their patients and choose the final shape according to the standard ratio, or according to the patient. So that when we want to talk about beauty in a scientific way, there must be ratios to evaluate it. These standard ratios used to measure and analyse facial aesthetic quality in population, and aesthetic enhancements that's ignore those ratios may lead people's look being worse. We may be unaware of it but we subconsciously judge beauty by facial symmetry and proportions. Lately, automated machine learning methods of assessing facial attractiveness using beauty metrics have been proposed.<sup>[2]</sup> These proposed frameworks focus on developing systems which automatically assess facial proportions and specified landmarks, typically associated with facial beauty. The preoperative discussion before aesthetic surgery has changed dramatically since the development of inexpensive, rapid, and high-resolution digital photography combined with accessible image manipulation software This recent technology makes

visualization of patients' expectations practical, facilitating communication with the patient and surgical decision making. Therefore, we decided to study the Nasofacial angle that's formed from the two of the following imaginary lines.<sup>[3,4]</sup> The First one is formed by the drawn line from the Nasion to the most prominent edge of the nose or the tip of the nose if it's more prominent than the first one, and the second one is the line between the imaginary line drawn between the Glabella and the Pogonion.<sup>[5,6]</sup> We choose the Nasofacial Angle to be processed among a sample of the contributors and comparing it with the standard ratios by computer software in an objective and mathematical computerised way to avoid the personal opinion of the surgical results expected evaluation.

**MATERIAL AND METHODS**

An observational cross-sectional study was being conducted at faculty of medicine Syrian private university. The data were collected from the participant by the authors via interviewing and taking lateral view photos. The photos had been analysed by the Auto-cad before and after the editing of the photos on Adope

Photoshop 2020 edition. We use the imaginary line between the upper edge of the Tragus and the lateral Canthos as the reality measurement used for the Auto cad dimension.

The total number of the participants were 90. 50% were male, 50% females. The excluded participants were the individuals with facial malformation.

The data analysed by the statistical software SPSS-25, observational and analytic statistics were done. For The analytic statistics we use T-test to show the relationships between the variables.

**Table (1):**

Nasofacial angle	Nasofacial angle before	Nasofacial angle after	P-value
<b>Mean</b>	34.07	31.12	0.000
<b>Std. Deviation</b>	3.906	3.232	
<b>Minimum</b>	25	24	
<b>Maximum</b>	42	39	

By distributing the data within gender. The male mean measure before editing was 34.89 while after the editing was 31.11. with standard deviation by 4.574 before the editing and 3.575 after it.

The female mean measure before editing was 33.24, while after editing was 31.13. with standard deviation of

## RESULTS

By distributing the data, we found that the mean Nasofacial angle before the editing was 34.07 while it was 31.12 after editing, with standard deviation 3.906 before, 3.232 after. The Minimum measure was 25 before. And 24 after. While 42 was the Maximum measure before editing and the 39 was the after. There was a statistical relationship between the before and after the editing numbers (P-value < 0.05) which means that there was a difference in the angle before and after modifications in all the specimen. (Table 1).

2.924 for the before one and 2.889 for the after. There was a statistical relationship between the before and after the editing numbers according to the gender of the participants. Both females and males before and after the adjustment that's mean that we obtained new angle (P-value < 0.05). (Table 2).

**Table (2):**

Gender		Mean	Std. Deviation	P-value
<b>Male</b>	<b>Nasofacial angle before</b>	34.89	4.574	0.000
	<b>Nasofacial angle after</b>	31.11	3.575	
<b>Female</b>	<b>Nasofacial angle before</b>	33.24	2.924	0.000
	<b>Nasofacial angle after</b>	31.13	2.889	

The mean of the participant who did Rhinoplasty were 32.12 before and 30.46 after with standard deviation by 3.254 before and 2.789 after. There was a statistical relationship between the before and after the editing numbers according to the rhinoplasty surgery among the participants (P-value < 0.05).

The mean of the participant who did not have Rhinoplasty were 34.86 before and 31.39 after with

**Table (3):**

Has Rhinoplasty		Mean	Std. Deviation	P-value
<b>No</b>	<b>Nasofacial angle before</b>	34.86	3.891	0.000
	<b>Nasofacial angle after</b>	31.39	3.379	
<b>Yes</b>	<b>Nasofacial angle before</b>	32.12	3.254	0.017
	<b>Nasofacial angle after</b>	30.46	2.789	

By distributing the data with rhinoplasty and the participant gender. we found that: the males who did not have rhinoplasty their mean number was 35.97 with the standard deviation of 4.426. the mean of after the editing was 31.91 with the standard deviation of 3.503. while the female who did not have rhinoplasty their mean number

standard deviation by 3.891 before and 3.379 after. There was a statistical relationship between the before and after the editing numbers according to the rhinoplasty surgery among the participants (P-value < 0.05) the samples that underwent rhinoplasty and the one had non- surgical operation on the facial both was less than 0.05 also means that there was a new angle. (table 3).

was 33.68 with the standard deviation of 2.845. the mean of after the editing was 30.84 with the standard deviation of 3.205. There was a statistical relationship between the before and after the editing numbers according to the rhinoplasty surgery among the participants and their gender (P-value < 0.05). the males who did have

rhinoplasty their mean number was 31.92 with the standard deviation of 3.679. the mean of after the editing was 28.92 with the standard deviation of 2.875. while the female who did not have rhinoplasty their mean number was 32.29 with the standard deviation of 2.972. the mean of after the editing was 31.79 with the standard deviation of 1.968. we didn't find any statistical relationship between the before and after the editing numbers

according to the rhinoplasty surgery among the participants and their gender (P-value > 0.05) dividing the specimen into males and females had rhinoplasty and non-surgical interventions all were less than 0.05 except the female's group that underwent rhinoplasty was more than 0.05 which means that there was no difference before and after adjustment. That's mean that the rhinoplasty is achieving the required target (table 4).

**Table (4):**

Has Rhinoplasty	Gender		Mean	Std. Deviation	P-value
No	Male	Nasofacial angle before	35.97	4.426	0.000
		Nasofacial angle after	31.91	3.503	
	Female	Nasofacial angle before	33.68	2.845	0.000
		Nasofacial angle after	30.84	3.205	
Yes	Male	Nasofacial angle before	31.92	3.679	0.018
		Nasofacial angle after	28.92	2.875	
	Female	Nasofacial angle before	32.29	2.972	0.457
		Nasofacial angle after	31.79	1.968	

## DISCUSSION

Face analysis is an important step in the management of aesthetic facial surgery. The statistics of the Nasofacial angle mean in M.eggerstedt, et al.<sup>[7]</sup> was 35.7 with standard deviation of 3.9. while in KalevarlNk,<sup>[8]</sup> the mean in the females was 31.4 with standard deviation of 3.4 whereas, males mean angle was 33.5 with a standard deviation of 2.5. in Qattan's et al.<sup>[9]</sup> study the mean angle of the males was 41.4 with a standard deviation of 6.8. the females 33.3 with a standard deviation of 4.1. in our study the statistics were: the Nasofacial mean angle for the total was 34.07, with a standard deviation of 3.906. After the distribution to males and females the mean angle for the female was 33.24 with a standard deviation of 2.924. while males mean angle was 34.89 with standard deviation of 4.574.

Also, we declared the angles differences before and after the editing as what is showed in the tables named in the results section.

## CONCLUSION

We defined the Nasofacial Angles mean and their standard deviation and its distributions as gender. that's what leads us to focus on the necessity of the facial analyses before undergoing to the plastic operation.

## Declarations

### Ethics approval and consent to participate

All the patients who admitted to the ENT Department gave a written consent and know that their medical information could be a part of clinical study.

The ethical approval also took from the faculty of medicine Syrian Private University, the faculty of medicine Damascus University, and the ENT Department head.

### Consent for publication

Not applicable.

## Availability of data and materials

All data generated or analysed during this study are included in this published article, and for any additional information they are available from the corresponding author on reasonable request.

## Competing interests

The authors declare that they have no competing interests.

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## Authors' contributions

All the authors participate in data collection and writing the manuscript, also helping in statistical issues and the revision of the paper

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