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ORIGINAL RESEARCH ARTICLE

MEASUREMENT OF NASAL INDEX IN BHAKTAPUR REGION: A DESCRIPTIVE CROSS-SECTIONAL STUDY

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ABSTRACT

Background: The nose is most projection part of the face. Anatomically, the shape of the nose is pyramidal with its apex faces upward and the base faces downwards. It plays an important role in respiration, phonation and aesthetic. The shape of the nose varies according to the different geographical region owing to climate and ethnicity. The aim of this study was to assess the nasal index among the citizens of Bhaktapur.

Methods: The study was conducted on 385 population of Bhaktapur between 1 Aug 2020-Aug 2021. The frequency of the nasal index was analysed. The vernier calliper was used to measure the height and width of nose. The data was analysed by using Statistical Package for the Social Sciences 20 version.

Results: In this study, the highest prevalence of nasal index in Bhaktapur region was mesorrhine 235 (61.0%). In the gender, the highest prevalence of the Nasal Index was mesorrhine. In the ethnicity also mesorrhine types of the Nasal Index was found.

Conclusions: This study concludes that commonest nasal index of the population of Bhaktapur fall under mesorrhine type of nose. The sexual dimorphism was not significant in both the gender as it showed mesorrhine types in both gender. Whereas among the ethnicity, the Brahmin and Newar sharing the almost the same result.

INTRODUCTION

Anatomically, the nose is present in the central part of the face. Therefore, nose is considered as the beauty defining structure. It is divided into two parts – external and internal. The external part of nose is the projection in face. It is pyramidal in shape, upper end known as root and lower end called as nostrils meeting in the midline called dorsum or bridge of the nose.[1,2]

The features of nose also provide the aesthetic appearance of the individuals.[3] The nasal index plays an important role during nasal surgery. The nasal index varies according to the adaptation of the climate and ethnicity.[4] Studies have shown that the platyrrhine nose was prevalent in warm and humid environment and leptorrhine nose in colder climates.[5] Nepal also has various ethnicities. In this wide range of ethnicity, shape of the nose is considered as signature structure for indicating the various types of ethnicities.

The objective of the study was to measure nasal index among the population of Bhaktapur.

METHODS

The descriptive cross-sectional study was carried out in the population of Bhaktapur in between 1 Aug 2020-Aug 2021 after getting the ethical clearance from the Institutional Review Committee (reference no. KMC-IRC 207202007). All the interested participants who were residing in Bhaktapur were included whereas the participants who had undergo the nasal surgery, any trauma to nasal bone and nasal septum deviation were excluded. Participants were enrolled using convenient sampling.

The nasal index was based on the ratio of the breadth of the nose to its height. The nasal dimensions are measured by using the nasal index formula.

Nasal Index=Nasal width/Nasal height x 100

Based on the Nasal index, it has been classified different types of Nose[6]

Hyperleptorrhine is a very narrow nose with a nasal index of

less than 54.9.
Leptorrhine describes a narrow nose with an index of 55–69.9.
Mesorrhine is a medium nose with an index of 70–84.9.
Platyrrhine is a short, broad nose with an index of 85–99·9.
Hyperplatyrrhine having an index of more than 100.

The height and the width of the nose were taken with the help of the MYLB-Electronic Digital Caliper brand- Mileseey. The nasal height was measured from nasion to subnasale while the nasal width was measured from right ala to left ala at right angle to nasal height.

For the sample size calculation;
Taking the 50% prevalence of population of Bhaktapur.
Prevalence(P); 50%
Z= 1.96 at 95% Confidence Interval (CI); e= margin of error, 5%
Then the sample size was calculated with formula as $n=Z^2pq/e^2$= 384.16.

Therefore, the total sample was 385.

The participations were included after taking verbal consent between 18-50 years. Each participant was explained about the objectives of the study. The frequency of the sample was taken. The data was analyzed with the help of Statistical Package for the Social Sciences 20 version.

RESULTS

The highest prevalence of the different types of nose was mesorrhine 235(61.0%) in the population of the Bhaktapur and least one was the hyperplatyrrhine 7(1.8%) (Figure 1).

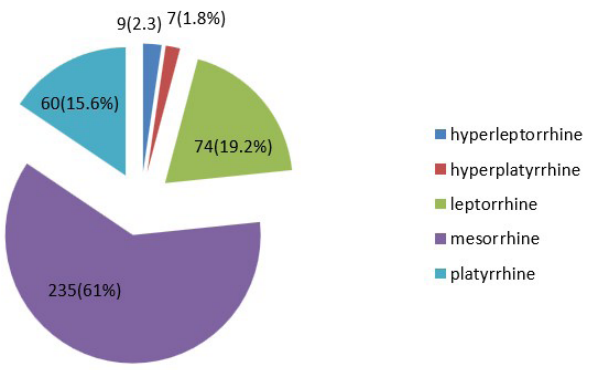

Figure 1: Frequency of nasal index

The total participants of the male and female were 139 and 246 respectively. In comparison with gender, mesorrhine was the most prevalence in both gender male 85(61.15%) female 147(59.76%) respectively (Figure4). In this study, the highest number of the participants were Brahmin (128) followed by Newar (114) (Figure 2). According to the ethnicity, the highest frequency was showed mesorrhine followed by leptorrhine except Yadav and Lama ethnic which showed platyrrhine (Figure 3).

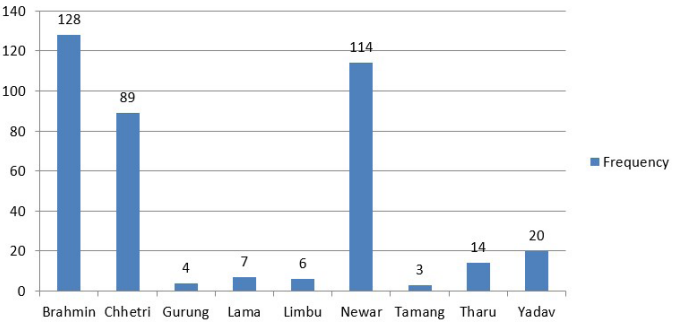

Figure 2: General descriptions of the participants according to the ethnicity

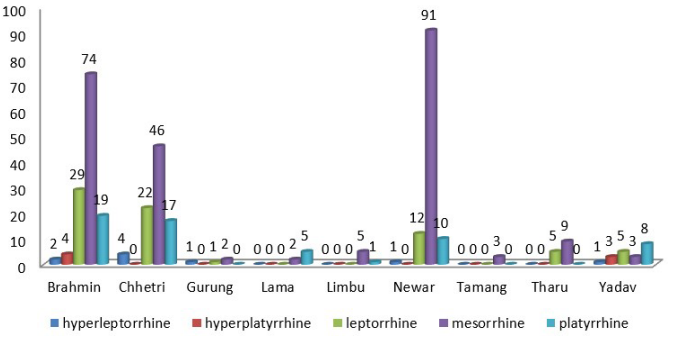

Figure 3: Distribution of the nasal index according to the ethnicity

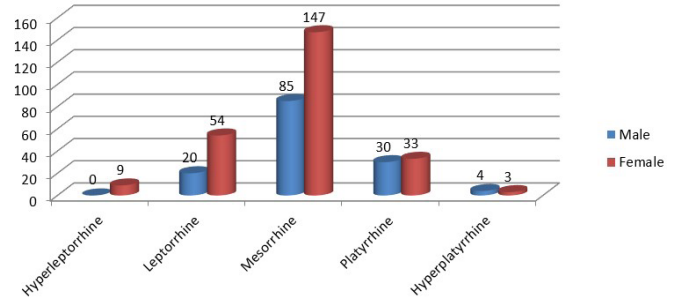

Figure 4: Distribution of nasal index according to the gender

DISCUSSION

Human nose is a very prominent and important component of the facial skeleton. Anatomically, nose is made up both bones and cartilages. In the face, the harder part is the bone and the flexible part is the cartilage. The shape of the nose is also the distinct features of the face.

Studies have reported that the shape of the nose also depend upon the region and climate of the particular areas.[7] The nasal index plays an important role in identifying sexual dimorphism and it also help to determine the different tribes and races. Nasal architecture is considered as the best structure to identify the races and enthnicity.[8]

The nasal index also affected by climate, usually hot and moist climate is associated with a broad nose whereas cool and

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dry climate has narrow nose.[9] In the hot humid conditions, a broad nose is said to dissipate heat which affects the shape of nose.[10] Nasal index can be very useful for a surgeon prior to rhinoplasty, therefore analysis of Nasal Index according to the ethnic group and their facial features can be study prior to the operation in order to avoid from the blunder.

As this study was done in the different population of the Bhaktapur with the different ethnicity that showed the prevalence of the nasal index was mesorrhine in Bhaktapur. The overall result compared with the gender also showed mesorrhine predominantly. The study conducted among the youth of Madheshis community of Nepal showed the predominantly mesorrhine types of the nose which was similar to our findings.[11]

One more study had been done in the Limbu and Rai which showed that the nasal breadths of Limbu females were broader compare to males, Rai had broader nose than that of the Limbu.[12] The study conducted in Tharu and Mongoloid of Nepal also showed mesorrhine types.[13] The present study also showed the predominance of mesorrhine type of nose among the studied ethnicities followed by Leptorrhine except the Yadav and Lama race. Similar findings were also reported by additional studies conducted in Nepal.[14-16] However, some study done in India and Iranian population reported the prevalence of Leptorrhine type which was contrast result in this study.[17,18] This variation may be due to the different geographical set up between the studies. Another study done in Nigerian population nose showed platyrrhine with significant sexual dimorphism which was totally contrast to this study which also denotes that the shape of the nose varies according to the country.[19] When this study compared with the study done in population of Western Uttar Pradesh region also showed Mesorrhine in both the gender.[20]

This study was carried out in a limited sample size. The participants were enrolled using convenient sampling technique. The proportions of the gender and ethnicity were not equal. So, this result can't be generalized according to the gender and ethnicity residing in Bhaktapur. Further studies with a larger sample size can be representing the entire population of Bhaktapur.

CONCLUSION

In this study, the mesorrhine type of nose was predominant among the population of Bhaktapur. The findings of this study may contribute to satisfactory outcomes in cosmetic and reconstructive rhinoplasty, anthropology, and forensic medicine.

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CONFLICT OF INTEREST: None

FINANCIAL DISCLOSURE: None

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