



Research Article

DIMPLE DISTRIBUTION IN DIST. JALGAON, MAHARASHTRA AND THE POTENTIAL FOR PREDICTIVE HUMAN SCREENING

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ABSTRACT

This research paper explores the prevalence, and potential implications of cheek dimples, contributing to the understanding of these morphogenetic traits. Cheek dimples, small indentations on the face, enhance attractiveness when smiling and have cosmetic significance. The study investigates the prevalence of dimples, as potential predictive screening tools for certain conditions. The dominance of dimples over non-dimples is acknowledged to have variable expression, complicating their assessment. The research methodology involved visual observations of individuals aged 20 to 30 in Jalgaon District, Maharashtra, India. The study included 607 subjects, with an acknowledgment of the uneven distribution of males and females. Statistical analysis, employing the Chi-square test, demonstrated a significant association between dimple presence and sex, with females exhibiting a higher prevalence. The findings indicate a prevalence of 52.38% for cheek dimples in the studied population, with a higher occurrence in females compared to males.

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INTRODUCTION

Studying the differences in physical traits i.e. morphogenetic traits among specific groups within the human population living in various geographic and environmental conditions presents a valuable opportunity (Bhasin and Khanna, 1994). This contributes for a better understanding of human traits and their implications for fields like anthropology and public health.

The small dip or indentations present on the face or other part of body called as dimple (Anibor *et al.*, 2021). As per a 1998 study by Pessa *et al.*, cheek dimples result from the dermocutaneous insertion of fibers on the inferior bundle of the double or bifid zygomaticus major muscle. One or both cheeks may exhibit one or multiple dimples, with occurrences on both cheeks being more prevalent than dimples on only one cheek (Pessa *et al.*, 1998). Dimples are observed in both genders without a specific preference, and they can manifest unilaterally or bilaterally, being inherited as a dominant trait (Argamaso, 1971; Daponte *et al.*, 2004). When smiling, the skin above the dimples is drawn inward, enhancing their size and visibility and looks attractive (Almaary *et al.*, 2018). Because dimples are inherent, some individuals born without them may opt for dimple creation surgery as a desirable cosmetic procedure for look enhancement (Chung *et al.*, 2018). Cheek dimples are supposed to be associated with

chromosome 16, while cleft chin dimples are linked to chromosome 5 (Omotoso *et al.*, 2021).

Winchester (1951) asserted that the dominance of presence of dimples over non-dimples is accompanied by the complicating factor of variable expression.

Wiedemann (1990) theorizes that the presence of dimples might be influenced by factors like circulation, muscle tone, or body weight; although no specific evidence was referenced in support of this notion. He recounted instances of individuals who had dimples during childhood but no longer retained them in adulthood.

Dimple not only present on the face but also on the other part of the body and can be used as tool for predictive screening of some conditions. Méhes & Meggyvessy (1987) reported the case of acromial dimple considered reference for 18-q deletion syndrome found rare in population. Infants with asymptomatic sacral dimples are rarely linked to spinal dysraphism, indicating low neurological risk (Kucera *et al.*, 2015). Wilson *et al.*, (2016) stated that simple sacral dimples are commonly observed in newborn babies during physical examinations and are infrequently connected with spinal dysraphism. The study found that almost one-third of infants undergoing spinal ultrasonography had a simple sacral dimple with a low risk of

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spinal dysraphism, suggesting a potential need for revising existing guidelines.

This study aims to contribute to the understanding of dimples, investigating their prevalence, genetic basis, inheritance patterns, and potential implications for predictive screening of certain conditions. By exploring the prevalence of dimples, this research seeks to enrich the knowledge in anthropology, genetics, and cosmetic surgeries.

MATERIAL AND METHODS

This study conducted visual observations to examine the prevalence and expression of dimples among individuals aged 20 to 30 in Jalgaon District, Maharashtra, India. Data was collected by a trained observer through direct visual inspection, utilizing Google Forms for efficient recording. The subjects, recruited from college students, excluded individuals with a history of dimple surgery. Total 607 subjects are used for the sampling (156 males and 451 females). The study acknowledges the uneven distribution of males and females in the randomly collected data. Both smiling and non-smiling facial expressions were observed, and photographs were taken for reference. Informed Consent from each participant was taken before data collection. The study's geographical focus was the Jalgaon District to ensure regional specificity and diversity within the college student population.

Statistical analysis

To investigate the association between dimples and sex, the Chi-square test was employed. This statistical method is particularly suited for examining the relationship between categorical variables, making it an appropriate choice for analyzing the dichotomous nature of dimple presence (or absence) and sex (male or female) in the studied population. The level of significance was set at $p < 0.05$ to determine statistical significance

RESULTS

Table 1 Distribution of dimples among the study area

Gender	Present	Absent	Total
Male	74	82	156
Female	244	207	451
Total	318	289	607

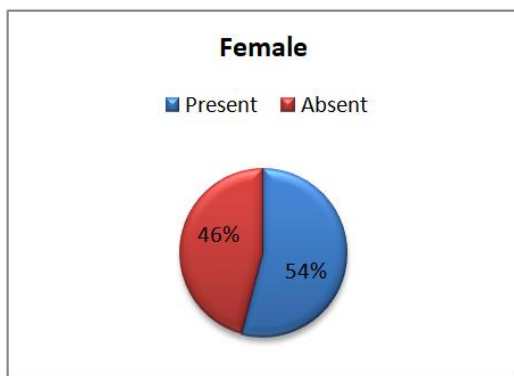


Fig 1 Cheek dimple Prevalence- Females

The chi-square statistic is 2.0649. The p-value is 0.15072. The result is not significant at $p < .05$.

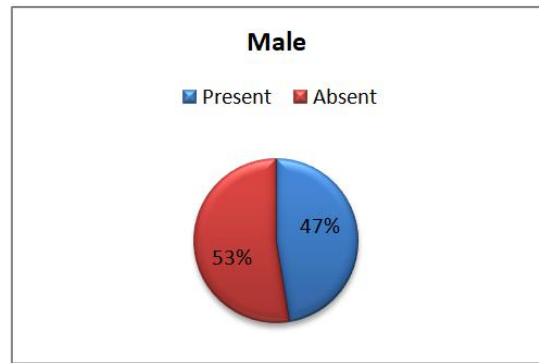


Fig 2 Cheek dimple Prevalence- Males



Fig 3: Cheek Dimple (smiling face): Present



Fig 4 Cheek Dimple (smiling face): absent

DISCUSSION

The prevalence of cheek dimple was observed is 52.38% in the studied sample size. The present study showed that the occurrence of dimple is more in females than the male. The observation varied with our previously reported literature which showed 75.85% presence of dimple in sample population, which may due to increase in sample size (Chude and Pawar 2023). The present study shows a resemblance to the study of Oladipo and Amangi-Peters (2005) in Southern Nigeria, where they found a higher prevalence of dimples in females than in males.

CONCLUSION

This research revealed that facial dimples are more commonly observed in females compared to males. The large variance in physical features is sometimes unknown to many people in our community, which is why population studies are crucial. Physical anthropologists and forensic specialists would greatly benefit from morphogenetic trait variations in their analysis of population patterns.

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