Glabellar Wrinkles Pattern among Medical and Dental Students of a Tertiary Care Centre of Nepal

Santosh Koirala[1], Biraj Niraula[2], Bindira Adhikari[2], Santosh Joshi[3], Rajib Chaulagain[4]

[1] Department of Forensic Medicine, Chitwan Medical College, Bharatpur, Nepal
[2] Medical Internee, Chitwan Medical College, Bharatpur, Nepal
[3] Dental Internee, Chitwan Medical College, Bharatpur, Nepal
[4] Department of Health Research, Madhesh Institute of Health Sciences, Janakpurdham, Nepal

Corresponding Author:

Santosh Koirala
Department of Forensic Medicine,
Chitwan Medical College, Nepal
Email: santoshkoirala427@gmail.com

Abstract

Introduction: Glabella is the midline elevated portion of our face between the eyebrows whose contraction leads to the formation of wrinkles or furrows. These wrinkles which are more pronounced with aging, vary from person to person and between sex too. The purpose of this study was to assess the glabellar wrinkles pattern among medical and dental students of a tertiary care centre of Nepal.

Methods: A descriptive cross-sectional study was conducted from August 2024 to October 2024 among 265 medical and dental students of Chitwan Medical College. This study was photographic analysis of glabellar contraction patterns of healthy medical and dental students. The data was recorded in proforma and later entered into Microsoft Excel and then transferred to SPSS statistics for Windows, version 16.0 (SPSSS Inc., Chicago, Ill., USA) and analysed using descriptive statistical tests.

Results: A total of 265 students with the mean age 20.28±0.80 years participated in the study. The majority of participants were males 146 (55.1%). The most frequent pattern observed was 'U' pattern (121, 45.7%) followed by '11' pattern (92, 34.7%) while the ' X' pattern was least found (3, 1.1%). In gender-based distribution, the 'U' pattern was more in males (73, 50%) than in females 48 (40.3%) while the '11' pattern was more among the females (52, 43.7%).

Conclusions: In conclusion, the 'U' pattern was most frequent pattern observed followed by '11' pattern. The 'X' pattern was the least frequent pattern observed.

Keywords: Glabellar wrinkles, patterns, wrinkles.

Introduction

Glabella is the region on our face situated between the two eyebrows. It is the first area observed in facial mimic. Its contraction is typically linked to unpleasant emotions including anxiety, annoyance, frustration, or fatigue and produces wrinkles.[1] The degree of frown lines between the eyebrows, or glabellar wrinkles, can differ greatly from person to person. Glabellar wrinkle growth and intensity can be influenced by a number of factors, including age, sun exposure, heredity, and recurrent facial expressions.[2-5]

While some people may have deeper, more noticeable wrinkles in this area, others may have very mild frown lines. Furthermore, skincare practices and other lifestyle choices, like smoking, can affect how glabellar wrinkles emerge.[6, 7] In general, glabellar wrinkle severity varies greatly between people and is impacted by a confluence of lifestyle, environmental, and genetic factors.[1, 6, 8]

Almeida et al. in their study classified glabellar wrinkles pattern into five types ('U', 'V', 'Omega', 'Inverted omega' and 'Converging arrows').[1] In another study conducted among Koreans, Kim et al described these glabellar patterns into five different types ('U', '11', 'X', 'Pi' and 'I').[4] Both the study showed variations in the types of Glabellar wrinkles. The pattern of these wrinkles has so far been conducted in Western population and there is paucity of information among the Nepalese population. This study may later also assist further forensic studies and dermatological based studies. The purpose of our study was to assess the glabellar wrinkles pattern among medical and dental students of a tertiary care centre of Nepal.

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Methods

This was a descriptive cross-sectional study conducted at Chitwan Medical College among the medical and dental students. The study was conducted from August 2024 to October 2024. The ethical clearance for the study was obtained from Institutional Review Committee of Chitwan Medical College (Ref - CMC-IRC/080/081-147).

The sample size of the present study was 265 which was calculated using formula, n = Z2pq/d2 where, p = 44.6%4 =0.446, q = (1 – p) = (1 – 0.446) = 0.554 and d = allowable error which was kept at 6%.

Thus n=1.962×0.446×0.554 /0.0036

n=263.556 ≈ 265

A convenience sampling method was used to collect data. Students who had not undergone any cosmetic treatment in the preceding 6 months and who consented to participate in the study were included while students with a previous history of ablative (dermabrasion, peelings, or laser), surgical or filling treatments on the region in the past 6 months were excluded.

This study was designed as a prospective photographic analysis of glabellar contraction patterns of healthy medical and dental students. All the participants were explained about the study objectives. They were also explained that the photographs will not be used apart from the study purpose. The photographs were taken in adequate lighting conditions. The students were positioned in front of investigator, seated in a chair. It was ensured glabella was visible and that the area of interest was not obstructed by hair or spectacles. The photograph was at first taken at rest and then the student was asked to squeeze the eyes to take the other photograph. The type of wrinkle pattern of the particular students was recorded in proforma and entered into Microsoft Excel and then transferred to SPSS statistics for Windows, version 16.0 (SPSSS Inc., Chicago, Ill., USA). The descriptive statistics was used to analyze data and the results were presented in tabular format.

Results

The present study was conducted in 265 participants. The mean age of participants was 20.28±0.80 years. Among the participants there were 146 (55.1%) males and rest were females (Table 1)

Table 1: Characteristics of participants

Characteristics of participants	Frequency	Percent
Mean Age (years)±SD	20.28±0.80 years	
Male	146	55.1
Female	119	44.9

Table 2 showed the patterns types and their distribution among the participants. The U pattern was the most frequently found (121, 45.7%) followed by 11 pattern (92, 34.7%). The X pattern was least found (3, 1.1%).

Table 2: Distribution of glabellar wrinkle patterns among the participants

Patterns	Frequency	Percent
'U' pattern	121	45.7
'11' pattern	92	34.7
'X' pattern	3	1.1
'Pi' pattern	10	3.8
'I' pattern	39	14.7

Among the gender, the U pattern was more in males (73, 50%) than in females 48 (40.3%). The 11 pattern was more among the females (52, 43.7%) than in male (40, 27.4%) (Table 3).

Table 3: Distribution of glabellar wrinkle patterns based on gender

	Female		Male	
	Frequency	Percent	Frequency	Percent
'U' pattern	48	40.3	73	50.0
'11' pattern	52	43.7	40	27.4
'X' pattern	1	0.8	2	1.4
'Pi' pattern	3	2.5	7	4.8
'I' pattern	15	12.6	24	16.4
Total	119	100.0	146	100.0

Discussion

Wrinkles on the face, especially the glabellar area, might have an impact on one's perception of oneself and one's body.[8] In general, research and therapeutic applications of glabellar wrinkles are important, since they advance our knowledge of aging, cosmetic dermatology, psychological wellness, and general health. Glabellar wrinkles are an obvious sign of aging skin. Examining the onset and development of these wrinkles' sheds light on the physiological mechanisms that underlie skin aging, such as altered cellular activity, decreased skin elasticity, and changes in collagen and elastin levels.[9,10] Researching the psychological effects of glabellar wrinkles can assist medical providers in providing patients seeking cosmetic treatment with better assistance. Many people seek out cosmetic procedures to lessen the appearance of glabellar wrinkles, such as dermal fillers or injections of botulinum toxin.[11,12] Enhancing cosmetic results and patient satisfaction requires research on the safety and efficacy of these procedures.[13]

The muscles at the medial end of the eyebrow are called the corrugator (or corrugator supercili) muscles which are important muscles in the central forehead and glabellar regions primarily responsible for creating the vertical frown line.[14,15] They also elevate the medial section of the eyebrow while depressing the lateral region of the eyebrow.[9] Other muscles such as the orbicularis oculi pars palpebralis, depressor supercili, frontalis and nasalis also play role in formation of the glabellar wrinkles.[3,8,14]

Studies related to the wrinkle patterns of glabella have shown

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different ways of classification patterns, yet they all show signify only one thing, whichever classifications is used, there are variations in glabellar wrinkle patterns.[3, 4, 10, 16] The classification provided by Kamat and Quandros had an addition of one more item 'W' variety to that provided by Kim et al.[3, 4] Due to easy to use and simple in classifying the participants this study based on the classification given by Kim et al.[4]

In the present study, majority of the participants belonged to 'U' pattern category followed by '11' pattern. This was similar to the findings of Kim et al.[4] However in another study conducted among Indian population, Kamat and Quandros,[3] the '11' pattern was most common followed by 'U' pattern. The 'I pattern was the least frequently identified pattern in the study by Kim et al.[4] which was not in agreement with the present study. The variations in the present study may be due to inclusion patterns of the participants such as age, race, ethnicity. The other explanation behind this variation may be due to geographical variation. Studies have also shown variation among gender and race.[7,17,18] Hamer et al. have shown lifestyle and physiological factors for the formation of wrinkles.[19]

The degree of wrinkles on the face, including glabellar wrinkles, can sometimes be linked to underlying medical issues or lifestyle choices like smoking and sun exposure.[20] Potential risk factors for specific diseases or health disorders can be found with the aid of research in this field. The present study and the findings reflect the existence of variations of glabellar wrinkles among the study participants in Nepal too.

Glabellar wrinkles are important for facial expression accentuation as they are associated with anger, frustration. In other way they relay negative emotions.[21] They have been used in forensic anthropology and craniometric analysis too. In forensic they are important in analyzing skull morphology from unknown remains and also in gender estimation. They have also been used by forensic anthropologists for ancestry analysis.[22,23]

The present study also has limitations. The study was focused on observation of variations of glabellar wrinkles patterns among our study participants rather not based upon use of different tools such as use of ultrasound. The other limitation was the selection of precise age only as the prime intention of authors was to observe the variations among Nepalese. The authors do agree that the glabellar wrinkles would have been more accentuated among older age group. The study was conducted among the participants of a single medical college so the study results cannot be generalized.

Conclusion

In conclusion, the 'U' pattern was most frequent pattern observed followed by '11' pattern. The 'X' pattern was the least frequent pattern observed. The study provided a baseline information regarding variations of glabellar wrinkle pattern.

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