

Prevalence of gummy smile among students of Vietnam Maritime University, school year 2024 - 2025

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ABSTRACT

Gummy smile is one of the complaints of the patients, since such a situation can influence self-esteem and social relationships¹. **Objective:** This study aims to describe the gummy smile's current status of students at Viet Nam Maritime University. **Methods:** A cross – sectional study was conducted on 355 students at Viet Nam Maritime University. **Results and conclusions:** The prevalence of gummy smile was 21,3%, the prevalence of gummy smile among females was higher than in male (22,8%;19,4%) but it was not statistically significant with $p = 0.543$; In both genders, gummy smile was the most common in average upper lip group and the least common in long upper lip group; The rate of gummy smile was the biggest in the group laughed in parallel compared to other groups (42,7%, $p < 0,001$).

Keywords: Gummy smile, student, Viet Nam Maritime University

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INTRODUCTION

An excessive gingival appearance during smiling, commonly referred to as a gummy smile (GS), is characterized by more than 2–3 mm of gingival exposure and may negatively affect the esthetics of the smile². The prevalence of gummy smile is about 10% in the population aged 20–30 years, with a higher incidence in females compared to males³. The etiology of gummy smile is multifactorial⁴.

A gummy smile can influence self-confidence and social interactions¹. This impact is even more significant among dental students, who tend to have a comprehensive understanding of oral esthetics and thus a heightened awareness of the importance of the smile⁵. In Vietnam, Võ Trương Như Ngọc and Nguyễn Việt Anh (2010) conducted a study on 89 dental students aged 18–25 using photographic analysis, and reported that 49.44% presented with gummy smile⁶.

Most studies worldwide as well as in Vietnam have mainly focused on the treatment modalities for gummy smile, while relatively few have addressed its prevalence among students. Therefore, our research team raised the question: "What is the prevalence of gummy smile among students and whether there is a difference in the prevalence of gummy smile among groups based on gender and anatomical characteristics of the lips?". From that, we conducted the study entitled: "Prevalence of gummy smile among students at Vietnam Maritime University" with the objective: To describe the prevalence of gummy smile among students at Vietnam Maritime University.

MATERIALS AND METHODS

Study population

Participants: Students of Vietnam Maritime University

Inclusion criteria

- Age: 18–25 years
- Willingness to participate in the study
- Presence of a full set of anterior teeth in both arches
- No periodontal or gingival diseases
- No history of surgical treatment for gummy smile

Exclusion criteria

- Presence of prosthetic restorations in the anterior region of either arch
- Current or previous orthodontic treatment
- History of maxillofacial cosmetic surgery
- Inability to capture smile photographs
- Congenital craniofacial anomalies

Study duration and location

Duration: March 2024 – May 2025

Location: Vietnam Maritime University

Study design: Cross-sectional descriptive study

Sample size calculation:

Sample size was determined using the formula:

$$n = Z_{1-\alpha/2}^2 \frac{p(1-p)}{d^2}$$

Where:

- n : required sample size
- $Z_{1-\alpha/2}$: standard normal variate at 95% confidence level ($Z = 1.96$)
- $p = 0.36$ (prevalence of gummy smile according to Lê Quang Linh and Nguyễn Mạnh Phú⁷)
- $d = 0.05$ (desired precision)

The required sample size was calculated as $n = 355$.

Sampling method: Convenience sampling

Study variables: Gender, amount of gingival display during maximum smile, upper lip length, smile line classification.

Data processing and analysis: Data were entered using Microsoft Excel and analyzed with SPSS 22.0. Chi-square test was applied to compare proportions, and Student's t-test was used to compare means.

Ethical considerations: All participants were fully informed about the study objectives. Participation was entirely voluntary. The study did not pose any risk to participants' health. All collected data were kept confidential and used solely for research purposes.

RESULTS

Prevalance of gummy smile

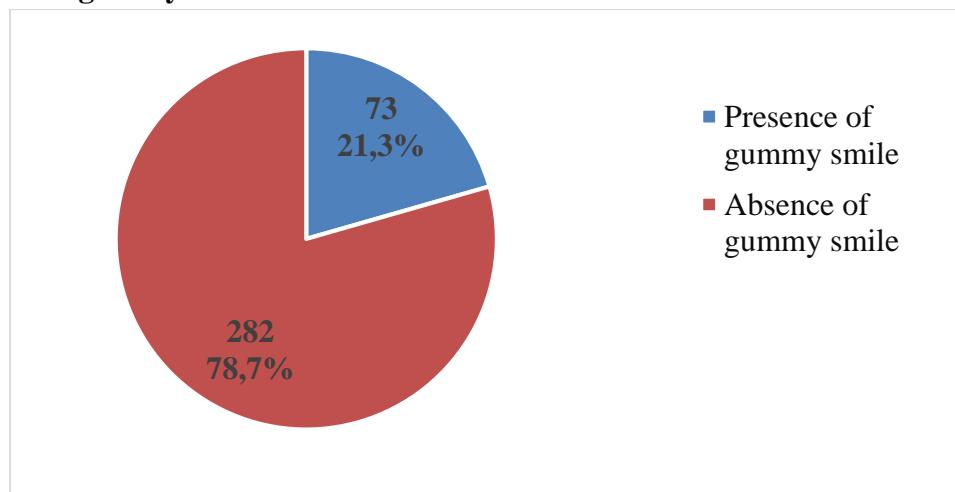


Figure 3.1. Distribution of gummy smile and non-gummy smile among study subjects
($n = 355$)

The prevalence of gummy smile was 21.3%.

Table 3.1. Distribution of gummy smile by gender (n = 355)

Smile	Presence of gummy smile		Absence of gummy smile		Total	p
	n	%	n	%		
Gender						
Female	28	22,8	95	77,2	123	100
Male	45	19,4	187	80,6	232	100
Total	73	21,3	282	78,7	355	100

The prevalence of gummy smile was 19.4% in males and 22.8% in females, with no statistically significant difference between the two groups.

Table 3.2. Distribution of gummy smile according to upper lip length classification on standardized photographs in females (n = 123)

Smile	Presence of gummy smile		Absence of gummy smile		Total	p(*)
	n	%	n	%		
Upper lip length						
Short upper lip	6	26,3	13	73,7	19	100
Average upper lip	17	36,2	30	63,8	47	100
Long upper lip	9	15,8	48	84,2	57	100
Total	28	22,8	95	77,2	123	100

In the female group, gummy smile was most prevalent among those with average upper lip length (36.2%), while the lowest prevalence was observed in the long upper lip group (15.8%).

Table 3.3. Distribution of gummy smile according to upper lip length classification on standardized photographs in males (n = 232)

Smile	Presence of gummy smile		Absence of gummy smile		Total	p (*)
	n	%	n	%		
Upper lip length						
Short upper lip	7	18,9	30	81,1	37	100
Average upper lip	30	22,2	105	77,8	135	100
Long upper lip	8	13,3	52	86,7	60	100
Total	45	19,4	187	80,6	232	100

Among males, gummy smile was most prevalent in the average upper lip group (22.2%), whereas the lowest prevalence was observed in the long upper lip group (13.3%).

Table 3.4. Distribution of gummy smile according to smile line classification on standardized photographs in all subjects (n = 355)

Smile	Presence of gummy smile		Absence of gummy smile		Total	p (*)
	n	%	n	%		
Smile line						
Parallel	53	42,7	71	57,3	124	100
Straight	20	14,7	116	85,3	136	100
Reverse	0	0	95	100	95	100

Total	73	21,5	282	78,5	355	100
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Gummy smile was most prevalent among participants with a parallel smile line (42.7%), whereas no cases were observed in those with a reverse smile line.

DISCUSSION

Prevalence of gummy smile in the study population

In our study, the prevalence of gummy smile was 21.3% (Figure 3.1), which was lower than the 36% reported by Lê Quang Linh and Nguyễn Mạnh Phú⁷. This difference may be attributed to variations in sampling methods. Consistent with most previous studies, gummy smile was more prevalent among females than males. Our results also demonstrated a higher prevalence in females (22.8%) compared with males (19.4%).

Prevalence of gummy smile according to upper lip length

Our findings indicated that in both genders, gummy smile was most frequently observed in the average upper lip group. This result contrasts with the hypothesis proposed by some authors suggesting a correlation between short upper lip and gummy smile, but aligns with the findings of several clinical studies across different populations. Furthermore, short upper lip is not the sole factor contributing to gummy smile.

Prevalence of gummy smile according to smile line classification

The smile line, as defined by Akerman, is an imaginary line connecting the incisal edges of the maxillary anterior teeth. Our study showed that the parallel smile line group had the highest prevalence of gummy smile (42.7%), which is consistent with the results of Đỗ Quốc Hương (45.2%). The straight smile line group accounted for a lower prevalence (14.7%), and no cases of gummy smile were recorded in the reverse smile line group.

CONCLUSION

The overall prevalence of gummy smile was 21.3%. Females exhibited a higher prevalence than males (22.8% vs. 19.4%). In both genders, gummy smile was most commonly observed in the average upper lip group and least common in the long upper lip group. With respect to smile line classification, gummy smile was most prevalent in the parallel smile line group (42.7%).

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