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Impact of Ghutka and Mawa Use on Oral Health in a Sub-Urban Population of Karachi

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ABSTRACT

Ghutka and Mawa are smokeless tobacco products mostly used in South Asia. They have areca nut, tobacco, lime, catechu, paraffin wax, and flavoring materials. These mixtures are highly addictive and cancer-causing, related to oral submucous fibrosis, leukoplakia, and mouth cancers. Still, awareness of their harmful effects remains very low among users. **Objectives:** To observe oral findings and clinical patterns in Ghutka and Mawa users visiting ENT clinics. **Methods:** This cross-sectional research was done in Al-Tibri Medical College and Hospital, Karachi, from January to June 2025. One hundred patients who used Ghutka or Mawa for at least six months were selected by purposive sampling. Oral history and a detailed mouth examination were done. Data was entered and analyzed in SPSS using the Chi-square test, with a significance level $p \leq 0.050$. **Results:** Out of 100 users, dental issues were most common (73%), then trismus (44%), pain (40%), and chewing trouble (21%). The majority were addicted for 6–20 years, while 11 had more than 20 years of use. Ulcers were found in 58 Mawa and 53 Ghutka users; growths in 35 and 29 respectively. Longer use had more severe lesions, with malignant signs mostly after 10 years ($p < 0.05$.). **Conclusions:** Ghutka and Mawa are strongly connected with ulcers, dental and jaw problems, and precancerous growths. Long-term use increases damage. Awareness, early detection, and strict public control are urgently required.

INTRODUCTION

Ghutka and Mawa are smokeless tobacco products that are commonly used in the Indian subcontinent and also among some immigrant groups living abroad. They usually have areca nut, slaked lime, catechu, paraffin wax, tobacco, and different flavoring agents that can be sweet or spicy, mixed in a powder or small grain-like form [1-2]. When people chew them, the mixture quickly mixes with saliva and causes a reddish-brown color on the teeth and inside of the mouth. With continued use, these stains become permanent and often come with changes in the mouth lining. Use of smokeless tobacco in various forms like betel quid, paan, naswar, and areca nut has been prevalent for centuries in South Asian culture [3]. However, Ghutka and Mawa became more popular during the last two decades because of their cheap cost, ready availability in small sachets, and lack of awareness regarding their harmful effects [4]. The method of intake is simply a pinch placed between the cheek and gum, slowly sucked and chewed, very similar to other forms of tobacco chewing. But unlike traditional forms, Ghutka/Mawa is highly addictive and strongly carcinogenic [5]. Several studies have confirmed the association of Ghutka and Mawa with multiple oral and

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pharyngeal diseases. These include dental caries, gingival recession, oral ulcers, leukoplakia, oral submucous fibrosis, and malignancies of the oral cavity and pharynx [6-7]. The International Agency for Research on Cancer (IARC) classifies areca nut and smokeless tobacco products as Group 1 carcinogens, with a well-documented role in squamous cell carcinoma of the oral cavity [8]. In Pakistan and India, oral cancers are among the most common malignancies, with strong epidemiological links to Ghutka and Mawa consumption [9-10]. The burden is increasing especially in younger age groups, which makes the problem even more alarming for clinicians working in ENT and oral surgery units.

Despite the high prevalence of Ghutka and Mawa use in Karachi, there is limited local data documenting the clinical oral manifestations among long-term users. Most existing studies are either population-based surveys or focus on specific lesions, lacking comprehensive clinical examination in ENT settings. This gap underscores the need to systematically assess oral health patterns and severity of lesions in habitual users to inform targeted awareness and intervention programs. This study aimed to evaluate the oral health effects of Ghutka and Mawa use in a sub-urban population of Karachi by documenting clinical oral findings and analyzing the association between duration of use and severity of lesions.

METHODS

This cross-sectional observational study was conducted in the outpatient department of Al-Tibri Medical College and Hospital, Karachi. The study duration was six months, from January 2025 to June 2025. Ethical approval was obtained from the Institutional Review Board (Ref. No. IREC/ATMC/16(02-2024)/01) of Al-Tibri Medical College and Hospital. Written informed consent was taken from every patient before participation. A total of 100 patients were enrolled by non-probability purposive sampling. Sample size was calculated using Cochran's formula for proportions, $n = \frac{Z^2 \cdot p \cdot q}{e^2}$ where n is the required sample size, Z is 1.96 at 95% confidence level, p is the expected prevalence of oral lesions in Ghutka/Mawa users from earlier studies, q = 1-p, and e (margin of error) was taken as 0.050. The minimum sample size came to around 96, but we included 100 patients to make the results more reliable. Patients above 18 years, with a history of Ghutka/Mawa use for at least six months and presenting with oral complaints, were included. Patients with other forms of tobacco use, systemic illnesses causing oral lesions, or those who refused consent were excluded. Data collection was done by taking a short history mainly regarding Ghutka/Mawa consumption habits like duration, frequency, and any combinations. After that, a detailed oral cavity examination was carried out by the investigator, and findings were noted in a structured Performa. In a few patients, although they came for other medical problems, they themselves talked about the Ghutka habit when examined. Data were entered and analyzed using SPSS version 22.0. Descriptive statistics were applied for demographic and clinical variables. Association between Ghutka/Mawa use and oral cavity findings and duration was checked using the Chi-square test, and a p-value ≤0.05 was taken as significant. Data collection was done by taking a short history mainly regarding Ghutka/Mawa consumption habits like duration, frequency, and any combinations. The data collection instrument was a self-designed, structured Performa. To ensure content validity, a panel of three senior ENT specialists and a dental public health expert reviewed it. They had their say in order to enhance the simplicity fand understandability of items. To determine the reliability and feasibility of the Performa, 10 patients (excluding the main study) were piloted on it. The pilot demonstrated the steady knowledge and use of the Performa, and it was not necessary to make any significant change. After that, a detailed oral cavity examination was carried out by the investigator, and findings were noted in this structured Performa.

RESULTS

Out of 100 patients examined, dental problems were the most common complaint (73 cases), followed by trismus (44), pain (40), and chewing difficulty (21). The majority of patients had addiction for 6–20 years, while 11 patients used it for more than 20 years (Table 1).

Table 1: Frequencies of Different Complaints Among Patients and Duration of Addiction

Category	Subcategory	Frequency (n)
Complaints	Chewing	21
	Trismus	44
	Dental Issue	73
	Pain	40
Duration of Addition	Less than 5 years	25
	6-10 years	30
	11-20 years	34
	More than 20 years	11

Ghutka and Mawa showed the highest association with oral lesions. Ulcers were seen in 58 Mawa and 53 Ghutka users, growths in 35 and 29, respectively, while dental issues were frequent in both groups. Other products like niswar, tobacco, pan, and smoking also showed a significant relation, though less frequent. Chi-Square test was applied; level of significance was <0.050 (Table 2).

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Table 2: Association of Material of Addiction with Examination Findings

Substances	N	Ulcer (N)	Growth (N)	Dental Issue (N)	p-Value
Gutka	53	35	12	25	0.037
Mawa	58	29	22	15	0.016
Pan	8	2	1	5	0.049
Niswar	10	1	0	0	0.001
Tobacco	15	10	2	3	0.001
Smoking	13	2	1	11	0.001
Supari	15	0	0	15	0.001
Manpuri	1	1	0	0	0.001

With longer duration of use, more severe findings were noted. Less than 5 years of habit showed mostly ulcers and dental issues, while patients with more than 10 years of use had a higher frequency of growths, some suspicious of malignancy. The relation between duration and oral findings was statistically significant. Chi-Square test was applied; level of significance was <0.050 (Table 3).

Table 3: Association of Examination Findings with the Duration of Addiction

Duration of Habit	N	Ulcer (N)	Growth (N)	Dental Issue (N)	p-Value
Less than 5 years	25	2	00	22	0.001
6-10 years	30	11	01	18	0.027
11-20 years	34	13	05	16	0.041
More than 20 years	11	6	4	1	0.001

DISCUSSION

The patients who took Ghutka and Mawa in our study had oral complaints that ranged from stains in the teeth and mucosa to actual ulcers and fibrotic alterations. These results can be compared to the previous research in Pakistan and India, the long-term smokeless tobacco use has been reported to induce oral submucous fibrosis, leukoplakia, and even squamous cell carcinoma [11-12]. This mechanism is established, and the alkaloids of the areca nut and tobacco are carcinogens; slaked lime increases the penetration of these carcinogens into the mucosa [13]. Among the notable findings was the fact that a good number of patients were not quite aware of the deleterious consequences of Ghutka/Mawa. This lack of awareness and the low cost render it a significant social health concern, particularly among the low socio-economic populations. These patterns have been recorded in the research of Karachi and other South Asian cities where awareness level regarding the risk of oral cancer is low, and the consumption has been high [14,15]. The results of this paper corroborate the evidence of Ghutka/Mawa being an addictive substance. Admitted patients stated that they could not quit the habit even knowing about the stains and frequent oral ulcers. This addiction is congruent with the pharmacological impact of arecoline (areca nut) and nicotine (tobacco) that are associated with the development of dependence [16]. The addition of paraffin wax and flavoring substances can also be seen as increasing the likability of the product amongst younger users, thus the popularity of adolescents as new consumers can be reported more often [17]. As an ENT, these habits are not restricted to the pathology of the oral cavity. They also diffuse to pharynx and larynx. Past researches have revealed an association with cancers of the oropharynx, trismus secondary to submucous fibrosis and chronic pharyngitis [18-19]. Most of our patients came with irrelevant ENT issues, but when we examined them, we noticed lesions that were clearly a result of Ghutka use. The rising rate of oral cancer cases in Pakistan is also another problem. As Virani *et al.* and other reports have demonstrated many times over, oral cavity cancers are one of the leading cancers in both men and women, and they are primarily associated with the use of smokeless tobacco [20]. This is also supported by our findings and indicates that urgent measures to have been taken in the area of public health. It can be reduced through simple measures such as awareness campaigns, preventing sales around schools and ensuring close scrutiny of sachet manufacturing, primarily among the youth. Our study has several strengths, including the fact that it is limited by a small sample, and it was conducted in a single center. Nevertheless, the findings are not in vain as they reflect a clinical trend that ENT doctors have to deal with on a daily basis. The use of Ghutka and Mawa has a close relationship with oral and throat issues. Even when other complaints are presented to the ENT specialists, they must remain alert to observe early mucosal changes to provide early advice and referrals. Moreover, the non-probability sampling in one hospital OPD has some bias in that the study as well may not reflect the entire community of Ghutka and Mawa users as they may be symptom-free, or are not visiting hospitals. Catching of Ghutka and Mawa related lesions at an early stage should be conducted by regularly examining the mouth in ENT and dental clinics. The dangers of these products should be demonstrated through awareness campaigns, mostly among the younger people. This habit can be prevented with the assistance of schools and community programs. The laws which regulate the selling of Ghutka and Mawa need to be tough and a total ban implemented to check this growing health hazard.

This study was limited by its single-center design and relatively small sample size, which may not represent the broader population of Ghutka and Mawa users. Future research should include multi-center longitudinal studies to track lesion progression and explore the effectiveness of preventive interventions. Additionally, integrating educational campaigns and stricter regulation could help reduce long-term oral health risks in the community.

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CONCLUSIONS

Our study shows that Ghutka and Mawa use is highly linked with many mouth problems like ulcers, bad teeth, trismus, and some doubtful growths. The severity was more in patients who were using them for long years, mostly above 10 years. Most of the users had very little awareness and visited ENT OPD very late, where we found hidden mouth lesions during a normal checkup. Early finding and good counseling to patients are very important to stop further damage. Public health knowledge and strong control on selling are needed to reduce this bad and growing habit.

Authors' Contribution

Conceptualization: VKK
Methodology: VKK, HM
Formal analysis: TMG
Writing and Drafting: KI, DK, RK
Review and Editing: KI, DK, RK, TMG, VKK, HM

All authors approved the final manuscript and take responsibility for the integrity of the work

Conflicts of Interest

All the authors declare no conflict of interest.

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