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Effectiveness Of Tobacco Cessation Counselling In A Teaching Dental Hospital: A Prospective Interventional Study

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Abstract:
Background*: Tobacco use remains a significant global health burden and a major contributor to preventable morbidity and mortality. Despite widespread awareness of its adverse effects, sustained cessation remains challenging due to nicotine dependence and entrenched behavioral patterns. Healthcare-based interventions, particularly within dental settings, offer a strategic opportunity for early identification and structured cessation support. This study aimed to evaluate the effectiveness of tobacco cessation interventions delivered through a Tobacco Cessation Centre in a teaching dental hospital.*
Materials and Methods *A prospective interventional study was conducted among 209 adult tobacco users attending a Tobacco Cessation Centre in a teaching dental institution. Participants were enrolled using a consecutive sampling approach. Baseline assessment included demographic profiling, tobacco consumption characteristics, and nicotine dependence measured using the Fagerström Test for Nicotine Dependence. Participants received either behavioral counselling alone or behavioral counselling combined with Nicotine Replacement Therapy, based on clinical suitability. Follow-up assessments were conducted at 1 week, 2 weeks, 4 weeks, and 3 months to evaluate cessation outcomes, changes in dependence scores, and adherence to interventions. Statistical analysis was performed using SPSS version 26.0, with significance set at p less than 0.05.*
Results*: The study cohort was predominantly male, with smokeless tobacco, particularly gutka, being the most prevalent form of use. At three months, 19.6 percent of participants achieved abstinence, while 45.0 percent demonstrated a reduction in tobacco consumption. A progressive and consistent decline in nicotine dependence scores was observed across follow-up intervals in both intervention groups. No statistically significant difference was found between behavioral counselling alone and counselling combined with Nicotine Replacement Therapy in relation to cessation outcomes. However, increasing age, higher baseline nicotine dependence, and frequency of follow-up visits were identified as important determinants influencing cessation outcomes.*
Conclusion: *Intrathecal Bupivacaine with Buprenorphine 60µg caused prolonged duration of postoperative analgesia when compared to intrathecal Bupivacaine with Nalbuphine 2mg Tobacco cessation interventions delivered within dental healthcare settings are effective in facilitating reduction in nicotine dependence and promoting behavioral change. While complete cessation was achieved in a limited proportion of participants, a substantial reduction in tobacco use was observed. Sustained follow-up, targeted behavioral strategies, and individualized treatment approaches are critical to enhancing long-term cessation outcomes.*
Key Word: *Tobacco cessation; Nicotine dependence; Behavioral counselling; Nicotine replacement therapy; Dental setting*

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I. Introduction

Tobacco use continues to represent one of the most significant preventable causes of morbidity and mortality worldwide, contributing extensively to the global burden of non-communicable diseases. Recent global estimates indicate that approximately 1.3 billion individuals worldwide use tobacco, with the majority

residing in low- and middle-income countries (1). The World Health Organization reports that tobacco use accounts for more than 8 million deaths annually, including nearly 1.2 million deaths due to second-hand smoke exposure. Despite growing awareness of tobacco-related health risks, cessation rates remain suboptimal, and nicotine dependence continues to pose a significant challenge to global public health. The chronic nature of tobacco-related diseases, coupled with prolonged treatment requirements, further amplifies the long-term burden imposed on individuals, families, and healthcare infrastructures.

Tobacco dependence is increasingly understood as a chronic relapsing disorder characterized by behavioral, psychological, and neurobiological mechanisms. Nicotine addiction involves complex interactions between reward pathways, conditioned behavioral responses, and psychosocial influences. Although a large proportion of tobacco users express an intention or desire to quit, achieving sustained abstinence remains challenging. Evidence indicates that most individuals require multiple quit attempts prior to successful cessation, while relapse remains a common feature of the quitting trajectory (2). This cyclical pattern reflects the persistent influence of withdrawal symptoms, craving, environmental triggers, stressors, and behavioral conditioning, highlighting the necessity for structured, sustained cessation support rather than isolated interventions.

Behavioral theories of addiction and cessation, particularly the Transtheoretical Model of behavior Change, conceptualize tobacco cessation as a dynamic staged progression involving precontemplation, contemplation, preparation, action, and maintenance (3). Individuals may transition between stages based on evolving motivation, perceived risks, self-efficacy, social influences, and dependence severity. Importantly, relapse is not regarded as treatment failure but rather as an anticipated component of behavioral change. This framework emphasizes that cessation success depends not only on initial motivation but also on continuous behavioral reinforcement, coping strategies, and professional guidance. Recognition of cessation as a staged process provides a theoretical basis for designing targeted, patient-centred interventions aligned with an individual's readiness to quit.

In India, tobacco consumption remains a major public health concern, characterized by the widespread use of both smoked and smokeless tobacco products (6). Smokeless forms such as gutka, khaini, and mishri are particularly prevalent due to cultural acceptability, affordability, aggressive marketing, and ease of accessibility. The diversity of tobacco products and patterns of dual use present unique challenges for cessation strategies. Furthermore, early initiation of tobacco use, social normalization, and misconceptions regarding smokeless tobacco safety contribute to sustained dependence within the population. These factors collectively contribute to India's substantial share of the global tobacco-related disease burden.

Healthcare-based tobacco cessation interventions have demonstrated substantial effectiveness, particularly when behavioral counselling is combined with pharmacological support (2). Contemporary cessation strategies emphasize structured behavioral approaches, motivational interviewing, cognitive-behavioral techniques, and pharmacotherapy to address nicotine dependence. Dentists and dental auxiliaries, owing to their frequent patient interactions, preventive care orientation, and clinical credibility, are well positioned to deliver cessation counselling and facilitate tobacco cessation services within routine practice (8). Integration of cessation services into dental care not only enhances patient outcomes but also strengthens the public health role of dentistry.

Despite increasing recognition of dental institutions as viable platforms for tobacco cessation, systematic evaluation of cessation services delivered through dedicated dental tobacco cessation centers remains limited. Existing investigations of some previously done interventional studies on tobacco cessation which have frequently emphasized short-term outcomes or smaller samples, with relatively fewer studies assessing real-world cessation effectiveness. Robust evidence generated from clinical practice settings is essential for informing policy, strengthening programme implementation, and optimizing cessation strategies. Therefore, the present study aimed to evaluate the effectiveness of tobacco cessation services delivered through a Tobacco Cessation Centre in a teaching dental hospital.

II. Material And Methods

Study design and setting:

The present study was designed as a prospective interventional study conducted at the Tobacco Cessation Centre, Teaching Dental Institute, Pune, Maharashtra. A total of 209 participants were included in the study. All participants were informed about the study, and written informed consent was obtained prior to enrolment.

Eligibility criteria

The inclusion criteria comprised individuals aged 18 years and above, with a history of tobacco use in any form (smoking or smokeless), and those willing to participate in the study and attend follow-up visits. The exclusion criteria included individuals with severe systemic illness, individuals with cognitive or

communication impairments that could interfere with counselling or assessment, and those unwilling to participate or comply with follow-up visits.

Sample size

The study included a total sample size of 209 participants who met the eligibility criteria and consented to participate. A non-probability consecutive sampling technique was used, wherein all eligible tobacco users attending the Tobacco Cessation Centre during the study period were consecutively recruited until the required sample size was achieved.

Sample Size Calculation

The sample size was calculated using the standard formula for estimating proportions:

$N = (Z^2 \times p \times q) / d^2$

Where:

n = required sample size

Z = standard normal deviate at 95% confidence level (1.96)

p = estimated prevalence of tobacco use

$q = 1 - p$

d = allowable error (precision)

Study procedure:

Following recruitment, baseline demographic information, including age and gender, was recorded. Detailed tobacco use history was obtained using a structured questionnaire, which included information on the type of tobacco consumed, duration of use, and daily frequency of consumption. Nicotine dependence was assessed using the Fagerström Nicotine Dependence Test (FTND)(9). Based on FTND scores, participants were categorized into dependence grades ranging from very low to very high dependence.

After baseline assessment, participants received tobacco cessation intervention. Depending on clinical assessment and individual suitability, participants were allocated to either behavioral counselling alone or behavioral counselling combined with Nicotine Replacement Therapy (NRT).

Intervention Protocol

1. Behavioral Counselling

Behavioral counselling was delivered using standardized tobacco cessation protocols aligned with established tobacco dependence treatment guidelines. The counselling framework incorporated structured, patient-centred approaches aimed at enhancing motivation, strengthening quit intent, and equipping participants with practical coping strategies.

The intervention followed the 5A's model (Ask, Advise, Assess, Assist, Arrange), ensuring systematic identification of tobacco use, provision of clear advice to quit, assessment of readiness to quit, and structured support throughout the cessation process(2). For participants not ready to quit, motivational interviewing principles were applied to enhance intrinsic motivation and resolve ambivalence toward quitting.

Key components of behavioural counselling included:

Motivational enhancement was carried out by exploring each participant's personal reasons for quitting, addressing perceived barriers, and reinforcing self-efficacy. Participants were educated about the systemic and oral health risks associated with tobacco use, including cardiovascular disease, respiratory disorders, malignancies, periodontal disease, and impaired wound healing. Emphasis was placed on identifying individual behavioral and environmental triggers such as stress, social situations, and post-meal habits that prompt tobacco consumption. Coping strategies were introduced, including behavioural substitution techniques like chewing sugar-free gum, practicing deep breathing exercises, and adopting stress management skills to control cravings. Additionally, relapse prevention was addressed by preparing participants for high-risk situations, managing withdrawal symptoms, and developing structured contingency plans to prevent lapses from progressing into full relapse.

Each counselling session lasted approximately 15–30 minutes and was delivered at baseline. Reinforcement counselling was provided during each follow-up visit. Participants were also provided with educational materials and self-help information to support tobacco cessation and encourage continued behaviour change outside the clinical setting.

2. Pharmacological Intervention – Nicotine Replacement Therapy (NRT)

Participants assigned to the combined therapy group received Nicotine Replacement Therapy (NRT) tailored to their nicotine dependence level as determined by Fagerström Test for Nicotine Dependence (FTND) scores.

The choice and dosage of NRT were individualized based on dependence severity(1):

Nicotine replacement therapy (NRT) was individualized based on the severity of nicotine dependence as assessed by the Fagerström Test for Nicotine Dependence (FTND). Participants with low dependence (FTND ≤3) were prescribed short-acting NRT, such as 2 mg nicotine gum or lozenges, to be used as needed for craving control. Those with moderate dependence (FTND scores 4–6) received combination therapy, which included a nicotine patch (14–21 mg/day) supplemented with short-acting forms to manage breakthrough cravings. For individuals with high dependence (FTND ≥7), a higher-dose nicotine patch (21 mg/day) was administered in conjunction with 4 mg nicotine gum or lozenges to achieve more effective craving suppression and withdrawal management.

The transdermal nicotine patch provided steady baseline nicotine levels to reduce withdrawal symptoms, while short-acting formulations addressed acute cravings. Participants were instructed regarding correct usage, recommended duration of therapy (typically 8–12 weeks), gradual dose tapering, and potential side effects. Prior to initiation, contraindications and necessary precautions were assessed. Adherence was monitored at each follow-up visit, and dosage adjustments were made where indicated.

3. Follow-Up and Monitoring

Participants were followed up at 1 week, 2 weeks, 4 weeks, and 3 months after initiation of the intervention.

At each follow-up visit:

At each follow-up, tobacco use status was assessed through self-report, and nicotine dependence was reassessed using the Fagerström Test for Nicotine Dependence (FTND). Withdrawal symptoms were closely monitored, and adherence to both behavioural counselling strategies and nicotine replacement therapy (NRT), where applicable, was reviewed. Reinforcement counselling was provided to maintain motivation and minimize the risk of relapse, and NRT dosages were modified when necessary based on individual response. Cessation outcomes were categorized into three groups: abstinent, defined as complete cessation of tobacco use since the previous follow-up; reduced use, indicating a decrease in the frequency or quantity of tobacco consumption compared to baseline; and continued use, referring to no significant reduction or ongoing regular tobacco use..

Participants reporting relapse were re-engaged through relapse management counselling and encouraged to reattempt cessation.

Statistical analysis

All collected data were entered into a spreadsheet and analysed using Statistical Package for the Social Sciences (SPSS) version 26.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize demographic variables and tobacco use characteristics. Associations between categorical variables were evaluated using the Chi-square test. Multinomial logistic regression analysis was performed to identify predictors of tobacco cessation outcomes. A p value less than 0.05 was considered statistically significant.

III. Result

A total of 209 participants were included in the present study. The study population was predominantly male, constituting 80.4% of the participants, while females accounted for 19.6%. The mean age of the participants was 34.37 ± 11.52 years, with ages ranging from 18 to 76 years, reflecting a broad and heterogeneous age distribution. With respect to tobacco use patterns, both smokeless and smoking forms were represented, with smokeless tobacco being more commonly used. Gutka was the most frequently reported form (45.5%), followed by cigarette smoking (29.7%), mishri (12.9%), bidi (7.7%), tobacco chewing (3.8%), and mixed forms (0.5%).

Evaluation of cessation outcomes across intervention groups showed similar distributions. In the counselling group (n = 128), 25 participants achieved abstinence, 57 reduced use, and 46 continued tobacco use, while in the counselling + NRT group (n = 81), 16 achieved abstinence, 37 reduced use, and 28 continued use. No statistically significant relationship was observed between intervention modality and cessation outcome (Chi-square = 0.042, p = 0.979).

At the three-month follow-up, 41 participants (19.6%) achieved abstinence, 94 participants (45.0%) demonstrated reduced tobacco use, and 74 participants (35.4%) continued tobacco consumption. Increasing age was significantly associated with a higher likelihood of continued tobacco use, indicating comparatively lower cessation success among older participants, whereas younger participants exhibited relatively better outcomes in terms of abstinence and reduction.

Table 1. Demographic Characteristics among study population

Gender	N (%)
Male	168 (80.4%)
Female	41 (19.6%)
Total	209 (100%)

Gender-wise analysis of tobacco use demonstrated notable differences in consumption patterns. Gutka use was predominantly observed among male participants, suggesting greater adoption of commercially packaged smokeless tobacco products among men. In contrast, mishri use was largely concentrated among female participants, highlighting the persistence of traditional and culturally embedded smokeless tobacco practices among women. Cigarette smoking was reported across both genders, although a higher prevalence was observed among males. These gender-specific variations preport the influence of sociocultural and behavioral factors on tobacco use patterns.

Table 2. Tobacco Consumption Pattern among study population

Type of Tobacco	n (%)
Smokeless – Gutka	95 (45.5%)
Smokeless – Tobacco Chewing	8 (3.8%)
Smokeless – Mishri	27 (12.9%)
Smokeless – Mixed	1 (0.5%)
Smoking – Cigarette	62 (29.7%)
Smoking – Bidi	16 (7.7%)
Total	209 (100%)

Graph 1 shows Tobacco consumption patterns with distinct variations across different forms of tobacco use. Smokeless tobacco consumption was the most prevalent category, with gutka emerging as the dominant product, accounting for nearly half of the study population (45.5%). Cigarette smoking represented the second most common form of tobacco use (29.7%), followed by smokeless mishri use (12.9%) and bidi smoking (7.7%). Tobacco chewing and mixed smokeless forms constituted relatively smaller proportions of the sample. These findings indicate that commercially prepared smokeless tobacco products remain highly prevalent within the study setting.

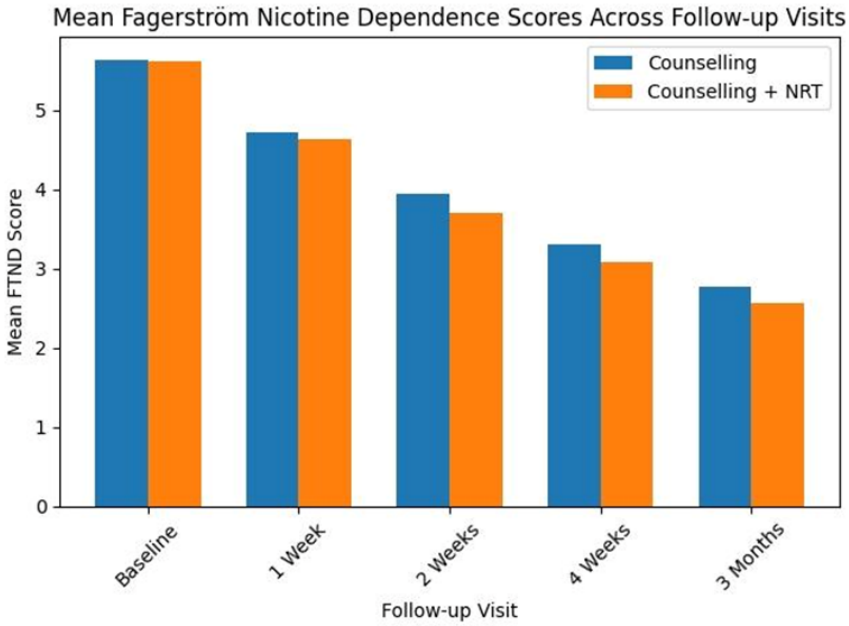

Figure 1 shows the mean FTND scores across follow-up visits in both intervention groups. A steady decline in nicotine dependence is observed over time in the counselling and counselling + NRT groups.

Assessment of nicotine dependence using the Fagerström Nicotine Dependence Score demonstrated a progressive decline over successive follow-up visits in both intervention groups. At baseline, the mean dependence scores were similar between participants receiving counselling alone (5.64 ± 1.94) and those receiving counselling combined with Nicotine Replacement Therapy (NRT) (5.62 ± 1.81), indicating comparable initial nicotine dependence levels. A reduction in mean scores was observed as early as the first week, with continued declines at subsequent visits. By the three-month follow-up, the mean scores had reduced to 2.78 ± 1.77 in the counselling group and 2.57 ± 1.51 in the counselling + NRT group, indicating reduced nicotine dependence over time... By the three-month follow-up, mean dependence scores had reduced substantially in both groups. Although participants receiving the combined intervention consistently exhibited slightly lower mean scores at follow-up visits, the overall declining trend was observed irrespective of intervention modality, suggesting a general reduction in nicotine dependence over time.

Table 3. Distribution of Participants by FTND Dependence Grade Across Follow-up Visits

Dependence Grade	Baseline	1 Week	2 Weeks	4 Weeks	3 Months	P value
Very High (8–10)	40 (19.1%)	15 (7.2%)	7 (3.3%)	3 (1.4%)	0 (0.0%)	p < 0.001**
High (6–7)	59 (28.2%)	49 (23.4%)	37 (17.7%)	22 (10.5%)	15 (7.2%)	p < 0.001**
Moderate (5)	49 (23.4%)	42 (20.1%)	23 (11.0%)	28 (13.4%)	16 (7.7%)	p < 0.001**
Low (3–4)	54 (25.8%)	79 (37.8%)	88 (42.1%)	66 (31.6%)	70 (33.5%)	p < 0.001**
Very Low (0–2)	7 (3.3%)	24 (11.5%)	54 (25.8%)	90 (43.1%)	108 (51.7%)	p < 0.001**
Total	209 (100%)	209 (100%)	209 (100%)	209 (100%)	209 (100%)	

- FTND grades were categorized as Very High (8–10), High (6–7), Moderate (5), Low (3–4), and Very Low (0–2).
- Differences across follow-up visits were assessed using the Chi-square test.
- P < 0.05 was considered statistically significant.

Analysis of nicotine dependence grades further supported this trend. At baseline, 40 participants (19.1%) were classified within the very high dependence grade, and 59 participants (28.2%) were within the high dependence grade. Over follow-up visits, the proportion of participants within higher dependence grades declined considerably. By the three-month follow-up, no participants remained within the very high dependence category, while 108 participants (51.7%) were classified within the very low dependence grade. This shift indicates a substantial improvement in nicotine dependence status.

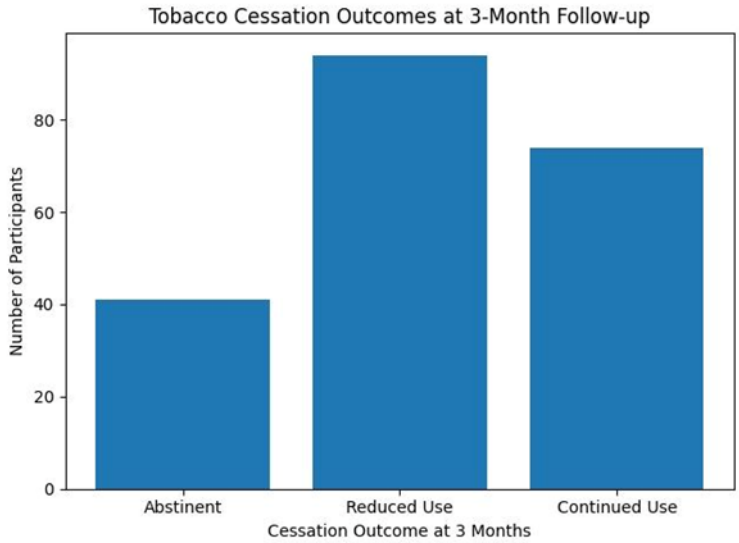

Figure 2 shows the distribution of tobacco cessation outcomes at three months.

Evaluation of tobacco cessation outcomes at three months revealed that 41 participants (19.6%) achieved abstinence from tobacco use. A larger proportion, comprising 94 participants (45.0%), demonstrated reduced tobacco consumption. However, 74 participants (35.4%) continued tobacco use. Although complete cessation was observed in a smaller proportion of participants, reduction in tobacco use was noted in nearly half of the study population.

Table 4. Assessment of Type of Tobacco Used and Intervention Modality

Type of Tobacco	Counselling	Counselling + NRT	Total
Smokeless – Gutka	55	40	95
Smokeless – Tobacco Chewing	3	5	8
Smokeless – Mishri	19	8	27
Smokeless – Mixed	1	0	1
Smoking – Cigarette	40	22	62
Smoking – Bidi	10	6	16
Chi-square			4.220
P value			0.518

- *Chi-square test was used to evaluate the relationship between type of tobacco used and intervention modality.*
- *P < 0.05 was considered statistically significant.*

Analysis of the association between intervention modality and cessation outcomes did not demonstrate a statistically significant relationship. The proportions of abstinent, reduced-use, and continued-use participants

were comparable between the counselling and counselling + NRT groups. Similarly, no statistically significant association was observed between type of tobacco used and intervention modality, indicating that intervention allocation was broadly similar across tobacco categories. Evaluation of cessation outcomes across different tobacco types also did not reveal statistically significant differences, although minor variations in outcome proportions were observed.

Table 5. Multinomial Logistic Regression Analysis of Predictors of Tobacco Use Outcomes

Predictor Variable	Reduced vs Abstinent OR (95% CI)	p value	Continued vs Abstinent OR (95% CI)	p value
Age (per year)	1.02 (0.99–1.05)	0.12	1.04 (1.01–1.07)	0.01*
Gender (Female)	0.95 (0.62–1.45)	0.78	1.20 (0.80–1.80)	0.35
Tobacco Type (Smokeless)	1.10 (0.72–1.68)	0.64	1.55 (1.05–2.30)	0.03*
Intervention (Combined)	0.55 (0.33–0.91)	0.02*	0.40 (0.23–0.70)	0.001***
Baseline FTND Score	1.20 (1.05–1.37)	0.01*	1.35 (1.18–1.55)	0.045*
Visit Number	0.75 (0.62–0.91)	0.004**	0.60 (0.48–0.75)	0.002**

- Abstinent category was used as the reference outcome group.
- OR = Odds Ratio; CI = 95% Confidence Interval.
- *p < 0.05; **p < 0.01; ***p < 0.001 considered statistically significant.

Multinomial logistic regression analysis identified several factors associated with tobacco use outcomes. Increasing age was associated with higher odds of continued tobacco use, suggesting that older participants may experience greater difficulty in achieving cessation. Smokeless tobacco use was also associated with increased odds of continued use, indicating potential challenges related to dependence patterns or product characteristics. The combined intervention demonstrated a significant protective effect, with reduced odds of both continued use and reduction relative to abstinence, suggesting improved cessation outcomes among participants receiving counselling combined with NRT. Higher baseline nicotine dependence scores were associated with poorer cessation outcomes, reflecting the well-established influence of dependence severity on treatment response. Notably, increased follow-up visits were significantly associated with improved outcomes, indicating the importance of sustained clinical engagement and behavioral reinforcement.

Overall, the findings of the present study demonstrate a significant reduction in nicotine dependence over time, accompanied by clinically meaningful cessation and harm-reduction outcomes. While statistical associations between certain categorical variables were not significant, regression analysis highlights key predictors influencing cessation success, emphasizing the multifactorial nature of tobacco cessation behavior.

IV. Discussion

The present study evaluated tobacco use patterns, nicotine dependence, and cessation outcomes among participants attending a Dental Tobacco Cessation Centre. The findings demonstrated that smokeless tobacco consumption was more prevalent than smoking forms, with gutka emerging as the most commonly consumed tobacco product. These observations are consistent with more recent evidence from the Global Adult Tobacco Survey (GATS-2) India (2016–17) and subsequent analyses by Tata Institute of Social Sciences (2018), which reported that smokeless tobacco remains the dominant form of tobacco use in India (12). The study by Agrawal et al. (2023) on smokeless tobacco utilization among tribal communities reported that a substantial proportion of tobacco users consumed smokeless tobacco products such as gutkha, khaini, and paan, highlighting its strong sociocultural presence in India (11). In line with these findings, the present study also observed that smokeless tobacco—particularly gutka—was the most commonly used form among participants, reinforcing evidence of its continued predominance due to cultural acceptance and accessibility.

Gender-wise differences observed in the present study revealed that gutka use was predominantly seen among males, whereas mishri use was largely concentrated among females. Similar findings were reported by Mishra et al. (2019), who highlighted gender-specific variations in smokeless tobacco consumption patterns in Indian populations (13). Cultural practices and traditional beliefs have been suggested as key contributors influencing tobacco product preferences, particularly among women.

Assessment of nicotine dependence demonstrated a progressive decline in mean Fagerström Nicotine Dependence Scores across follow-up visits. Comparable reductions in nicotine dependence following structured behavioural counselling have been reported in recent studies. A study by Jhanjee and Sethi (2018) emphasized that behavioural counselling significantly improves quit attempts and reduces dependence severity (14). Behavioural interventions remain central to tobacco cessation programs due to their ability to enhance motivation, improve self-efficacy, and address relapse-related challenges.

Participants receiving counselling combined with Nicotine Replacement Therapy exhibited slightly lower nicotine dependence scores at follow-up visits compared to counselling alone. This observation aligns

with findings from a systematic review by Hartmann-Boyce et al. (2018), which demonstrated that Nicotine Replacement Therapy significantly improves cessation outcomes when used alongside behavioural support (15). Pharmacological interventions have been shown to reduce withdrawal symptoms and cravings, thereby facilitating sustained abstinence.

Analysis of nicotine dependence grades in the present study revealed a marked shift from higher dependence categories toward lower dependence grades over time. Similar patterns have been reported in longitudinal cessation studies. Tombor et al. (2018) observed that repeated intervention exposure and follow-up visits are associated with progressive reductions in nicotine dependence (16). These findings suggest that sustained clinical engagement plays a critical role in dependence modification.

Evaluation of cessation outcomes revealed that a larger proportion of participants achieved reduction rather than complete abstinence. Harm reduction has been increasingly recognized in recent tobacco control literature. Hatsukami et al. (2018) highlighted that reduction in tobacco consumption may lead to decreased toxicant exposure and may serve as an intermediate step toward cessation (17). Reduction-based outcomes are particularly relevant among individuals with higher dependence levels.

The absence of statistically significant associations between intervention modality and cessation outcomes observed in the present study is consistent with findings from recent behavioural research. West et al. (2020) reported that cessation outcomes are influenced by multiple behavioural, psychological, and adherence-related factors (18). Individual variability, treatment compliance, and motivation levels may explain differences in cessation success.

Multinomial logistic regression analysis indicated that increasing age and higher baseline nicotine dependence were associated with poorer cessation outcomes. Similar findings were reported by Smith et al. (2019), who demonstrated that greater dependence severity reduces quit success (19). Conversely, increased follow-up visits were associated with improved outcomes. A study by Patwardhan and Murphy (2019) emphasized the importance of repeated counselling sessions in improving cessation outcomes (20).

Overall, the findings of the present study are consistent with contemporary literature and reinforce the importance of behavioural counselling, pharmacological support, and sustained follow-up. Dental professionals play a crucial role in tobacco cessation by providing early identification, counselling, and reinforcement. Integration of tobacco cessation services within dental settings has been strongly recommended in recent public health frameworks (20,21).

V. Conclusion

Within the limitations of the present study, smokeless tobacco consumption was found to be more prevalent than smoking forms among participants attending the Dental Tobacco Cessation Centre, with gutka emerging as the most commonly consumed tobacco product. Distinct gender differences were observed in tobacco consumption patterns.

A progressive decline in nicotine dependence scores was observed across follow-up visits, indicating improvement in dependence status over time. At the three-month follow-up, a proportion of participants achieved abstinence, while a larger proportion demonstrated reduction in tobacco use.

Although no statistically significant associations were observed between intervention modality and cessation outcomes, measurable behavioural improvements were evident. Factors such as baseline nicotine dependence, age, and follow-up visits were found to influence cessation outcomes.

The findings of the present study reinforce the important role of behavioural counselling, pharmacological support, and sustained follow-up in tobacco cessation. Dental professionals play a crucial role in promoting tobacco cessation through patient education and intervention within dental settings.

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