

## RESEARCH ARTICLE

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# Attitude, Practice and Perceived Barrier for Tobacco Cessation Counseling and Nicotine Replacement Therapy among Private Dental Practitioners of North India: A Web based Survey

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## Abstract

**Objective:** To assess the attitude and practices towards the Tobacco Cessation Counselling and Nicotine Replacement Therapy and identify the possible barriers towards the implementation of these practices amongst Private dental practitioners of North, India. **Methodology:** A cross sectional web based survey using 33 item pre-tested self administered questionnaire was conducted. A total of 250 valid responses were received and were available for analysis. Using the statistical package SPSS Version 23 the statistical analysis was done. The survey results was disseminated in accordance with the CHERRIES criteria for sharing E-survey results. **Results:** There was a response rate of 78.12 %. 69% of the subjects were offering tobacco cessation counseling while only 20.4% were actually practicing NRT. 52% believed that NRT along with counseling increases the rate of successful quitting the habit. 98% believed that they lacked formal training to introduce NRT for patients. **Conclusion:** Though study subjects had a positive attitude towards tobacco cessation and Nicotine Replacement Therapy, it does not reflect their current practice. Dental practitioners must get ongoing education in order to enhance their skills in prescription NRT, as a major obstacle to providing NRT is a lack of formal training.

**Keywords:** Tobacco cessation- nicotine replacement therapy- private practitioners

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## Introduction

Tobacco remains the only legal substance that causes a significant number of deaths even when used exactly as recommended by its manufacturers [1]. In 2019, tobacco-related diseases resulted in approximately 8 million deaths. While tobacco use has been decreasing in many regions, the overall prevalence remains high in certain areas. For example, in Southeast Asia, an estimated 47% of adults use tobacco, the highest rate among all WHO regions. According to the Global Adult Tobacco Survey (GATS 2), approximately 10 crore (100 million) adults smoke tobacco, while 19.9 crore (199 million) use smokeless tobacco products. The global tobacco use rate in 2020 was 22.3% of adults aged 15 and older, with 91% of these users being cigarette smokers [2].

Despite the declining trend in tobacco use, the death toll from tobacco-related diseases is expected to continue rising, as tobacco kills both its users and those exposed to its emissions over time. This long-term health impact

is especially concerning in regions with high tobacco consumption, like Southeast Asia, where both smoking and smokeless tobacco use are prevalent. Even as the number of smokers decreases, the delayed effects of tobacco-related diseases will continue to cause significant mortality in the years ahead [2].

The World Health Organization Framework Convention on Tobacco Control (WHO FCTC) was overwhelmingly adopted by the World Health Assembly in 2003 to address the global tobacco crisis. The primary objective of the WHO FCTC, which has been in effect since 2005, is to protect current and future generations from the harmful health, societal, environmental, and economic impacts of tobacco use and exposure. In 2008, the WHO introduced six evidence-based tobacco control measures focused on reducing demand, to help countries fulfill their obligations under the Framework Convention on Tobacco Control. These policies, collectively known as the MPOWER package, align with various provisions of the WHO FCTC. MPOWER stands for:

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- M: Monitoring tobacco use and prevention policies;
- P: Protecting smoke-averse individuals;
- O: Offering assistance to quit tobacco;
- W: Warning about the risks of tobacco use
- E: Enforcing bans on tobacco advertising, promotion, and sponsorship
- R: Raising taxes on tobacco products

These measures aim to reduce tobacco consumption and its associated harms [1].

The National Tobacco Control Program (NTCP) was introduced by the Government of India in 2007–2008 to raise public awareness of the detrimental effects of tobacco use, to cut down on the manufacture and distribution of tobacco products, and to make sure that the provisions of “The Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply, and Distribution) Act, 2003” (COTPA) are effectively implemented to assist individuals in quitting smoking. At present, the initiative is being executed throughout the 36 states along with the union territories, encompassing approximately 612 districts nationwide. All medical personnel, including dentists, received training for tobacco cessation as part of this initiative [3]. The health authorities in India have not yet developed any clinical protocol regarding the management of nicotine dependency. Western nations, including Australia and the United States of America, have clinical regulations and protocols concerning the management and control of nicotine dependency shaped by their governing board [1].

Nicotine enters the bloodstream when tobacco is inhaled through the lungs, or when smokeless tobacco is absorbed through the skin or the mucous membranes of the nose and mouth. The most preferred and possibly most prevalent form of absorption, pulmonary absorption, occurs within seconds. Once in the body, the chemicals in tobacco smoke are rapidly distributed through the bloodstream. Nicotine quickly crosses the blood-brain barrier and reaches the brain in about seven seconds. This triggers a rapid release of glucose and causes an increase in respiration, heart rate, blood vessel constriction, and alertness. These effects are due to dopamine release from the midbrain, which influences the prefrontal cortex, creating a sense of reward. This quick onset of pleasurable sensations and the strong reinforcement of these effects are central to the development of nicotine addiction [4].

Addiction, in this context, refers to the diminished ability to control the desire for the substance, particularly in response to cues that would normally inhibit the behavior. Nicotine produces several well-known psychoactive effects, such as stimulation, relaxation, and mood enhancement. Once in the bloodstream, nicotine is metabolized by the liver, with a half-life of 20–30 minutes. Nicotine affects the body by altering the functioning of acetylcholine and norepinephrine. To maintain their nicotine levels and continue experiencing the rewarding effects of tobacco use, users must frequently consume more of the substance. Over time, tolerance develops, meaning that individuals need to use tobacco more often or switch to stronger products to achieve the same effects, reinforcing their addiction [4].

Professionals can support individuals in quitting smoking through two main approaches: pharmacological and non-pharmacological methods. The effectiveness of these interventions is enhanced when pharmacotherapy is combined with behavioral treatments [3]. Brief counseling by healthcare providers has been shown to significantly improve patients' chances of quitting smoking [5]. According to the nationwide Global Adult Tobacco Survey (GATS), 52% of tobacco users express a desire to quit. However, they often lack the necessary assistance. Around 4.1% of smokers even make the mistake of turning to smokeless tobacco as a quitting strategy. There is still a notable gap in the adoption of cessation support strategies by healthcare professionals.

Dental offices are emerging as an important venue for promoting tobacco cessation. Dentists are trusted professionals and can serve as credible sources of advice on quitting, especially since patients are more health-conscious during appointments. This creates what is known as a “teachable moment,” where dentists can offer guidance and support to help patients quit [6]. Behavioral interventions that include oral evaluations in dental offices or community settings could increase the success rate of tobacco cessation for both cigarette smokers and smokeless tobacco users [7].

Dentists represent relatively unexplored resources in providing preliminary information on tobacco use and offering brief counseling to help patients quit [7]. According to global data, only 38% of dentists in Hong Kong actively assist patients in quitting tobacco, while 75% of dentists in Northern Ireland and 68% in the UK feel compelled to provide tobacco cessation services. In India, while studies have examined the attitudes and practices of dental students and institution-based dentists, there appears to be a lack of research on private dental practitioners. Given that private dentists constitute a significant portion of the workforce and play a vital role in healthcare delivery, it is important to develop strategies that provide training to those working in private clinics or offices. Therefore, this study aims to assess the attitudes and practices of private dental professionals in North India towards Tobacco Cessation Counseling (TCC) and Nicotine Replacement Therapy (NRT), as well as to identify potential barriers to implementing these practices.

## Materials and Methods

### *Survey Design*

The present study was a cross-sectional online survey and used a convenience sampling technique; designed in compliance with recommendations by Checklist for Reporting Results of Internet E-surveys (CHERRIES). Participation was entirely optional and; there will be no incentive or penalty for taking the survey. Every participant was told that completing the following questionnaire would count as assumed consent to participation, and they might stop at any moment. Ethical approval was sought from the Institutional Ethical Committee.

### *Survey Instrument*

A 33-item self-administered, structured questionnaire

was created using the Google survey application Gmail and was distributed amongst the private dental practitioners of Northern India through Gmail, Instagram, and WhatsApp. The survey form consisted of four sections. Demographic details such as name, age, gender, education, and number of years of dental practice experience were included in Section 1. Section 2 comprised 10 questions for assessing attitude and used 5 points Likert scale; Section 3 has 16 questions to assess practice and used 3 points Likert scale; and Section 4 consisted of 7 questions and responses were recorded using 3 point likert scale to assess perceived barriers for tobacco cessation counseling and NRT.

#### *Development, Pretesting, and Recruitment*

Based on a thorough literature search, a questionnaire was developed by experts in the field from an established conceptual framework. Each survey item was then reviewed for frequent mistakes such as leading, ambiguous, or double-barreled queries were corrected. Internal consistency of the survey tool was assessed using Cronbach's alpha coefficient and emerged to be satisfactory (Cronbach's  $\alpha = 0.85$ ). Reliability was assessed statistically using Pearson's correlation coefficient and was found to be very strong ( $r > 0.9$ ).

After the survey tool was found satisfactory regarding simplicity, clarity, and relativity; Google Drive was used to construct a web link with a text that contained the study's proposal and title. Questionnaire link was distributed via Instagram, Gmail, and WhatsApp, as these are the social media sites that are used the most.

#### *Data collection*

The survey was distributed to 320 people throughout eight months (November 2023 to June 2024); out of which 250 responses were available for analysis. 50 individuals did not respond and 20 responses were excluded as were either incomplete or apparent errors. By blocking users from the same IP address from accessing the survey more than once, duplicate entries were prevented. Responses were gathered using the Google survey tool of Gmail. The survey results were disseminated by the CHERRIES criteria for sharing E-survey results.

#### *Statistical Analysis*

Using the statistical package SPSS Version 23 the statistical analysis was done. The descriptive statistics included frequency and percentage. The ordinal variables were compared and correlations were established using the Chi-Square test.

## **Results**

The majority of participants reported documenting their patients' tobacco use status and the type of tobacco consumed. 69% of the respondents provided tobacco cessation counseling, 96% discussed the impact of tobacco on oral health with their patients, 90% informed patients about the benefits of quitting, and 80% offered assistance to those who wished to quit. However, when it came to providing self-help resources, only a small percentage displayed tobacco cessation pamphlets and

posters in the waiting room for patients to use. In terms of prescribing Nicotine Replacement Therapy (NRT), just 20.4% of dentists were actively practicing it. Among those, 16% prescribed low-dose options, such as 2 mg gum, 1 mg lozenge, or a 14 mg patch. For patients with low nicotine dependence, 1.2% prescribed a 21 mg patch along with a 1 mg lozenge or 2 mg gum for those with moderate dependence. For highly dependent patients, 0.8% prescribed a 21 mg patch combined with either a 2 mg lozenge or 4 mg gum. Additionally, only 34% of the dentists followed up with patients to track their progress in quitting, although 60% referred patients to appropriate support services to aid in their cessation efforts (Table 1).

More than 50% of the participants in this survey expressed a positive attitude towards providing tobacco cessation counseling to their patients. 76% felt it was their responsibility as dentists to offer tobacco cessation support, while 64% believed that tobacco cessation counseling by dentists is effective. However, only 20.4% were confident in their ability to provide effective counseling.

Regarding Nicotine Replacement Therapy (NRT), 52% believed that combining NRT with counseling enhances the chances of successful quitting, and 46% felt confident in their ability to offer NRT. Furthermore, 78% were optimistic about their patients' potential to change their tobacco habits. Only 5.6% felt that there were sufficient opportunities for dentists to receive training in tobacco cessation and prevention counseling. Finally, 84% agreed that tobacco cessation counseling should be given equal priority alongside dental treatment (Table 2).

In terms of perceived barriers to tobacco cessation counseling (TCC), 86% of participants believed that patient resistance to TCC in the dental setting was a significant obstacle. 88% felt that patients would not respond positively to such counseling, and 76% viewed the discussions as too time-consuming. Additionally, 86% were concerned that patients might leave their practice if advised to quit tobacco use. A staggering 98% reported feeling they lacked formal training to introduce Nicotine Replacement Therapy (NRT) to patients, and 66% identified the availability of NRT as another barrier (Table 3).

According to the bivariate logistic regression analysis, males were 4.545 times more likely to practice Nicotine Replacement Therapy (NRT) than females, based on the odds ratio. Additionally, participants with a BDS qualification were more likely to practice NRT compared to those with an MDS qualification. Among the study subjects, those with more than 5 years of practice had an odds ratio of 3.083, indicating that they were three times more likely to practice NRT than those with less than 5 years of experience (Table 4).

## **Discussion**

The present study was conducted to thoroughly evaluate various aspects of tobacco cessation counseling and Nicotine Replacement Therapy (NRT) among private dental practitioners in Northern India. It examined the attitudes, practices, and perceived barriers of the respondents. According to the author's best knowledge,

Table 1. Practice regarding TCC

	No	Yes	Don't Know
Do you ask the patient if they have ever used tobacco?	10 4%	240 96%	0 0%
Do you ask patients what kind of tobacco they use?	20 8%	225 90%	5 2%
Do you provide counseling to your patients for tobacco cessation?	47 18.80%	173 69.20%	30 12%
Do you inform patients about how tobacco affects their overall health?	250 100.00%	0 0%	0 0%
Do you inform consumers about how tobacco affects their oral health?	10 4%	240 96%	0 0%
Do you educate patients regarding the advantages of quitting tobacco?	20 8%	225 90%	5 2%
Do you give patients self-help tobacco cessation booklets in the waiting area?	220 88%	20 8%	10 4%
Do you have tobacco-related posters in the waiting area?	200 80.00%	45 18%	5 2%
Do you help patients who are planning to discontinue?	45 18%	200 80.00%	5 2%
Do you provide patients with nicotine replacement therapy?	174 66%	51 20.40%	25 10%
Do you use FTND scale to assess nicotine dependence	100 40.00%	20 8%	130 52%
For patients with low dependence, I prescribe either 2 mg of gum or 14 mg of patch or 1 mg lozenge.	80 32%	40 16%	130 52%
For patients with moderate dependence, I prescribe a 21 mg patch combined either with 1 mg lozenge or 2 mg gum.	85 34%	3 1.20%	162 64.80%
For patients with high dependence, I prescribe a 21 mg patch combined either with 2 mg lozenge or 4mg gum.	85 34%	2 0.80%	163 65.20%
Do you monitor the patient's progress toward quitting ?	130 52%	85 34%	35 14%
Do you direct patients to right resources for seeking assistance in quitting ?	80 32%	150 60.00%	20 8%

this is the first study to simultaneously assess multiple factors related to tobacco cessation counseling among private dental practitioners.

Despite widespread efforts to reduce tobacco use, it continues to rise globally. It is essential to both discourage tobacco consumption and promote cessation to limit its use. Interventions within dental settings are more effective in helping patients quit smoking compared to standard medical care [8]. According to clinical practice guidelines, patients should receive brief interventions, where their tobacco use is assessed, and advised to quit [9]. Research has shown that counseling is an effective, evidence-based approach to reducing tobacco use. When patients are ready to quit, clinicians can provide tailored support and follow-up care. However, there is still insufficient research to determine which specific interventions or strategies are more effective than basic counseling alone [8].

A comprehensive understanding of attitudes, behaviors, perceived challenges, and demographic factors

such as age and gender is crucial. Many studies have highlighted that behavior and attitude are key factors in successfully implementing clinical practice guidelines. The findings of this study revealed a positive attitude towards tobacco cessation counseling (TCC) among more than 50% of private dental practitioners. These results align with studies by Singla A et al. and Awan KH et al. [10, 11]. While the findings are promising, there is still room for improvement. Although 62.3% of participants expressed confidence in providing behavioral counseling, only 20.23% felt confident in offering Nicotine Replacement Therapy (NRT). This suggests that while dental professionals recognize the effectiveness of NRT in helping patients quit, many feel unprepared to provide it. Furthermore, only 5.65% of private practitioners felt that sufficient opportunities for training in tobacco cessation were available to them.

In this study, > 90% of dentists inquired about their patients' tobacco use and the type of tobacco consumed.

Table 2. Attitude Regarding TCC

	Not at all	A little bit	To some extent	Considerable extent	Greater extent
A dentist's obligation to provide tobacco cessation counseling	0 0%	60 24%	65 26%	65 26%	60 24%
A dentist can effectively offer counseling on tobacco cessation.	5 2%	85 34%	100 40.00%	45 18%	15 6%
I am assured to effectively provide counseling for tobacco cessation.	35 14%	60 24%	80 32%	50 20.00%	25 10%
Patients anticipate advice on quitting from dentists.	35 14%	85 34%	75 30%	45 18%	10 4%
The combination of NRT and behavioral counseling raises the success rate of breaking the habit.	10 2%	100 44%	60 24%	40 16%	30 12%
Instead of abrupt complete abstinence, it is preferable to gradually reduce nicotine dependence.	35 14%	50 20.00%	35 14%	75 30%	55 22%
I am confident in my ability to provide NRT.	153 61.20%	47 18.80%	25 10.00%	20 8.40%	5 2%
I believe in patient's ability to alter tobacco habit .	5 2%	50 20.00%	70 28%	70 28%	55 22.00%
Dentists have sufficient possibilities to receive training for tobacco cessation and counseling.	156 62.40%	80 32%	9 3.60%	5 2%	0 0%
Tobacco cessation should be prioritized just as much as dental treatment.	10 4%	30 12%	80 32%	75 30%	55 22%

Table 3. Perceived Barriers for TCC

	Disagree	Tend to agree	Totally Agree
Patient's reluctance to TCC in a dental setting	35 14%	145 58%	70 28%
Patients would not react favourably	30 12%	155 62%	65 26%
The conversations take up too much time.	60 24%	100 40.00%	90 36%
Patients may quit the practice if they receive counseling to stop using tobacco	35 14%	105 42%	110 44%
Lack of professional training to offer tobacco cessation for patients.	5 2%	30 12%	215 86%
Uncertain about the negative consequences of NRT	140 56%	85 38%	15 6%
Availability of NRT	85 34%	105 42%	60 24%

Table 4. Association of Socio Demographic Variables with Practice of NRT

		Odds Ratio	95.0% C.I.for Odds Ratio	
			Lower	Upper
Gender	Female	1.000 (Constant)	-	a-
	Male	4.545	0.647	31.913
Qqalification	BDS	1.000 (Constant)	-	-
	MDS	0.219	0.043	1.104
Years of Practice	5 or less	1.000 (Constant)	-	-
	More than 5 years	3.083	0.142	66.734

While 68.5% provided behavioral counseling, only 20.3% offered Nicotine Replacement Therapy (NRT). These findings are consistent with a study conducted by Bomble NA et al. [12]. Notably, among the 20.3% who offered NRT, 15.6% prescribed either 2 mg gum, 1 mg lozenge, or a 14 mg patch, while nearly 1% prescribed other NRT combinations, which may suggest a lack of consistency in prescribing practices. Additionally, 91.1% of participants did not assess the level of nicotine dependence in their patients.

The results of the study highlight that a lack of formal training is a significant barrier to offering Nicotine Replacement Therapy (NRT), along with patient-related factors such as poor attitude and unresponsiveness. These findings are consistent with studies by Pendharkar and Rajesh G. et al. [13, 14]. Overcoming these barriers is crucial for delivering effective tobacco cessation counseling. Addressing patient-related factors could involve implementing strategies to motivate patients to quit, such as providing pamphlets and educational materials in the clinical setting to enhance understanding and shift attitudes. Additionally, it is important to take concrete steps to improve dental professionals' skills in tobacco cessation counseling. However, further research is needed to assess the willingness and receptivity of dentists to learn more about tobacco cessation counseling, as indicated by their opinions and readiness to engage in further training [15].

The present study addressed the limitations of web-based surveys and achieved a high response rate of 78.12% while ensuring the privacy of the respondents. The scoring procedures for the scales and key questions were thoroughly documented, which can provide valuable insights for future research and help improve the quality of subsequent studies [16]. The findings of this investigation can help identify the factors that either encourage or hinder private practitioners from engaging in tobacco cessation counseling, thus aiding in more effective planning and implementation. It is important to view these findings as opportunities for dental professionals to drive meaningful and impactful changes in public health [17]. Additionally, by actively engaging with their communities, dental professionals should be encouraged to contribute to the creation of tobacco-free environments.

It is important to consider the limitations of this study when concluding. Since this study is based on a questionnaire, it may be subject to biases such as social desirability, acquiescence, and the distortion of negative responses [18]. To confirm these findings, larger sample sizes and further research are needed. Additionally, the cross-sectional design of this study is a limitation, as it does not provide insights into the predictability of the results. To better understand the causal relationship between tobacco cessation counseling and its influencing factors, longitudinal studies with a more diverse sample would be necessary.

In conclusions, Nicotine addiction remains the primary barrier to long-term smoking cessation. Research shows that Nicotine Replacement Therapies (NRTs) can increase the success rate of quitting by 50% to 70% [19]. However, private dental practitioners, who are not typically affiliated

with academic institutions, may consider NRT and tobacco cessation as low-priority areas. Therefore, it is crucial to provide training in these areas to enhance their ability to support patients. Another significant challenge in private practice is the concern that patients may leave the practice if encouraged to quit smoking. It is essential for oral health care teams to publicly recognize smoking cessation as a key aspect of dental care and to acknowledge that helping tobacco users quit is an integral part of their professional responsibilities.

## Author Contribution Statement

All authors contributed equally in this study.

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