

Identifying the Potential Determinants of Tobacco Counseling Implementation among Oral Health Professionals of India: A Cross-Sectional Survey

Neha Agrawal¹, Sarah Mariam², Narinder Dev Gupta¹, Rajendra Kumar Tewari³, Juhi Gupta⁴, Amit Kumar Garg⁵

¹Department of Periodontics and Community Dentistry, Dr. Z. A. Dental College, Aligarh Muslim University, Aligarh, UP, India.

²Department of Periodontology and Oral Implantology, Bharati Vidyapeeth Deemed to be University Dental College and Hospital, Pune, India.

³Department of Conservative Dentistry and Endodontics, Dr. Z. A. Dental College, Aligarh Muslim University, Aligarh, UP, India.

⁴Department of Oral Pathology/Oral Medicine & Radiology, Dr. Z. A. Dental College, Aligarh Muslim University, Aligarh, UP, India.

⁵Department of Conservative Dentistry and Endodontics, Maharana Pratap College of Dentistry & Research Center, Madhya Pradesh Medical Science University, Jabalpur, Gwalior, MP, India.

Correspondence: Neha Agrawal, Dept of Periodontics and Community Dentistry, Dr. Z. A. Dental College, Aligarh Muslim University, Aligarh, UP, India. **E-mail:** dr.n_agrawal@yahoo.co.in

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ABSTRACT

Objective: To identify the potential determinants of tobacco counseling implementation among oral health professionals in India. **Material and Methods:** A cross-sectional survey was carried out among the 298 dentists of Aligarh and Gwalior. The questionnaire used in the study had sections on dentists' sociodemographic data and a 35-item questionnaire to assess the potential determinants of tobacco cessation counseling. Descriptive statistics were carried out, and a Chi-square test was utilized to determine the association. P-value <0.05 was considered statistically significant. **Results:** Domains "knowledge", "Professional Responsibility and Identity", and "Remembrance, awareness, and judgment" showed a statistically significant correlation with most tobacco cessation counseling behaviors. In addition, undergraduate education received in Tobacco Cessation counseling, and Continuing education received in Tobacco Cessation counseling had significantly impacted the practice of tobacco cessation counseling (p=0.02 and 0.04, respectively). **Conclusion:** This study suggests that "Knowledge", "Professional Responsibility and Identity" and "Remembrance, awareness, and judgment" are the potential determinants that could be used to design effective strategies to enhance tobacco counseling among dentists in India.

Keywords: Knowledge; Tobacco Use Cessation; Dentists; Smoking; Health Education.

Introduction

Tobacco use is among the leading preventable causes of premature morbidity and mortality globally. It is among the most significant public health threats globally and has been recognized as an epidemic, killing more than 7 million individuals yearly. Direct tobacco usage affects more than 6 million people, while second-hand smoke (SHS) impacts 0.89 million non-smokers [1].

The problem of tobacco use is worsening in India, and the prevalence of tobacco consumption is varied and unequal throughout the country. Of the estimated 28.6% of tobacco use in India, only 10.7% of tobacco consumption is cigarettes and bidis, whereas 21.4% is used in smokeless tobacco products [2]. India harbors 12% of the tobacco smokers of the world (267 million), with around 1 million tobacco-related deaths per annum. Smoking and exposure to second-hand smoke take the life of about 0.93 million people per year (IHMT 2016) [3]. Smokeless tobacco contributes to an additional 0.02 million individuals' deaths in India annually, corresponding to 74% of the global burden of smokeless tobacco [4].

Tobacco abuse cessation and prevention are crucial to lessen tobacco-related mortality and morbidity, as its insufficiency may lead to added 160 million global deaths amongst smokers by 2050. Therefore, capacity-building strategies for screening, counseling, and strengthening existing healthcare facilities are the pressing priority [5].

The deteriorating effects of tobacco consumption on general health and oral health-endangering human lives cannot be overlooked. Tobacco abuse significantly affects oral health, ranging from harmless staining of teeth to severe life-threatening diseases such as oral cancer [6,7]. Dentists have the greatest access to healthy tobacco users among the different health professionals in the healthcare framework. As dental treatment is often based on frequent and prolonged visits, it provides a significant opportunity to contact the patient for a more extended time and subsequently start and support tobacco cessation practices. Therefore, dental practitioners are in a prime position among healthcare professionals in preventing and fighting the adverse effects of tobacco smoking. It is also believed that more than half of smokers see the dentist at least once a year [8]. Dental practitioners have the experience and ability to recognize the harmful oral health impacts of tobacco smoking, including premalignant and malignant lesions [9]. Exploration of the literature has indicated that dental providers are very much aware of the detrimental outcomes of tobacco use but often lack conviction in helping patients to stop tobacco use [10]. This lack of confidence may stem from a lack of knowledge and skills, time, the greater perceived complexity of cessation protocol, and doubts about the effectiveness of counseling [11,12].

Most studies regarding tobacco counseling and oral health professionals have concentrated on barriers to Tobacco Cessation counseling [13,14]. However, the evidence of potential determinants that could be used to design effective strategies to enhance tobacco counseling among dental students is scarce. Also, regardless of the considerable number of behavior change theories and implementation assessments, our knowledge of why specific interventions are more successful than others remains inadequate because it is still unclear how successful interventions produce their effects. Thus, it is essential to prepare interventions based on key factors influencing their counseling behaviors to enhance oral health care professional adherence to Tobacco Cessation counseling activities.

The prevalence of tobacco use in smoking and smokeless form is relatively high in Uttar Pradesh. 23.1% of men, 3.2% of women, and 13.5% of all adults currently smoke tobacco, and 42.6% of men, 15.2% of women, and 29.4% of all adults in Uttar Pradesh use smokeless tobacco [15]. Therefore, this study was carried out to identify the potential determinants of tobacco counseling implementation among dentists in India.

Material and Methods

Ethical Considerations

Ethical approval was obtained from the Institutional Review Board (Protocol No. 426/FM dated 04/01/19). Informed consent was taken from all the participants before the commencement of the study. The involvement of the participants in the study was voluntary, and the confidentiality of data was ascertained.

Study Design and Sample

A cross-sectional survey was carried out among the 327 dentists working as academicians or clinicians or both in Aligarh and Gwalior from February 2019 to August 2019. A convenient sampling method was utilized. Record of all the enrolled dentists, registered at Chief Medical Office (CMO), District Hospital, Aligarh and Gwalior and dental Colleges personnel and private clinicians was obtained from respective Institutions, hospitals, and local Indian Dental Associations and they were contacted telephonically and through emails to be part of the study. Informed consent was obtained from all the study participants through emails. Participants who did not give consent or incompletely filled performance were excluded from the study. Requests were made to the dentists to fill out the questionnaire within two weeks and they were called again once before the deadline. So, the final sample size reached was 298, generating a response rate of 91.13%.

Questionnaire

The questionnaire used in the study was in the English language. It consisted of sections on dentists' sociodemographic data, questions regarding years of experience, Participants' tobacco use history taking practice, and training in tobacco cessation counseling. To assess the potential determinants of tobacco cessation counseling, the second section contained a 35-item questionnaire that was based on a previously developed and validated instrument to cover the core concept of tobacco cessation guidelines approved nationally and internationally [16]. The questionnaire was adapted to the need of the study to suit the Indian situation. In the questionnaires, the items were assigned under appropriate theoretical domains. The 12 theoretical key domains identified as impacting the dentist's behavior were: "Knowledge", "Skillfulness", "Professional Responsibility and Identity", "Opinion about Abilities", "Beliefs about the outcome", "Motivation and Aim", "Remembrance, Attention, and Decision Processes" "Environmental Circumstance and Resources" "Social impact", "Feelings", "Behavioural Guideline", and "Nature of the Behaviours". These domains gave necessary clarifications of current behaviors and an explanation of what steps can be taken to achieve positive behavior change.

Domain scores were provided on the basis of responses assessed on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). The total score for each domain was calculated and divided by the maximum score for the given domain and valued as a percentage (0-100 percent).

Age, sex, work experience, professional qualification, undergraduate education received in tobacco cessation counseling, and continuing education received in tobacco cessation counseling were all evaluated using the dichotomized responses as Effective and Not Effective.

Questionnaire Validation

The questionnaire was pretested on 30 dentists who were excluded from the main study and included 10% of the study sample for assessment of reliability and validity. The reliability of the questionnaire was evaluated utilizing test-retest reliability and the internal consistency of the questionnaire was determined by

Cronbach's-alpha (α). In addition, construct validity of the questionnaire was assessed using Spearman's correlation coefficient between individual domains and five As of tobacco cessation counseling guidelines.

Data collection

The dentists were provided with an explanatory description of the study and instructions to participate. Requests were made to the dentists to fill the questionnaire within two weeks and were called again once before the deadline.

Statistical Analysis

The data were assembled and evaluated using Statistical Package for Social Sciences (SPSS) 16.0 (version 16 for Windows, IBM Corp., Armonk, NY, USA). Descriptive statistics were carried out, and a Chi-square test was utilized to determine the associations. P-value <0.05 was regarded as statistically significant.

Results

The questionnaire had good face validity, and the test-retest reliability value was 0.91. Internal consistency calculated through Chronbachs-Alpha (α) was found to range between 0.81 to 0.91. Domains “Knowledge”, “Professional Responsibility and Identity” and “Remembrance, awareness, and judgment” showed a statistically significant correlation with most tobacco cessation counseling behaviors. The weakest correlations were observed between “Environmental Circumstance and resources” and any Tobacco cessation counseling behaviors assessed (Table 1).

Table 1. Spearman’s correlation coefficients between theoretical domains and the five as from TUC counseling guidelines (n = 73).

Domains	Ask	Assess	Advice	Assist	Arrange
Knowledge	0.13*	0.24*	0.15*	0.35*	0.21
Skillfulness	0.32	0.41*	0.13	0.24	0.47*
Professional Responsibility and Identity	0.11	0.52*	0.46*	0.37*	0.40*
Opinion about Abilities	-0.04	0.24	0.14	0.19	0.15
Beliefs about outcome	0.03	0.16*	0.18	0.12	0.14
Motivation and aim	0.05	0.45*	0.11	0.13	0.43*
Remembrance, awareness and judgment	0.54*	0.42*	0.41*	0.46*	0.53*
Environmental circumstance and resources	0.06	-0.07	-0.03	-0.04	-0.02
Social impact	0.06	0.46*	0.23	0.11	0.17
Feelings	0.12	0.56*	0.15	0.13	0.11
Behavioural Guideline	0.05	0.13	0.12	0.09	0.03
Nature of the Behaviours	0.02	0.04	0.15	0.04	0.01

*Statistically Significant.

A total of 298 dentists responded to the questionnaire, generating a response rate of 91.13%. The participants' mean age and completed years of work experience were 34.5 ± 4.8 and 7.2 ± 3.7 , respectively. More females (56.8%) than males (43.2%) participated in this study. Only 32.5% received Continuing education in tobacco cessation counseling (Table 2)

Table 2. Sociodemographic characteristics of participants.

Characteristics	N (%)
Age Range (Years)	
20-29	76 (25.5)
30-39	202 (67.9)

40 and above	20 (6.6)
Mean age	34.5±4.8
Sex	
Male	129 (43.2)
Female	169 (56.8)
Professional Qualification	
Bachelor of Dental Surgery	190 (63.9)
Master in Dental Surgery	108 (36.1)
Work Experience	
0-4	111 (37.4)
5-9	119 (39.8)
10-14	55 (18.3)
15 and above	13 (4.5)
Mean work experience	7.2±3.7
Undergraduate education received in Tobacco Cessation counseling (%)	139 (46.5)
Continuing education received in Tobacco Cessation counseling (%)	97 (32.5)

Regarding tobacco use history-taking practices, as shown in Table 3, the majority (89.9%) of respondents reported frequently asking their patients about tobacco use, and a significant proportion (82.5%) advised them to quit tobacco use. Despite asking about patients' tobacco history, 59.9% assisted patients to quit smoking, and only 43.3 % arranged to follow up for quitting.

Table 3. Participants' tobacco use history taking practice.

Questions	Frequently	Infrequently	Never
	N (%)	N (%)	N (%)
Ask if patient uses tobacco	268 (89.9)	25 (8.5)	5 (1.6)
Advises patients to quit tobacco	246 (82.5)	46 (15.6)	6 (1.9)
Assesses patient's willingness to quit	217 (72.8)	59 (19.8)	22 (7.4)
Assists patients to quit tobacco	179 (59.9)	102 (34.3)	17 (5.8)
Arranges follow up to quitting	129 (43.3)	135 (45.4)	34 (11.3)

*The 5 A's of smoking cessation.

The present study's findings revealed that age, Undergraduate education received in Tobacco Cessation counseling, and Continuing education received in Tobacco Cessation counseling were significantly associated with the practice of tobacco cessation counseling ($p=0.03$, 0.02 and 0.04 , respectively). However, other factors like sex, work experience, and professional qualification were not significantly associated with the cessation practice, as depicted in Table 4.

Table 4. Factors influencing perceived cessation practice effectiveness.

Influencing Factors	Perceived Cessation Practice Effectiveness		p-value
	Effective N (%)	Not Effective N (%)	
Age Range (Years)			0.03*
20-29	52 (68.3)	24 (31.7)	
30-39	127 (62.9)	75 (37.1)	
>40	10 (49.8)	10 (50.2)	
Sex			0.12
Male	101 (59.5)	68 (40.5)	
Female	79 (60.9)	50 (39.1)	
Work experience (CYWE)			0.79
0-4	75 (67.6)	36 (32.4)	
5-9	83 (69.9)	36 (30.1)	
>10	40 (59.0)	28 (41.0)	
Professional qualification			0.38

BDS	119 (65.6)	20 (34.4)	
MDS	54 (67.8)	12 (32.2)	
Undergraduate education received in TUPAC counseling			0.02*
Yes	96 (68.9)	43 (31.1)	
No	53 (33.3)	106 (66.7)	0.04*
Continuing education received in TUPAC counseling			
Yes	66 (68.2)	31 (31.8)	
No	93 (46.3)	108 (53.7)	

*Statistically Significant.

Discussion

Identifying factors that are associated with tobacco cessation efforts is essential as this could help prepare the strategy more likely to assist tobacco users in quitting, as well as helping to optimally utilize the healthcare resources and redesign the tobacco policies [17]. However, although several factors have been studied extensively, no consistent determinants based on the theoretical framework of smoking cessation have been identified in India. Therefore, this study was carried out among oral healthcare professionals in North India.

Our findings showed that most North Indian oral health care professionals asked and advised patients to quit tobacco, but assisting in stopping and arranging follow-up services was not well performed. Theoretical domains “knowledge”, “Professional Responsibility and Identity” and “Remembrance, awareness, and judgment” were identified as potential determinants for the implementation of TUC counseling guidelines among oral health professionals.

In this study, more females than males (56.8% *versus* 43.2%) participated, which is in contrast to other studies carried out in Nigeria [18], Brazil [19], and China [20], which reported slightly more males among participants. There was no statistically significant difference between gender regarding the perceived cessation practice effectiveness. This finding contrasts with the study conducted in North London [21] and Canada [22], where female dentists were more likely to provide smoking cessation support. The probable reason behind this finding is that the implementation of evidence-based practice (EBP) depends on human behavior rather than gender [23].

This study revealed that younger dental clinicians were more likely to give smoking cessation advice than their older colleagues. This finding was in line with the other studies [22,24]. In recent years, the dental undergraduate curriculum has been updated, including various facets of tobacco use and its cessation. Tobacco use among patients is addressed at the Departments of Oral Medicine and Radiology, Periodontology and Public Health Dentistry (Dental Council of India, 2007 and 2018). Therefore, younger dentists qualified in the last ten years had received more preventive issues training than older dentists trained in a more traditional curriculum. This explains why younger dentists in our sample were more likely to provide smoking cessation support than their more senior colleagues. It also describes the greater Perceived Cessation practice effectiveness among oral health care practitioners with experience of 5-14 yrs, although not statistically significant.

In the present study, most participants reported that they frequently ask (89.9%) their patients if they use tobacco. This finding was considerably higher than reported in other studies carried out in Southwest Nigeria (86.3%) [18], the United States (60%) [25], and Kuwait (75%) [26]. However, this result is lower than reported in other studies [27,28]. In this study, other As such as “Assist” and “Arrange” have been less frequently implemented, which was in line with other studies [29,30]. It may have resulted from inadequate tobacco cessation counseling education at undergraduate and continuing education regarding tobacco cessation practices after that.

In the present study, undergraduate education for Tobacco cessation counseling was received only by 46.5 percent, higher than reported in other studies, and continuing education for Tobacco cessation counseling by only 32.5 percent, which was lower than in other studies [18,31]. This shows that it's a worldwide problem. Therefore, comprehensive Tobacco Cessation Education should be integrated into the dental curriculum in a more sensitive, practical, appropriate, and relevant manner. The education should improve the dental students' ability to identify, counsel, prepare tailor-made quit plans, and arrange follow-up visits for tobacco users. This method would enhance their knowledge, skillfulness, and abilities, thereby enhancing their confidence, perceived effectiveness, and increased rate of implementation of tobacco cessation guidelines.

Furthermore, the competence attained should be appraised through written or oral tests, video observations, and assessments like Objective Structured Clinical Examination (OSCE) [32,33]. The curriculum should provide knowledge through lectures, problem-based learning, rehearsing relevant counseling techniques, role-play, pre-clinical and clinical instructions, peer mentoring, and patient care [34,35]. Tobacco use cessation and prevention should be Integrated and made necessary as a component of continuing dental education programs to improve adherence and confidence in providing cessation counseling [9,36].

The results of our study showed that “Knowledge”, “Remembrance, awareness and judgment”, and “Professional Responsibility and Identity” were the possible determinants for Tobacco cessation counseling. The results were in line with another study, except for “Knowledge”, which was the extra domain affecting the adherence to the guidelines in the present study [18]. According to the Precaution Adoption Process Model (PAPM) model, different levels of awareness and motivation regarding their health behaviors are essential to determine each particular individual's current status [37]. In addition, participants with more significant role identities also had stronger intents to utilize the guideline and provided more quit counsel, indicating that role identity and responsibility was an important variable [38].

Undergraduate education and Continuing education received in Tobacco Cessation counseling were significantly associated with the practice of tobacco cessation counseling. These strategies will enable dentists to identify, assist in preparing a custom-tailored quit strategy, and observe with proper follow-up [9].







There were a few limitations in the study. First, the study was conducted among dentists contamination of investigation might have occurred. Although we had taken the precautions to not reveal the study protocol before the study, Dentists may have discussed the questionnaire among themselves during the study period.

Second, theoretical-domain approaches don't fundamentally recognize the causal cycles promoting behavior change. Our study isn't an endeavor to replace theories but to distinguish hindrances, give significant clarifications to execution challenges, and give a proof base to planning tobacco cessation interventions. Despite these limitations, theoretical-domain approaches can help manage populace well-being mediations by providing a complete clarification of how various factors influence successful implementation.

Conclusion

Theoretical-domain approaches are essential to explain factors impacting the usage and sustainability of evidence-based interventions directed towards population health. This study found that “knowledge”, “professional responsibility and identity”, and “remembrance, awareness, and judgment” are all relevant contributors for developing effective tobacco counseling tactics among Indian dentists. The identification of factors may positively impact dentists' behavior, thereby, their cessation practices. This theoretical-domain approach may give a significant evidence base to future research in various settings and specialized disciplines.

Authors' Contributions

NA		https://orcid.org/0000-0001-6034-9675	Conceptualization, Formal Analysis, Data Curation, Writing - Original Draft and Writing - Review and Editing.
SM		https://orcid.org/0000-0002-2960-5551	Conceptualization, Data Curation and Writing - Original Draft.
NDG		https://orcid.org/0000-0002-5669-5716	Conceptualization, Methodology, Supervision and Writing - Original Draft.
RKT		https://orcid.org/0000-0002-6116-5592	Formal Analysis, Resources, Writing - Review and Editing and Supervision.
JG		https://orcid.org/0000-0002-1370-4299	Conceptualization, Methodology and Writing - Original Draft.
AKG		https://orcid.org/0000-0003-1561-7866	Data Curation, Writing - Original Draft and Writing - Review and Editing.
All authors declare that they contributed to critical review of intellectual content and approval of the final version to be published.			

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Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

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