Original Article

Tobacco cessation effects on oral health by group and individualized motivational therapy in 12 to 18 years old boys – A randomized controlled study

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ABSTRACT

Background/Introduction: Adolescents are the most vulnerable population to initiate tobacco use. It is now well established that most of the adult users of tobacco start tobacco use in their childhood or adolescence. **Aim:** The purpose of this study is to compare and evaluate the Group Motivational Therapy (GMT) and Individualised Motivational therapy (IMT) for tobacco cessation in adolescents. **Methodology:** Oral screening was done in a village named Vehra Khadi near Anand. One hundred and eight adolescents aged between 12 and 18 years were included in the study. They were randomly divided into three groups namely Group 1 - Interventional group consisting of 36 adolescents who were given GMT; Group 2 - Interventional group consisting of 36 adolescents who were given IMT; and Group 3 -3 6 age - matched Negative control group. Hence, a total sample size of 108 was evaluated for tobacco consumption frequency, passive smoking, gingival index, and stain index and followed up for 9 months for the effect of both interventional group as well as positive control. **Results:** Frequency of tobacco consumption was reduced from baseline to 9 months' follow-up for both the interventional groups, which was statistically significant with <0.001 percent *P* value showing 84.38% change by intervention 1 and 98.30% in intervention 2. **Conclusion:** Group and individualized motivation serves as an effective means for tobacco cessation among adolescents. Improvement in gingival health and reduction of the tobacco consumption was observed with motivational intervention.

KEYWORDS: Counseling, dental stains, indices, motivation, reminder therapy, tobacco cessation

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Introduction

Adolescence phase of a growing child embarks to an important oral health-care period. This period of growth and development witnesses various anatomical, physiological, and psychological changes that may affect personal oral hygiene care. The prevention of dental disease is certainly one of the pivotal concerns of the dental clinician who is concerned for adolescents and responsibility of adolescents for dealing his/her own Oral Health Program should be emphasized.[1] According to the WHO, the age that falls in adolescent transition period is 10–18 years. They also suggest that it is global monitoring age, and required global

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assessments of oral health status.[2] Adolescence is the stage of identity versus role confusion, they are more prone to get influenced by their peers and role models. It is a recognized fact that most of the adult consumers got indulged in substance abuse during youth life.

Tobacco intake midst the youth is now an alarming condition and they are susceptible targets of tobacco business. Teenagers are the most vulnerable population and may indulge in tobacco use. Various studies from year 2017 showed that there is consumption of tobacco at an early age of 15 years in the USA. The data displayed in the USA revealed that people diagnosed for oral cancer in their 2nd or 3rd decade of life had started consuming tobacco and betel nut-based carcinogenic products in an early age wherein, in India, the tobacco consumption starts at very early age.[3] India is known to be World Number three producer in tobacco and Gujarat falls in the belt of growing highest tobacco in India.[4] Adolescents often are drawn toward the tobacco products because of invigorating marketing. Young adults fall into this habit due to early availability of such products locally and the initiation age for tobacco consumption has been dropped substantially.

According to Global Youth Tobacco Survey (GYTS) India 2016–2017, it has showed decrease in tobacco consumption use from 54% to 28% from the past decade.[4] The reason being implementation of Tobacco-Free School (TFS) Guidelines. However, 28% is considered an alarming condition as tobacco consumption incidence. This ratio of tobacco consumption is fair enough to cause an increase in future oral health-related problems.[5] Theories by Casey *et al*. in 2008;[6] Somerville in 2010[7] have suggested an "imbalance" in brain development underlying a predisposition for jeopardy behavior, including substance use, during adolescence, with emotion and reward systems (e.g., amygdala and nucleus accumbens) developing before cognitive control systems (e.g., prefrontal cortex). Preventive approaches are a new way of dealing problem. There is a need to focus on mainly two areas amongst adolescents, which is the involvement of habit at an early age and associated aggravating factors. The various products available in India are to be monitored well which could be used to compact with this jeopardy. However, documented problems have been noted by few controlled interruption trials for adolescents regarding studies lacking promising methodologies and action research.[8]

Among various adolescent tobacco cessation programs, motivational augmentation interventions are most extensively used methods. Group motivation is one of the known and effective methods for tobacco cessation. It is an indigenous method used for counseling of mass population to achieve the required consequences. Group therapy is a form of remedy where folks with alike issues are brought together with a specialized licensed therapist. The therapist carries forwards the session, but commonly everybody contributes in certain manner such as talking to themselves and listening to each other.[6]

Motivation through personal counseling is an ephemeral, patient-centered method focused on resolving equivocation regarding quitting and increasing self-efficacy for change. Personal counseling uses an unprejudiced, commandment, and empathetic healing style that accentuates personal accountability for making judgments about adjustment and often integrates personalized opinion, intended to accurate normative confusions and amplify attentiveness of personally applicable significances of tobacco consumption. Many times, persons involved in such habits do not wish to come out in public and accept it. For such individuals, individualized counseling is important. Every individual requires a particular plan from the various options.[8] The present study aimed to assess Tobacco Cessation Effects on oral health by Group and Individualized Motivational Therapy (IMT) among boys of 12–18 years.

Methodology

A double-blinded randomized controlled trial was planned to determine which method is more operative for tobacco cessation among youths aged between 12 and 18 years. Prior authorization was obtained from the sarpanch of the village and "K. F Sarvajanik School," vehra khadi. Ethical approval was obtained from institutional ethics committee (SVIE/ON/DENT/BNPG16/D17023 dated: April 29, 2017). Informed written consent and assent was obtained in local language (Gujarati) after the purpose and nature of the research was explained to the participants and their parents. Adolescents included in the study as consumers of were age between 12 and 18 years consuming tobacco in any form-Tobacco and nonsmoking tobacco (smoke OR chew tobacco) at least two times in a week since 3 months. Healthy age-matched adolescents were included as negative control (Group 3). Physically disabled children and consumers who required urgent oral management and immediate referral were excluded from the study. Participants were further divided into three groups as shown in CONSORT flow diagram [Figure 1].

Randomization of samples

Sample allocation was done by lottery method. Name notes were made for all the consumers followed division of these name notes in three different bowls named as 12–14 years, 14–16 years, and 16–18 years to maintain age-matched groups. Two teachers from the school randomly picked 12 paper notes from 3 bowls to make a group of 36, respectively, for interventional

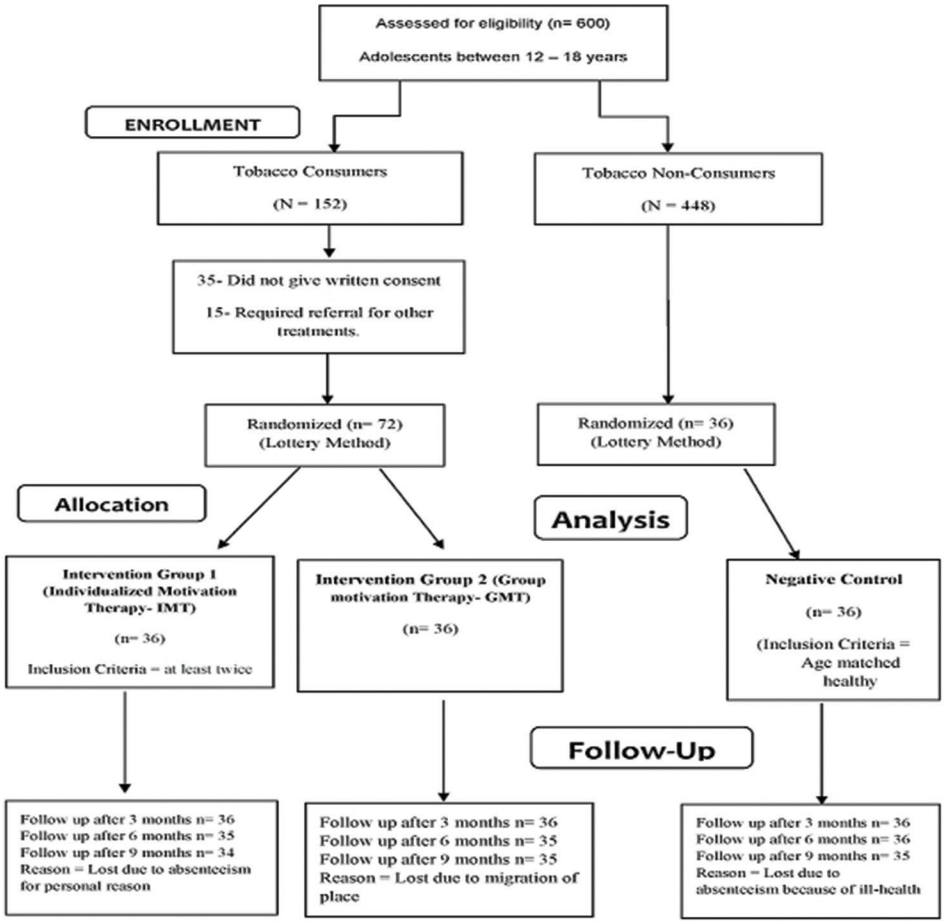

Figure 1: Consort flow diagram of the study

Groups 1 and 2. Once the interventional groups were made, age-matched healthy teenagers were selected for control group. Of 448 screened 148 consented to participate in study and 36 nonconsumers were selected by similar lottery method by the third teacher. This method was chosen so that each subject had an equal chance of being allocated to the study group.

Recording demographic details and gingival index

A pro-forma was designed for screening and demographic details which consisted two parts. The first part included the sociodemographic information and tobacco chewing habit details. The second part consisted of clinical examination of the subjects where gingival index according to Silness and Loe[9] and Smokeless tobacco stain index by Deshpande and Patel[10] was recorded. Scoring criteria for the same are mentioned in Table 1.

At the baseline, gingival status, and dental stains were evaluated by recording gingival index and using a periodontal probe and explorer. Inspection was carried out in ordinary day light by adolescents seated upright in a classroom setup with rested back. Autoclaved diagnostic instruments were used for intraoral examination. Primary investigator carried out all the dental investigation. Index recording and clinical examination was done by co-investigator at follow-up visits (at baseline, 3 months, 6 months, and 9 months) who was unaware of the group allocation. For documentation purpose, an assistant was trained who recorded the data.

Table 1: Smokeless tobacco stain Index by Deshpande and Patel (2018)[10] scoring criteria for each tooth in anterior and posterior region

	Scores
For Anterior Teeth - Buccal/Palatal	
No stains visible	0
Stains on Fissures	1
Stains covering 1/3rd Labial and Palatal surface	2
Stains covering 2/3rd Labial and Palatal surface	3
Stains on all the surface	4
For Posterior Teeth	
No stains visible	0
Stains on Pits and fissures	1
Stains covering 1/3rd Buccal and lingual surface	2
Stains covering 2/3rd Buccal and lingual surface	3
Stains covering on all the surfaces	4

The tobacco cessation therapy was carried out by the primary investigator in the following manner for different study groups.

Group 1-(Motivation through personal counseling and parent counseling)

Motivational interviewing-A goal-oriented, patient-centered counseling for provoking cessation of habit was done by helping them to discover and determine the addiction [Figure 2]. Parents counseling-parents were sensitized about the later consequences of tobacco and need for their support for the termination of habit and avoiding passive smoking. Impartment of knowledge about the deleterious effects of passive smoking was done which unknowingly causes major health issues. They were requested to keep a strict check over their children and support them in every way for the termination of habit.

Figure 2: Counseling done by primary investigator for individualized motivation group (Group 1)

Figure 4: Health talk given by primary investigator (negative control group)

Group 2-(Group motivation through audio-visual aid)

Prescripted standardized motivational health talk was conducted [Figure 3]. The counseling session were utilized to impart knowledge regarding the harmful menaces of tobacco consumption on general and oral health. Orientation for better understanding regarding importance of oral health, consequences of substance abuse, and passive smoking was done with the help of audio-visual aids. PowerPoint presentations showing the harmful possessions of tobacco were shown. Video clips with patients' interviews were also shown for motivation of adverse effects.

Group 3-(Negative control group-health talk)

A scripted standardized health talk was given by introducing the detrimental effects of tobacco consumption on general and oral health [Figure 4]. Orientation was done for better understanding regarding importance of oral health, consequences of substance abuse and passive smoking with the help of audio-visual aids. Adolescents were praised and applauded for not picking up the habit.

Patient and public involvement

The children were motivated and were involved in the study by writing their names voluntarily on the

Figure 3: Counseling done by primary investigator for group motivation (Group 2)

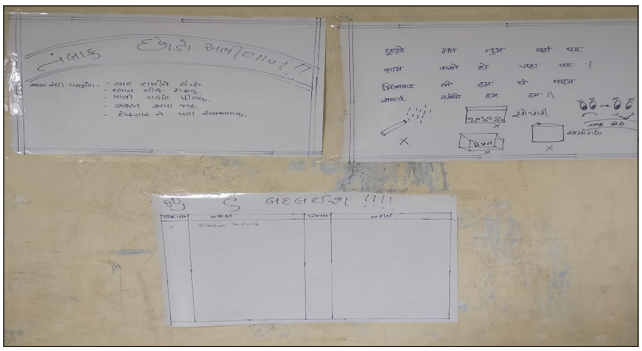

Figure 5: Poster with slogans on the walls of the school

posters only if they were willing to change and quit their habit. Banners and posters stating attractive anti-tobacco slogans were pasted on the walls of the school [Figure 5]. For encouraging and volunteering the pupils, an empty poster titled "I will definitely change" was pasted on the walls of the school. The tobacco consumers were asked to write their name only if they willing to change and quit their habit [Figure 6].

Statistical methods

Data were tabulated for different tests and inferential analysis was carried out. Chi-square test was used to check the association between the various categorical variables in the study like area of staining with the different groups of intervention. Friedman test is the nonparametric alternative to the one-way ANOVA with repeated measures which was used to test for differences between groups as the dependent variable being measured is ordinal that is frequency of tobacco usage in different intervention groups. Cochran *Q*-test was used to check effectiveness of interventional Groups 1 and 2 on gingival index. It was also used to determine if there are differences on a dichotomous dependent variable between three or more related groups, so as to infer whether passive smoking has reduced or not in different intervention groups.

Results

The present study was initiated with 36 participants in all three groups at baseline whereas on follow-up visits, we lost 4 participants [Figure 1]. Hence, the analysis of all the data was finally carried out for sample of 104. Among 69 tobacco users, 43 (62.31%) subjects were using for <5 years while remaining 26 (37.69%) were using it since more than 5 years. Out of 69 tobacco users, 9 (13.04) subjects were consuming "SR 1" Scented tobacco + mixture (Raag)/(Paan Villas), 10 (14.5%) were using Betel nut (Karamchand/ Rajnigandha) while remaining 50 (72.46%) were using Vimal + Zafrani Zarda.

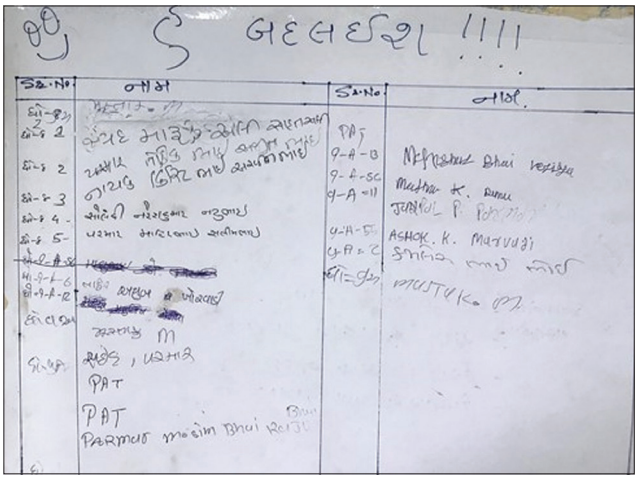

Figure 6: Self-motivation poster with names written by pupils showing willingness to change

Tobacco usage frequency was evaluated in both intervention and negative control groups. In negative control group, there was not a single sample having tobacco habit, hence its effectiveness was not calculated. Tobacco usage frequency was comparatively high in baseline, which over a period of time decreased in both intervention Group 1 and 2. However, effectiveness of intervention was measured using Friedman Test. Intervention Group 2 was found to be more effective due higher test statistics and comparatively favorable sum of reduction in descriptive statistics [Table 2].

Gingival score interpretation for intervention Groups 1 and 2 revealed that there was significant difference observed after 9 months as depicted in Table 3.

Majority of the samples were having stained teeth at cervical margins + proximal surfaces of anterior teeth with 64.7% in intervention Group 1 and 85.7% in intervention Group 2 [Table 4].

Whereas, 50% in intervention Group 1; and 57.1% in intervention Group 2, respectively were having stained pits and fissures in posterior teeth [Table 5].

Discussion

The rationale of this randomized controlled trial was to associate group motivation therapy with IMT among adolescents aged between 12 and 18 years for tobacco cessation. This study also associated oral hygiene status with tobacco consumption by recording gingival indices before, during, and after tobacco cessation program.

Age group

According to Chambers *et al*.[11] adolescents are known to be predominantly vulnerable to initiate substance use which further progresses to harmful consequences. Dopaminergic systems are significantly reorganized in the adolescent brain, with decrease in dopamine in striatal configurations like nucleus accumbency, in the context of limited inhibitory control, potentially precipitating high-risk behaviors to compensate for dopaminergic void. Casey and Jones,[12] within the window of this imbalance, adolescents' decisions may be based on brain processes favoring immediate reward over consideration of longer term consequences. According to Baker in 2015;[13] Blakemore and Mills in 2014;[14] van Duijvenvoorde *et al*. in 2016[15] supported the theoretical model in experimental studies, which hypothesized that a mismatch in the timing of maturation between subcortical regions (involved in affect and reward processing) and prefrontal regions (involved in cognitive control) underlies the increase in risk-taking and sensation-seeking behavior's observed during adolescence.

Table 2: Tobacco usage frequency of participants in intervention Group 1 (individualized motivational therapy) and intervention Group 2 (group motivational therapy)

Frequency of usage	Intervention groups	Baseline, *n* (%)	3 months, *n* (%)	6 months, *n* (%)	9 months, *n* (%)
0 times	Group I - IMT	0 (0)	6 (17.6)	11 (32.4)	15 (44.1)
	Group II - GMT	0 (0)	6 (17.1)	14 (40.2)	26 (74.2)
1 time	Group I - IMT	0 (0)	2 (5.9)	4 (11.8)	7 (20.6)
	Group II - GMT	0 (0)	10 (28.5)	15 (42.8)	8 (22.8)
2 times	Group I - IMT	9 (26.5)	11 (32.4)	12 (35.3)	8 (23.5)
	Group II - GMT	14 (40)	12 (34.2)	5 (14.2)	1 (2.8)
3 times	Group I - IMT	12 (35.3)	7 (20.6)	2 (5.9)	2 (5.9)
	Group II - GMT	13 (37.1)	3 (8.5)	1 (2.8)	0 (0)
4 times	Group I - IMT	6 (17.6)	6 (17.6)	4 (11.8)	1 (2.9)
	Group II - GMT	4 (11.4)	4 (11.4)	0 (0)	0 (0)
5 times	Group I - IMT	6 (17.6)	1 (2.9)	0 (0)	0 (0)
	Group II - GMT	4 (11.4)	0 (0)	0 (0)	0 (0)
6 times	Group I - IMT	0 (0)	0 (0)	0 (0)	0 (0)
	Group II - GMT	0 (0)	0 (0)	0 (0)	0 (0)
7 times	Group I - IMT	0 (0)	0 (0)	1 (2.9)	1 (2.9)
	Group II - GMT	0 (0)	0 (0)	0 (0)	0 (0)
8 times	Group I - IMT	1 (2.9)	1 (2.9)	0 (0)	0 (0)
	Group II - GMT	0 (0)	0 (0)	0 (0)	0 (0)

*Freidman's test. *P*<0.001=Statistically significant. IMT=Individualized motivational therapy, GMT=Group motivational therapy

Table 3: Measuring effectiveness of interventions for changing gingival index status for Intervention Group 1 (individualized motivational therapy) and intervention Group 2 (group motivational therapy)

Groups	GI status, *n* (%)	Baseline, *n* (%)	3 months, *n* (%)	6 months, *n* (%)	9 months, *n* (%)	*P**
Intervention 1 (IMT)	Score 1	5 (14.2)	5 (14.2)	5 (14.2)	16 (45.7)	<0.001
	Score 2	30 (85.7)	30 (85.7)	30 (85.7)	19 (54.2)	
	Total	35 (100.0)	35 (100.0)	35 (100.0)	35 (100.0)	
Intervention 2 (GMT)	Score 1	5 (14.7)	5 (14.7)	5 (14.7)	16 (47.1)	<0.001
	Score 2	29 (85.3)	29 (85.3)	29 (85.3)	18 (52.9)	
	Total	34 (100.0)	34 (100.0)	34 (100.0)	34 (100.0)	

*Cochran Q test, *P*<0.001. IMT=Individualized motivational therapy, GMT=Group motivational therapy

Table 4: The association between tobacco consumption interventional groups and stained area in anterior

	No stained area in anterior, *n* (%)	Cervical margins + proximal surfaces, *n* (%)	Cervical margins + proximal surfaces + ½ the labial surface, *n* (%)	All the surface, *n* (%)	Total, *n* (%)	*P**
Intervention 1 (IMT)	0	22 (64.7)	7 (20.5)	5 (14.7)	34 (32.6)	<0.001
Intervention 2 (GMT)	0	30 (85.7)	2 (5.7)	3 (8.5)	35 (33.6)	
Negative control	35 (100.0)	0	0	0	35 (33.6)	
Total	35 (33.6)	52 (50.0)	9 (8.6)	8 (7.6)	104 (100.0)	

*Chi-square test, *P*<0.001=Statically significant. IMT=Individualized motivational therapy, GMT=Group motivational therapy

Table 5: The association between tobacco consumption interventional groups and stained area in posterior

	No stained area in posterior, *n* (%)	Pits and fissures, *n* (%)	Pits fissures + cusp slopes, *n* (%)	Pits fissures + cusp slopes + palatal surface, *n* (%)	Buccal and palatal surface, *n* (%)	Total, *n* (%)	*P**
Intervention 1 (IMT)	0	17 (50)	7 (20.5)	4 (11.7)	6 (17.6)	34 (100)	<0.001
Intervention 2 (GMT)	0	20 (57.1)	11 (31.4)	0	4 (11.4)	35 (100)	
Negative control	35 (100.0)	0	0	0	0	35 (100)	
Total	35 (100.0)	37 (100.0)	18 (100.0)	4 (100.0)	10 (100.0)	104 (100.0)	

*Chi-square test, *P*<0.001=Statically significant. IMT=Individualized motivational therapy, GMT=Group motivational therapy

Study place and school guidelines

As the population area was a tobacco cultivating area of Gujarat, it was witnessed that tobacco selling and consumption was not considered abnormal. In the current research, the TFS Policy was assessed and the investigators and co-investigator imparted knowledge regarding it to the principal, teachers, and village head. TFS Policy, in 2005[16] was utilized as basis for

counseling session of adolescents in simplified manner so as to transmit relevant information and explanation provided explicitly. Chatterjee *et al*. (2017)[17] studied adherence of these policies in rural villages. His study findings suggested that only 11% of schools adhered to all 11 TFS criteria. Majority (72%) Had forbidden trade of tobacco in and within 100 yards of the school; however, in the current research, the tobacco vendor was just outside the school gate. All available tobacco products available there. In the study by Chatterjee *et al*.,[17] were 63% displayed anti-tobacco posters; and 59% expelled tobacco use in premises. The prime reason given by principal of school for use of chewable tobacco over smoking tobacco was that it comes in small pouches/sachets which can be easily hidden. Another reason which investigator observed would be that there were no posters available in the school regarding harm of tobacco; nevertheless, tobacco use was forbidden in the school premises. Investigator also made an observation of a shop near the school premises selling tobacco products. Anand NP *et al* (2013) estimated prevalence of hookah and related factors among high school students. Hookah users were 7.6%. Most of them heard first from friends about hookah (63.2%). They usually smoked (85.5%) in hookah lounges. These young children figured the hookah was better and more socially acceptable than cigarettes.[18]

Type, form, and frequency of consumption of tobacco use

Despite of the tobacco cultivating area, the maximum adolescents, i.e., 25 of them were consuming 3 pouches. Wherein adolescents between 15 and 18 years were consuming smokeless tobacco 4–5 times per day. An important factor responsible for more consumption of smokeless tobacco is easy and ambulatory use. Adolescents use smokeless tobacco easily as these forms can be kept hidden unlike smoked forms. Varying reports are present on the incidence of tobacco among students in different states of India. More *et al*.[19] observed the increase concern related to the areca nut and its by product abuse among the children and adolescent groups. There is requirement of early interventional educational resources, special intoxication, and rehabilitation centers in the region of Vadodara, Gujarat. Tiwari *et al*.[20] studied chewable tobacco in the form of guthka, paan masala, and quid with tobacco are advertised in the country in numerous forms, sizes, shapes, and eye-catching coverings unduly with easy accessibility, more common costs, and imprudent promotion, under least supervision which are the attributed factors because of their predominant use in all age groups. Ahmad *et al*.[21] observed that gutkha was the most commonly used by the oral submucous fibrosis cases. They used gutkha and other products 2–10 pouches for 2–10 min per day, since 2–4 years. Most of them kept gutkha in the buccal vestibule or they chewed and swallowed it, only a limited number of patients chewed it and spat it out.

Chaturvedi in 1991[22] carried out survey of school children in a coastal village in the state of Kerala and showed 29% prevalence of tobacco chewing similar to the present study and in Mizoram showed a rate of 56.5% which was slightly higher. The author also surveyed 986 school children in a rural part of central India and showed leukoplakia in 32, erythroplakia in six, and submucous fibrosis in 18. Neufeld KJ *et al*.,[23] stated 50%–60% of patients with submucous fibrosis might show tendency toward developing invasive cancers. Gajalakshmi (2010),[4] compared both the genders, it revealed that males have habit of consuming chewable tobacco which is similar to the findings of GYTS 2006 and 2009. The incidence of chewable tobacco to be 9.4% and 9.0%, respectively, was found in Nigerian study.[24] New York Tobacco Survey in the year 2017 revealed that those people diagnosed with oral cancer had habit of tobacco consumption as early as 1st or 2nd decade of their lives.[5]

Gingival index

According to Papapanou[25] and Norderyd *et al*.,[26] the consumption of tobacco is a significant assimilated probability factor for gingival and periodontal disease in minor citizens. As the education populace comprises in the current research of youth between 12 and 15 years, only bleeding on probing was documented for assessing the gingival health, as suggested by the WHO (WHO, 1997).[2] On recording gingival index in the present study, change in the gingival score "2" was from 85.3% to 52.9%. The justification for a small score decrease is nonperformance of oral prophylaxis on all subjects at baseline, as the aim was to emphasize the motivational therapy strategies and its effect on tobacco cessation.

Narain *et al*.[27] suggested that Guthka, a chewable tobacco product is marketed and available factory-made combination of areca nut, tobacco, and certain condiments, which is advertised as colorful pouches in various flavors, and was found to be majority of used chewable tobacco product in the study. The more probability of such gingival devastation due to guthka may be recognized due to ingestion as apart from munching it. It is also often retained in the buccal and labial mucosa for a lengthier time. The destructive impact of all forms of tobacco and betel nut/areca nut consumption in the current research was calculated by measuring gingival index as early periodontal health indicator that is bleeding on probing. When it was equated with healthy control, the groups consuming smokeless tobacco form had an adverse effect on gingival health.

Role of group and individualized motivational interventions

The intervention was feasible to deliver in the schoolroom in absence of any teachers or parents. The PowerPoint presentation consisted of details about detrimental outcomes of tobacco ingesting and past,

present and expected mortality rates due to the habit. Photographs and interviews of patients distressing from oral cancer were shown to them.

Participants of the current study were well-versed regarding the negligence of peer pressure for using tobacco and were motivated to revert the peer pressure for quitting the habit. They were also motivated for their aesthetics as tobacco consumption causes dental stain and were advised to distract themselves from the urge of having it and indulge into physical exercising, yoga, dancing, and increase the daily water consumption. The present study showed similar results like Tong *et al*. (2010)[28] who stated their tobacco advising was effective for 94.9%. According to Klein *et al*.,[29] more reliability is seen among adolescent's recall and that readiness to alter and motivation was observed among them. Tobacco usage frequency declined over a stage of time during intervention Group 2. However, documentation by physician Horvath *et al*.[30] suggests that one-to-one counseling is ineffective for adolescents and that they are ill-prepared for brief conversation. In the current research, the investigator and co-investigators got professionally trained at Tobacco Intervention Initiative by the Indian Dental Association so as to provide effective counseling. Similarly, according to Fiore *et al*.,[31] system-level change is required for physicians such as professional regular training and reserves should be accessible for them so as to implement the cessation program. In the current research, parents of the intervention Group 2 were also counseled along with the adolescents. Parents play a major role and serves as role models for their children. If they themselves are into substance abuse and consume tobacco in front of their children, it is very likely of them to easily direct them. According to Whitesell *et al*.[32] multifactorial factors are involved for opting and increasing substance abuse. According to his study, various factors were familial and social factors.[24] Similarly, according to Cservenka,[33] substance abuse is 50% of the times inherited by either of a family member. According to Nash *et al*. (2005),[34] lack of parental scrutinizing and administration is one Important factor for up-taking substance abuse habit. According to Vanka *et al*.[35] the evidence-based approach does not identify the best approaches available for counseling adolescents. In fact adult approaches are now being practiced for adolescents as well. According to the study, some compulsory norms should be followed like tobacco screening, referring adolescents to appropriate cessation services and developing a follow-up program to monitor the progress of each adolescent.

Reminder counseling sessions

After counseling, recall is a very vivacious step as reminder therapy controls the urge of adolescents and home reinforcement helps them to maintain the taper and lastly quit the habit. In the present study, banners and posters stating attractive anti-tobacco slogans were pasted on the walls of the school. For encouraging and volunteering the pupils, an empty poster titled "I will definitely change" was pasted on the walls of the school. The tobacco consumers were asked to write their name only if they willing to change and quit their habit. Such efforts initiate and strengthen commitment ideas. It severed as an auto-reminder message on daily basis. Our finding was similar to the study by Winickoff *et al*.[36] stating that health-care specialists for youth along with their parent's reminder therapy have been promising for the results in quitting tobacco, hence for recall therapy they used telephonic reminder.

Conclusion

From the perspective of our study, though there was no substantial difference between interventional groups but there was significant difference in cessation of habit and decrease in gingival score. Catching the tobacco consumers at an early age would certainly minimize the incidence of tobacco use and later burden on the country. To address this burden, Motivation tactics, media, and therapy play an essential role in encouraging and intercepting the pattern of drug abuse in order to resolve this burden. Including the mutual effect of preventive initiatives, culture and family influences on adolescent tobacco use must be an effective long-term prevention and control activities.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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