ORIGINAL ARTICLE

Prevention of initiation of smokeless tobacco (SLT) consumption among rural children

Parimalkumar Ramanbhai Patel[1], Shikha Vikas Jain[2], Aroor Bhagyalaxmi[3], Bhargav Bipinbhai Dave[4], Narendra Kumar Ragunath[5], Hinal Mahendrabhai Bhadesiya[6]

[1]Tutor, Community Medicine Department, B.J. Medical College, Ahmedabad; [2]Assistant Professor, Community Medicine Department, B.J. Medical College, Ahmedabad; [3]Professor, Community Medicine Department, B.J. Medical College, Ahmedabad; [4]Tutor, Community Medicine Department, AMC MET Medical College, Ahmedabad; [5]Resident Doctor, Community Medicine Department, B.J. Medical College, Ahmedabad; [6]Resident Doctor, Community Medicine Department, B.J. Medical College, Ahmedabad

Abstract	Introduction	Methodology	Results	Conclusion	References	Citation	Tables / Figures

Corresponding Author

Dr. Parimalkumar Patel, 116, Avkar Society, Rakhiyal Station, Ta-Dehgam, Dist-Gandhinagar, Gujarat-382315
E Mail ID: drparimalpsm3787@gmail.com

Citation

Article Cycle

Abstract

Background: India Global Youth Tobacco Survey 2019 observed that 8.5% of the young age group (13-15 years) consume tobacco (9.6 % are boys and 7.4 % are girls). No interventional studies among adolescents were conducted before the initiation of the SLT use. **Aims & Objectives:** To estimate the prevalence of consumption of tobacco and non-tobacco products and to provide school based interventions to bring behavioral changes. **Materials and Methods**: An interventional study was carried out in Primary Schools. For estimation of the prevalence of tobacco and non tobacco use all the students of 1st to 5th while for the interventions, 4th and 5th standard were selected. Baseline data and change in the behavior at the end of one year was collected. FGD with key informants were also conducted. Descriptive Statistics was conducted. **Results**: The prevalence of smokeless tobacco consumption and non-tobacco product was found to be 1.3% and 36.5% respectively. After intervention 40.5% students had quit non tobacco products. Findings of FGD suggested that children should not be sent to purchase tobacco products on behalf of their parents. **Conclusion**: School based intervention and sensitization of the field workers along with knowing their perceptions for the predictors of consumption could be useful.

Keywords

Prevention, Initiation, Smokeless Tobacco, School Children

Introduction

India Global Youth Tobacco Survey 2019 observed that 8.5% of the young age group (13-15 years) consume tobacco (9.6 % -boys and 7.4 % -girls). (1) Low cost and being smokeless has led to an enormous increase in the use of all types of areca-nut among the children and adolescents. Its use has been associated with sub mucus fibrosis and high risk of oral cancer.

Global Adult Tobacco Survey (GATS) - India, 2010 reported the average age at initiation of tobacco use was 17.8 years (2) while study conducted in Delhi (3) in Gujarat observed 6 years and 5-10 years respectively.(4) Since experimentation with various tobacco products usually initiated in the childhood and adolescence period, assessing the determinants, type and extent of smokeless tobacco use and appropriate interventions targeting children both users, non-users can be highly effective in tobacco control. It has been observed that school and community based interventions are effective to reduce tobacco use. (5)

There have been very few interventional studies for the prevention of initiation of SLT use. The most effective way of preventing SLT use among children is to target before the initiation of tobacco use.(6)With this aim, current study was carried out.

Aims & Objectives

1. To estimate the prevalence of consumption of tobacco and non-tobacco products among school children

2. To know the effectiveness of school based interventions to bring behavioral changes

Material & Methods

Study Type: Interventional study

Study population: Study was conducted among primary school children. For the prevalence of tobacco and non-tobacco use all the children studying between classes 1 to 5th were included while interventions were done among students of 4th and 5th standard.

Study area: In Ahmedabad District, there are 11 talukas and there are 1244 Primary schools in the rural area. Four PHCs were selected randomly form One randomly selected taluka. From the selected four PHCs, one Health and Wellness Centre was selected randomly. Primary School under these four HWC areas was selected for the study.

Study Duration: One year from the date of initiation of study.

Sample size for interventions: Sample size was calculated assuming probability of preventing initiation of smokeless tobacco consumption by school and community-based intervention to be 50%, the estimated sample size by using the formula N= $(Z_{1-\alpha/2})^2$P (1-P) / δ^2 where $(1-\alpha)$ = 95% and δ= 10% of p was 380.

Sampling technique: Random sampling technique was used to select taluka. One taluka from the district was selected randomly and from the list of Government rural primary schools of selected PHCs, 4 schools were selected randomly. All children studying in the 4th and 5thstandard were included for the intervention in the study.

Study included;

1. Training of school teachers of the selected schools
2. Baseline data collection
3. Interventions-Health education to students of selected schools
4. Community interventions-Focus group discussion (FGD) with Grass root workers and community volunteers of villages of the selected schools.
5. Behavioural change assessment-quit rate of SLT or areca nut (non tobacco) use among children

Data collection: The principal investigator conducted a training session for field investigators regarding the objectives of the study and components of school and community interventions. Data collection and Interventions were carried out under the supervision of Investigators. Baseline data and assessment of behavioural changes at the end of one year were collected in the prescribed format.

Prevalence study. All the children of standard 1 to 5th were asked questions in the prescribed proforma to assess prevalence and factors influencing the use of tobacco and non tobacco products from the selected schools.

School and community based interventions:

During the first visit to the schools, training was given to school teachers regarding the effect of SLT use, tobacco free school policy etc…and also baseline data was collected from the students. In the subsequent visits, intensive IEC activities for the class 4th and 5th students only were carried out which included lecture, video and demonstration using posters. After the initial three visits, one day visit was made to each school every quarterly for reinforcing the IEC for the intervention group (4th and 5th class). IEC was provided in the form of poster exhibition, videos, awareness talk and distribution of pamphlets having basic information about tobacco and related cancers. We conducted 4 sessions in each school.

Community based interventions included onetime FGD with grass root workers of villages of selected schools for sustainability. Summary of Selection Procedure shown in (Figure 1)

Focus Group Discussion (FGD) was conducted to know about health care worker's knowledge on the hazards of Tobacco and Non tobacco product consumption, perception and behaviour of the community regarding consumption of Tobacco and non-tobacco products, reasons behind initiation and not quitting, steps taken by government, their role in community about tobacco control and suggestions for the improvement of the health programs.

Focus Group Discussion was conducted in the four villages of the selected schools. It was conducted at Health and Wellness Centre in a separate room with minimum disturbance from outside environment. Accredited Social Health Activists (ASHA), Anganwadi worker, Anganwadi helper, Multi-Purpose Health Worker (MPHW) were the main participants of FGD. Community Health Officer acted as a group leader. Before initiation of FGD participants were explained about the purpose and topic of FGD. Methodology and rules of focused group discussion were explained to participants and each FGD session lasted for around 30-45 minutes.

Monitoring and Supervision was done by the principal and co-investigators. After the completion of all the stipulated visits for providing health education, data collection was done to know the outcome measures.

Ethical Consideration: Approval for carrying out the study was taken from the Institutional Ethics Committee. Permission was also sought from the District Education Officer and principals of the selected schools for conducting the study in the schools.

Data entry: Data entry and analysis was done in Microsoft Excel and uni-variate and bi-variate analysis was done.

Results

Baseline Information: Overall, 831 students from four primary schools were present in the school at the time of the study. Proportion of boys (54%) was more than girls (46%). Almost half (47.4%) of the students were from 4th and 5th standard corresponding to the age of 9 to 13 years age range. There was almost equal representation of the type of family (Joint/Nuclear) in which the children were

residing. Father of two third of the children (65.2%) were either doing job or working as laborer. Father of half (50.3%) of the children were educated up to the secondary level. Mother of the three fourth of the children were housewives (75.9%) and mother of half of the children were educated up to secondary level.

Families of more than 80% of children consumed smokeless tobacco and consumption of panmasala/arecanut observed among 46.5% of the families. (Table-1).

The prevalence of smokeless tobacco consumption among studied children was found to be 1.3% (11/831). Out of those children who were consuming smokeless tobacco, majority 9/11 (81.8%) of them started consuming it within last one year. When asked about the reason for initiating the use of smokeless tobacco product, more than half 6/11 (54.5%) of the children started consuming it because of the use of smokeless tobacco in the family.

Prevalence of consumption of non-tobacco product was 36.5% but if we see standard wise then Prevalence of consumption of non-tobacco product was highest in standard 5th students followed by standard 4th(Figure-1). Almost one fourth of the students consume the product daily and that too once a day (71.4%). Majority (80.6%) of the students initiated the consumption because of fun. But the consumption was also there among 1st standard students. The rate of non-tobacco product consumption among the boys was 44.2% while among girls it was 27.3%. The gender wise difference in the consumption of non-tobacco products was found to be significant. Mean age of starting both smokeless tobacco and non-tobacco products was 9 years in students and average duration since students were taking smokeless tobacco products was 14 months (Table-2).

None of the students quit the consumption of smokeless tobacco product however, in 5 out of 9 students; there was a reduction in the consumption of smokeless tobacco product while in two students the consumption was same. Out of the total 222 students, in standard 4 and 5 who were consuming non tobacco products, after intervention 90 (40.5%) students had quit non tobacco products, 83 (37.4%) had decreased their consumption while 25 (11.3%) students continued with the same frequency (Figure-2).

39.3% of the students, in whose family the consumption of smokeless tobacco consumption was there, were consuming non-tobacco product, while 23.8% of the students in whose family the consumption of smokeless tobacco consumption was not there, were consuming non-tobacco product. The difference between the consumption of the non-tobacco product among students in whose family the smokeless tobacco consumption was there and not there was found to be statistically significant (Figure-3).

Findings of Qualitative assessment (Focused Group Discussion): Children usually initiate consumption of non-tobacco products at the early age of 5-6 years and tobacco products at the age of 14-15 years.

Peer pressure and family history were the most common reasons for initiating the consumption of tobacco and non-tobacco products. Taste and Curiosity are also one of the common reasons for initiation of areca nut consumption.

According to one participant: "Most of the parents of children are having addiction of consuming smokeless tobacco They send their children to buy masala and then consume it in front of them So, the children get influenced by them and start eating masala".

Most of the participants were of the view that "Cancer" is the most common harmful effect and among cancers "lung and mouth cancer" are the most common harmful effects of tobacco consumption. Other effects are "teeth problems", "Growth related problems in the children", "and lungs related diseases", "hypertension and Mental illness"

According to participants "mental relaxation", "Stress reliever", "Continuous household influence from parents", "ignorance of harmful effects", "don't feel well if they don't take" were reasons for addiction. According to almost all participants one common counter argument made by people was occurrence of incidents of cancer in people who were not taking any kind of tobacco product.

According to one participant the reason cited by the people who consume the products: "When we go for labour work, we consume masala to suppress the hunger and are able to do more work".

"If they take masala or miraj in morning after waking up then only they feel relaxed and would able to pass stool". Participants were aware somewhat of COTPA and they also had knowledge about pictorial warnings but their knowledge was very limited about toll free helpline for tobacco quitting and de-addiction centres.

Regarding their activities participants have responded that under National Tobacco Control Program they had organized various events in schools like Essay competitions, Knowledge sessions with students as well as with parents of children. They utilize the opportunity of explaining pregnant lady and mothers who come for vaccination of their children regarding harmful effects of tobacco and convince them to quit tobacco products.

Most of the participants were in favour of" banning production as well as selling all the products containing tobacco. "Strict fine to shopkeeper for breaking rules pertaining to tobacco", "Organizing Rallies", "Poster exhibition", "keeping shops far away from school premises" and "counselling of parents" were other suggestions given by participants.

One participant responded that: "If children deny going to buy tobacco product and tell their parents if they want to eat tobacco product they can go and buy it by themselves".

"Parents should be explained that they should not send children for buying tobacco product and they should not eat tobacco products in front of them".

Discussion

In India, many people are addicted to nicotine in various forms. There is a misconception that chewing gutka or smokeless tobacco is less harmful. Consumption of smokeless tobacco is more harmful than smoking form as the hazardous substances present in it directly enter into the system through oral cavity. Despite its public health impact, it is still being sold in different pouches by different names being endorsed by mainstream actors.(1) Mean age of initiation of both smokeless tobacco product and non-tobacco products was 9 years which is very young age. In the various studies conducted across the country, the mean age of initiation of tobacco use has been found to vary from 8-15 years.(3)

Studies carried out across India during the period of 2012-2019 shows that the prevalence of use of arecanut use among school going adolescents is in the range of 10% to 35%.(7-10)

In a study conducted Gupte H et al on the school going adolescents, 83% of the participants in the age group of 13-15 years were using areca-nut products while 18% were using SLT products. While in present study the Prevalence of consumption of non-tobacco product was 36.5% which is less than half from reported in Gupte H et al study.

In a study of Gupte H et(11), it was found that after the end Life First cessation programme, 62% quit rate was reported among areca nut users. In our study 40.5% of non-tobacco users achieved the quit status after the end of intervention phase. Reason behind for having less quit rate in our study as compared to other study could be the variation in age of the study participants (10-11 age to 13-15 age), influence of the family members behavior towards tobacco and non-tobacco products (almost 88% of fathers of students were tobacco users), level of understanding of students which invariably depends on their intellectual abilities.

Although none of the student who consumed smokeless tobacco product quit the consumption but the decrease in consumption of smokeless tobacco product was found.

In India use of arecanut is considered to be a gateway to use of tobacco.(12)Therefore, it will be more effective to prevent the initiation of smokeless tobacco use among children rather than trying to help them to stop after they are addicted. The prevalence of use of smokeless tobacco in the present study was 1.3% which is less as compared to the tobacco survey carried out in India from 2006 to 2009. Gutka was the most common SLT product being consumed which is also found in different studies carried out across India. One of the reasons for consumption of gutka is that it is being sold as mouth freshener packaged in an attractive pouch and is easily available.

However, the consumption of non-tobacco products in our study was found to be high. The consumption of non-tobacco products is considered to be a socially acceptable habit and there are no age bars for the purchase and use of the non-tobacco products. But the high consumption of non-tobacco products would gradually lead to the consumption of tobacco products. Consumption of non-tobacco products was more among the boys as compared to the girls.One of the reasons of higher consumption among boys may the more freedom of the boys in the family and society. Consumption was even found in the early age of 6-7 years.

Reasons for initiation of smokeless tobacco consumption in the present study were consumption by the parental/family member and for fun. Adolescents are influenced by the tobacco use by family members which gradually becomes an acceptable behavior. Then tobacco use gradually becomes favorable personal beliefs and subjective norms.(13)Other reason for use may be that these smokeless tobacco products are easily available and can be conveniently hided from family members and teachers. Similar findings have been reported by other studies.(12,13)Similar factors have been reported by studies conducted in India and other South-East Asian countries.(14,15) Peer Pressure, curiosity, family use, ease of access and affordability were some of the reported influencing factors.

Conclusion

Prevalence of smokeless tobacco consumption was found to be less in studied age-group (less than 10 years) however the prevalence of non-tobacco product consumption was found to be high. The consumption of non-tobacco product at early age may subsequently lead to consumption of smokeless tobacco at later age of life (early adolescent period). Targeting the children before their initiation of tobacco is the most effective way of preventing the use of tobacco among children. Study also supported this as large number of students consumed non-tobacco products but the quit rate was also high. Once the children start consuming tobacco it is very difficult for them to quit as in the present study only 1.3% of the children consumed tobacco products but none of them had quit the consumption.

Recommendation

Reinforcement of the message regarding the prevention of initiation of SLT and non-tobacco products among students needs to be done on regular basis. There should be strict implementation of tobacco free school policy.

Limitation of the study

Conclusion and recommendations of the study are based on the quit rate of non-tobacco product consumption as the prevalence of tobacco consumption was very less

Relevance of the study

Authors Contribution

Acknowledgement

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Tables

TABLE 1 PREVALENCE OF SMOKELESS TOBACCO AND PANMASALA/ARECANUT CONSUMPTION IN FAMILY

Family Member	Consumption of smokeless tobacco (N=676) * (%)	Consumption of Panmasala/Arecanut (N=386)** (%)
Father	594 (87.8)	316 (81.9)
Mother	241 (35.6)	172 (44.6)
Grand parents	137 (20.3)	86 (22.3)
Uncle	88 (13.0)	46 (11.9)
Brother	23 (3.4)	19 (4.9)
Sister	6 (0.9)	5 (1.3)

*Out of 831 students' family members, 676 students reported that at least one of their family members consumes smokeless tobacco products.** Out of 831 students' family members, 386 students reported that at least one of their family members consumes Panmasala/Arecanut.*

TABLE 2 PREVALENCE OF CONSUMPTION OF NON-TOBACCO PRODUCT IN CHILDREN

Consumption of non-tobacco product (n=831)	Frequency	Percentage
Yes	303	36.5
No	528	63.5
Frequency of consumption per day (n=196)		
1	140	71.4
2	34	17.3
3	11	5.6
>4	11	5.6

Consumption of non-tobacco product (n=831)	Frequency	Percentage
Reason for initiation (n=303)		
For fun	158	80.6
Tasty	111	56.6
Consumed by other member in family	21	10.7
Given for free by shopkeeper	2	1.0
Easily available	5	2.5

Figures

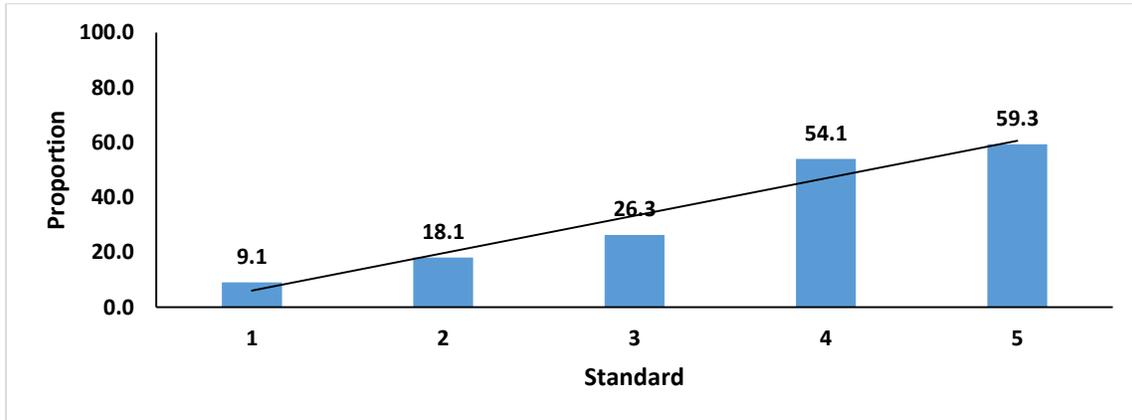### FIGURE 1 STANDARD WISE PROPORTION OF NON-TOBACCO PRODUCT USE AMONG CHILDREN

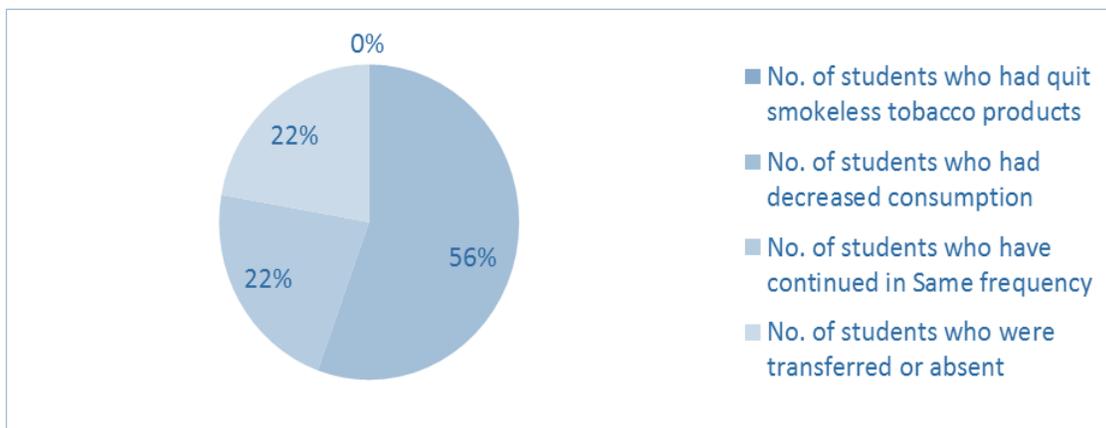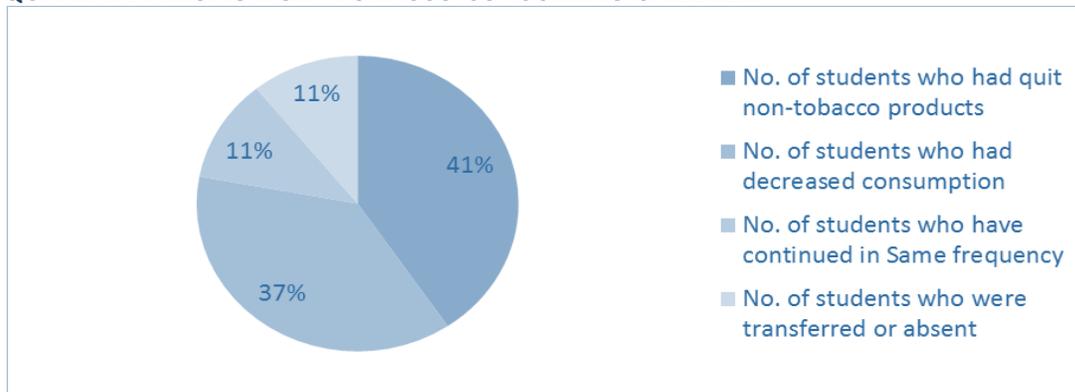### FIGURE 2 QUIT RATE AMONG SMOKELESS TOBACCO CONSUMING CHILDREN

FIGURE 3 QUIT RATE AMONG NON- TOBACCO CONSUMING CHILDREN

Out of 222 students, 90 (41%) students quit non-tobacco consumption after intervention, which is statistically significant with z value 6.51 at p<0.001