

An Assessment of the Effectiveness of an Intervention to Quit Tobacco Use in Patients Seek Treatment from the Institute of Oral Health, Maharagama, Sri Lanka

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Background: Tobacco is consumed in both smoked and smokeless forms. STEP Survey Sri Lanka 2015 showed that 29.4% males and 0.1% females were current smokers, Smokeless Tobacco (SLT) use was found in 26% of males and 5% of females. Dental setting could be considered as a suitable venue to provide brief health education message to persuade quit from tobacco. The aim of this study was to assess the effectiveness of brief intervention among tobacco users attending the Institute of Oral Health, Maharagama, Sri Lanka.

Methods: Dental Surgeons provide routine care for the patients at the OPD and assess the use of tobacco at the beginning and help patients to quit tobacco which takes only 3-5 minutes. Method of intervention of this study is to provide brief messages to quit tobacco based on oral health effects due to tobacco use: staining teeth, status of periodontal health, halitosis, smoker's keratosis, whiteness (burning) of the mucosa and palate and chewer's mucosa. Tobacco quit rate and attempts were assessed through the telephone conversation in 3 months, 6 months intervals.

Results: One hundred and twenty eight subjects were recruited for the study, 45 (35%) failed to contact after 6 months interval which yielded the total sample of 83. Among 73 betel chewers, 46 (63%) subjects were completely quit the habit after 6 months. Eight out of 10 subjects who chew betel quid more than 5 quid per day quit. Among 22 smokers, 7 (32%) completely quit smoking with brief intervention at dental setting.

Conclusion: Brief intervention at dental setting immensely helps to quit habit of daily betel chewers. This is an ongoing study relatively larger sample is needed for confirmation of the findings.

Introduction

Tobacco uses in any form is considered as the most harmful lifestyle habit to the individuals health. Unfortunately, tobacco is a highly addictive substance which add up in continuation of the habit and end up with detrimental effects to the health. Most disastrous situation is that majority of the addicted people are knowing that tobacco causes cancer and other diseases in the cardiovascular

system and other parts of the body [1]. Tobacco is consumed in both smoked and non-smoked, or smokeless forms. In Sri Lanka, the most widespread smoked form of tobacco is cigarettes, followed by bidi. Chewing and sniffing are the commonest methods of using ST. Other forms of use such as reverse smoking, dipping in the oral mucosa, tobacco dentifrices are rarely seen. World Health Organization STEP wise approach to chronic disease risk factor surveillance (STEPS) of 2015 showed that 29.4% males and 0.1% females were current smokers in Sri Lanka, ST use was found in 26% of males and 5% of females [2]. Global Youth Tobacco Survey was conducted in 2015 in a total sample of 1416 among school students in grade 8-10. According to the survey, 3.2% of boys and 0.2% of girls between 13-15 years of age smoked tobacco at least once during the past 30 days, which give an overall prevalence of 1.7% for this age-group in Sri Lanka. Prevalence of ST use among 13-15 years age group students were 2.4% with a rate of 4.2% among boys and 0.5% among girls in Sri Lanka [2].

A study conducted in the villages and estate sector of the Sabaragamuwa Province of Sri Lanka has shown a high consumption of tobacco, areca-nut, and alcohol use among estate workers, with daily betel chewing prevalence of 53.7%, ever smoking prevalence of 27% and ever alcohol use of 34% among over 30 years of age of rural villagers and estate communities [3]. In the recent past in Sri Lanka, tobacco smoking prevalence is gradually declining and reached 9.1% which is remarkable and due to anti-smoking effort from all sectors in Sri Lanka. According to the GAT survey conducted in 2019 in Sri Lanka, prevalence of smokeless tobacco was 13.5% which is slow declining trend when compared to the STEP survey 2015 (15.5 %) [4]. Economic cost of smoking was calculated in Sri Lanka in 2015-2016 and showed sever economic lost to the entire country although the tobacco companies are emphasis income from the tobacco tax which is negligible when comparing with the health cost and suffering of victims of tobacco [5]. Cost for management of tobacco related cancers and other diseases are a real burden to the government of Sri Lanka as free health benefits are entitled and enjoyed by all citizens of Sri Lanka [6].

Tobacco is identified as the leading preventable cause of premature death worldwide. It was estimated that 6 million people died from tobacco-related illness in 2014, of which 70% is from developing countries [7,8]. More than half of the tobacco users will prematurely die due to tobacco health hazards. Tobacco causes many non-communicable diseases including cancer, cardiovascular diseases, and respiratory diseases and affects most all the other organs of the body. According to the National Cancer Registry 2019 in Sri Lanka, lip, oral cavity and pharynx, lung, oesophagus and colorectal, were the most common cancers among males. Among females, breast and cervix uteri cancers were the commonest. A large body of published epidemiological studies shows strong association between tobacco smoking, smokeless tobacco (ST) use and development of cancer. Cancers of the lung, lip, oral cavity and pharynx, oesophagus, larynx, stomach, kidney, pancreas, liver and bladder, colon and rectum contribute from smoking [9], while cancer of the lip, oral cavity, pharynx, pancreas, and oesophagus are related to ST use [10,11]. Tobacco use is also leading to multiple oral health issues including oral cavity cancer, oral potentially malignant disorders, periodontal diseases, halitosis, poor wound healing, standing and many others. Sri Lanka is undergoing a severe economic crisis thereby it is mandatarly to cut down health expenditure due to unwanted lifestyle such as tobacco, alcohol, and other illicit drugs.

Next five years is crucial to Sri Lanka to rise from the economic crisis, therefore, it is essential to work hard and avoid unwanted health hazards by health promotion. Reduction in tobacco consumption through tobacco cessation is not only giving health benefits to an individual but also one of the strategies to overcome the economic challenges. Tobacco cessation could be easily done in the hospital setting including the dental clinics through multiple approaches. Brief interventions were reported in the world literature to quit tobacco in various clinical and primary care settings [12-15]. Tobacco use cessation is associated with the potential for reversal of potentially malignant disorders of oral cavity, enhance out comes following periodontal treatment, and better periodontal status compared to patients who continue to smoke or use ST. Therefore, quitting tobacco is the most logical approach to prevention of most Non-Communicable Diseases.

Dental setting could be considered as a suitable venue to provide brief health education message to persuade quit from tobacco. Dental Surgeon has the golden opportunity to assess the patients who consume tobacco in any form while oral examination and oral examination finding will be utilized to motivate for quit attempts. This study was conducted in the dental clinic setting with aim of assessing the success of customized, single brief health message given by the dental surgeon in the dental setting in tobacco cessation.

Materials and Methods

A descriptive cross-sectional study was conducted at the outpatients department (OPD) of the Institute of Oral Health (IOH), Maharagama, Sri Lanka. All patients who were current tobacco users in any forms and between 18- 60 years of age seeking care from the OPD of IOH were included in the study. Current user was defined as any person who used tobacco in any form during last one month period. Patients who refused to provide relevant information were excluded from the study.

Dental Surgeons provided routine care for the patients who were attending to the Institute of Oral Health, Maharagama, were assessed the tobacco use. The researchers helped patients to quit tobacco as part of the primary care providers' routine practice, which took only 3-5 minutes. Five A (5A)5A and 5R algorithm using toolkit developed by WHO (2014) was adopted for this study. In the first visit at dental treatment setting, dental surgeon asked about the tobacco use and provided advises to quit tobacco and assessed the readiness to quit. Method of intervention of the study was to provide brief messages to quit tobacco based on oral health effects due to tobacco use: staining teeth, status of periodontal health, halitosis, smoker's keratosis, whiteness (burning) of the mucosa and palate and chewer's mucosa. If the patient was not ready to quit, he or she was assessed according to the 5R model as shown here.

An interviewer administered questionnaire was used in the study which included details on socio-demographic data, lifestyle habits and details of tobacco useage. A comprehensive clinical oral examination was performed by a the investigator who is an experianced dental surgeon. Dental treatment was promoted prior to the data collection. Preference was given to patients for dental treatments to complete the treatment plan. After obtaining the informed consent from the patient, invetsigator introduced the details of tobacco cessation and brief intervention to the patient. Willingness to quit was assessed after the brief intervention. Success of the intervention through quit rate and quit attempts was assesed by a brief telephone interview after 3 months and 6 months.

Data were analyzed using SPSS version 21.0. Outcome of this study was analyzed with number of quit attempts during the follow up period and the number completely quitted the habit. Fisher's exact test was carried out to compare the proportions of tobacco users and non-users.

There was a category that frequency of use of tobacco had been reduced to some extent. One of the parameters in calculation of this study was to assess the number of individuals who did not change the habit at all. Ethical clearance for the study was obtained from the Ethical Review Committee of the Faculty of Dental sciences, University of Preadeniya. Informed and written concent was obtained from all the participants.

Results

During the period of conduction of the research 128 tobacco users were recruited for the study. Forty-five (35%) of them were failed to be contacted after 6 months interval which yield the total sample of 83. Out of them, 73 were betel chewers, 22 were cigarettes smokers and 4 were users of mawa - a commercial preparation of SLT users were 4 in number. Some of them were double users

of betel chewing and smoking. Majority of them were males. There is no significant difference between habit type and gender ($P > 0.05$) (Table 1).

Habit type	Male	Female	Total	Fisher exact test P
Betel Chewing	69	4	73	P = 0.6365
Smoking cigarettes	22	0	22	
Commercial preparation of SLT - Mawa	4	0	4	

Table 1. Distribution of Study Participants According to the Sex and Habit Pattern.

Among 73 betel chewers, 46 (63%) subjects completely quit the habit after 6 months. Eight out of 10 subjects who are chewing betel quid more than 5 quid per day were completed quit. Among 22 smokers, 7 (32%) were completely quit the smoking with brief intervention at dental setting. Among mawa users out of 4, 2 (50%) were completely quit after 6 months (Table 2).

Habit type	After 3 months			After 6 months			% Complete quit after 6 months
	Quit attempts	Reduce consumption	Complete quit	Quit attempts	Reduce consumption	Complete quit	
Betel chewing (73)	31	33	32	6	19	46	63
Smoking cigarettes (22)	12	12	6	5	5	7	32
Commercial preparation of areca nut - mawa (4)			2			2	50

Table 2. Success of Tobacco Cessation after 3 and 6 Months.

Discussion

Dental settings are considered as suitable environment to initiate tobacco cessation. Due to the time constraints in the OPD dental settings, we adopted brief intervention methodology instead of tobacco cessation with 5A and 5R models with tobacco counselling. There is ample evidence in the international literature on tobacco smoking cessation, but limited literature on betel quid cessation. We initiated this preliminary study to assess the quit rate among tobacco users in the OPD dental settings. We were able to adopt pre and post intervention design to assess the quit rate instead of randomized control design. During this study we developed brief intervention advice based on practicing habit and age of the patient which could be practices in any dental settings.

There is a controversy in the success of intervention in tobacco cessation. Brief interventions and motivational interviews have been proved to be successful in tobacco cessation [16]. Studies conducted to assess the effectiveness of brief interventions and motivational interviewing varies significantly on their methodology providing a great difficulty in comparing the results between studies. They vary in the type of tobacco, follow up duration and method adopted in delivery of messages. Like in the present study, most studies have assessed the quit rates by self-reports and not through the biochemical analysis [16] and this can result in a detection bias. Behavioral support offered by dental surgeons for tobacco cessation resulting in an increase quit rates has been shown to have low certainty evidence whereas it was moderate when behavioral support was combined with pharmacotherapy [17].

We were able to assess the quit rate among 83 patients after 6 months times: overall among all tobacco users quit rate was alarming (61%) which was a remarkable achievement with brief intervention. Among betel chewers very high quit rate was achieved (63%). There are no studies to compare this rate with the literature on quit rate of betel chewing. However, this study could be evaluated in the different dental settings with larger sample size with control arm in the future. Out of 22 smokers 7 smokers were quit the habit completely after 6 months period which is very high compared to the study done in New Delhi, India, only 2.6% quit smoking in the intervention arm [12]. Evaluation of the quitting rate would be better if reviewed in the OPD physically rather than telephone call which could be misled by the participants. Some of the participants were not able to be contacted after 3,6 months due to provided telephone number was not answering which could be avoided by initially requesting two or more options to contact them. Moreover, there is a possibility patients may not divulge the truth specially during telephone conversations. Therefore, to overcome such difficulties and to enhance the validity of the study through introduction of chemical analysis of cotinine levels or areca metabolites in follow-up physical visits. The other limitation was the small sample size and loss of participants during follow-up visits which resulted a non-respondent bias. Further research is needed to confirm the study's finding.

In conclusion and recommendations, brief intervention highly successful for quitting betel chewing habit. Brief intervention model developed based on age and type of habit could be utilised in similar settings for tobacco cessation. Future studies are recommended with larger samples to confirm the study findings.

The research was presented in the 42nd Asia Pacific Dental Congress | Virtual Congress held in Colombo during 18th to 22nd of May 2021 and abstract has been published in the APDC 2021 Journal.

References

References

1. Milcarz M, Polanska K, Bak-Romaniszyn L, Kaleta D. Tobacco Health Risk Awareness among Socially Disadvantaged People-A Crucial Tool for Smoking Cessation. *International Journal of Environmental Research and Public Health*. 2018; 15(10)[DOI](#)
2. Ministry of Health Sri Lanka. "WHO: STEPwise approach to chronic disease risk factor surveillance year 2015, <http://www.ministryofhealth.gov.lk>. Accessed on 10/05/2018. ". 2015.
3. Amarasinghe HK, Usgodaarachchi US, Johnson NW, Lalloo R, Warnakulasuriya S. Betel-quid chewing with or without tobacco is a major risk factor for oral potentially malignant disorders in Sri Lanka: a case-control study. *Oral Oncology*. 2010; 46(4)[DOI](#)
4. National Authority on Tobacco and Alcohol (2020). "Global Adult Tobacco Survey, Sri Lanka. *Fact sheet Available at: http://www.statistics.gov.lk/Resource/en/OtherCensusandSurveys/SurveyReports/SLK_GATS_2019_2020%20Factsheet.pdf*. Accessed on 21/01/2023.
5. Amarasinghe H, Ranaweera S, Ranasinghe T, Chandraratne N, Kumara DR, Thavorncharoensap M, Abeykoon P, Silva A. Economic cost of tobacco-related cancers in Sri Lanka. *Tobacco Control*. 2018; 27(5)[DOI](#)
6. Amarasinghe H, Jayasinghe RD, Dharmagunawardene D, Attygalla M, Scuffham PA, Johnson N, Kularatna S. Economic burden of managing oral cancer patients in Sri Lanka: a cross-sectional hospital-based costing study. *BMJ open*. 2019; 9(7)[DOI](#)
7. Warnakulasuriya S, Sutherland G, Scully C. Tobacco, oral cancer, and treatment of dependence. *Oral Oncology*. 2005; 41(3)[DOI](#)
8. World Health Organization (2015). "Global Health Tobacco Survey, Sri Lanka." Fact Sheet.
9. Gandini Sa, Botteri E, Iodice S, Boniol M, Lowenfels AB, Maisonneuve P, Boyle P. Tobacco

- smoking and cancer: a meta-analysis. *International Journal of Cancer*. 2008; 122(1)[DOI](#)
10. Thomas SJ, Harris R, Ness AR, Taulo J, Maclellan R, Howes N, Bain CJ. Betel quid not containing tobacco and oral leukoplakia: a report on a cross-sectional study in Papua New Guinea and a meta-analysis of current evidence. *International Journal of Cancer*. 2008; 123(8)[DOI](#)
 11. Akhtar S. Areca nut chewing and esophageal squamous-cell carcinoma risk in Asians: a meta-analysis of case-control studies. *Cancer causes & control: CCC*. 2013; 24(2)[DOI](#)
 12. Sarkar BK, West R, Arora M, Ahluwalia JS, Reddy KS, Shahab L. Effectiveness of a brief community outreach tobacco cessation intervention in India: a cluster-randomised controlled trial (the BABEX Trial). *Thorax*. 2017; 72(2)[DOI](#)
 13. Puschel K, Thompson B, Coronado G, Huang Y, Gonzalez L, Rivera S. Effectiveness of a brief intervention based on the '5A' model for smoking cessation at the primary care level in Santiago, Chile. *Health Promotion International*. 2008; 23(3)[DOI](#)
 14. Brown J, West R, Angus C, Beard E, Brennan A, Drummond C, Hickman M, Holmes J, Kaner E, Michie S. Comparison of brief interventions in primary care on smoking and excessive alcohol consumption: a population survey in England. *The British Journal of General Practice: The Journal of the Royal College of General Practitioners*. 2016; 66(642)[DOI](#)
 15. Li WHC, Wang MP, Lam TH, Cheung YTY, Cheung DYT, Suen YN, Ho KY, Tan KCB, Chan SSC. Brief intervention to promote smoking cessation and improve glycemetic control in smokers with type 2 diabetes: a randomized controlled trial. *Scientific Reports*. 2017; 7[DOI](#)
 16. Kumar R, Sahu M, Rodney T. Efficacy of Motivational Interviewing and Brief Interventions on tobacco use among healthy adults: A systematic review of randomized controlled trials. *Investigacion Y Educacion En Enfermeria*. 2022; 40(3)[DOI](#)
 17. Holliday R, Hong B, McColl E, Livingstone-Banks J, Preshaw PM. Interventions for tobacco cessation delivered by dental professionals. *The Cochrane Database of Systematic Reviews*. 2021; 2(2)[DOI](#)