

Smokeless Tobacco: Pattern and Awareness in a Rural Area of Bangladesh

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Abstract

Background: Smokeless tobacco consumption has contributed nothing except diseases, disability and death. But assessment of awareness and knowledge regarding its use has less been studied to the extent as that of smoking. The study was undertaken to assess the pattern of use and awareness of smokeless tobacco among rural community.

Materials and methods: This descriptive cross-sectional study was conducted among 310 respondents selected through systemic sampling method, aged 18 years, residing at least for 10 years in Noakhali district in Bangladesh. This study was conducted from May to November 2013.. Data were collected with a pretested questionnaire through face-to-face interview.

Results: Smokeless Tobacco (SLT) use was prevalent among 45.8% of respondents. Higher proportion of females than males used SLT. Zarda was the common form in more than half of the users. Among daily users, self-interest was the main factor for initiation and mean age of starting was 35 years. Per day frequency of SLT use for 1-8 times was in two-thirds of the daily users. Most of the respondents knew that SLT is injurious to health. About two-thirds of them mentioned SLT as addictive. More than one-thirds of the respondents had knowledge that smoking is more injurious than SLT. However, 30% of the respondents knew that both smoking and SLT were equally addictive. Excluding the former users, majority of the respondents knew that SLT might be quit.

Conclusion: Multistage effective behavioral change intervention programs are the preferable way to overcome this lifestyle-related health problem.

Key words: Awareness; Knowledge; Smokeless tobacco.

Introduction

It is undeniable that no form of tobacco and no method of use of tobacco is safe, albeit the severity of the negative impacts varies greatly between products. Smokeless Tobacco (SLT) is a broad term encompassing several different types

of tobacco products used orally or nasally. As SLT has not received the same ignominy as smoking tobacco, it is generally regarded as the lesser of the two evils.¹ SLT is the cheapest, readily available, poorly regulated, least taxed tobacco product.² All these are leading to an increase in the use of these products.

Traditional norms in South Asian countries, particularly India and Bangladesh, discourage young people and women from smoking, although there is no similar prohibition against using SLT. Furthermore, it is seen as a socially shared activity. As a result, the majority of women who use tobacco do so in smokeless forms. In rural areas, people are generally unaware of the dangers of using SLT. On the other side, many people feel that tobacco, whether smoked or not, has medical benefits for treating or alleviating common aches and pains including toothaches, headaches, and stomachaches. As a result, non-users, including children, are given advice on how to begin using tobacco.³

In Bangladesh, 20.6% of the adult population currently uses SLT. Prevalence is higher in females (24.8%) than in males (16.2%). Current SLT use is more prevalent in rural areas (22.5%) compared to urban areas (14.9%).⁴ All the values are lower from the GATS 2009.² The average number of times SLT was used per day was 8.1.⁴ More than 60 percent of women use SLT as a safe method of tobacco use.² In terms of intricacy, the tobacco consumption situation in Bangladesh differs from that in Western countries. There is a wide range of tobacco consumption patterns and modes, including cigarette smoking, bidis, pipes, cigars, traditional hookah smoking, and chewing tobacco in the form of raw dried leaf (Sada pata), zarda, gul, snuff, and other smokeless forms.⁵ SLT users are four times more likely than nonusers to develop oral-pharyngeal cancer, as well as having a higher risk of coronary artery disease, peptic ulcers, and neuromuscular illness. In developing nations, tobacco-related cancers of the mouth (Lip, tongue, gingiva and mouth floor) pharynx, larynx, and esophagus account for around

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three-quarters of all tobacco-related cancers. Adults' usage of chewing tobacco and snuff has remained stable, however, youth use has reportedly grown. Use of SLT has been associated to pancreatic cancer, cardiovascular illness, mouth cancer, and other diseases. Ectopic pregnancy, placenta previa, low-birth-weight babies, preterm deliveries, perinatal mortality, and sudden infant death syndrome are all associated with maternal smoking before, during, and after pregnancy.⁶

SLT use is responsible for a huge number of deaths, with more than 60,000 deaths each year on the Indian subcontinent alone.⁷ The South Asian region accounts for over 85% of the global illness burden associated with SLT usage, with India accounting for 74% and Bangladesh for 5%. In Bangladesh alone, SLT use resulted in the loss of 320,000 Disability-Adjusted-Life-Years (DALYs) and 13,329 fatalities owing to cancer and heart disease.⁸ Bangladesh has one of the highest rates of oral malignancies in the world, owing to a high frequency of chewing tobacco use in various forms.⁹

As more communities ban smoking in public, the tobacco industry is investing more in the development and marketing of SLT products, such as snuff, dip and chewing tobacco. The industry is now promoting new forms of SLT designed to be attractive alternatives to traditional chew. For example, one product, called Snus, is a moist powder that can be ingested without spitting. The new SLT products are being marketed to nonsmokers as well as smokers who may be trying to quit the habit, as a less harmful and cool option.¹⁰ From 2001 to 2010, SLT sales grew at a faster rate than cigarettes (A 51 percent growth in global volumes compared to an 8 percent increase in cigarettes) and are expected to continue to expand.¹¹

The Smoking and Tobacco Products Usage (Control) Act, 2005, dealt only with smoking tobacco products and remained silent about SLT product. A high rate of SLT usage in Bangladesh could have resulted from the definitional deficiency of legislative provisions.

This study was aimed to assess the pattern of SLT

consumptions and assess the knowledge, awareness about SLT among the rural people which may help to plan an effective awareness program to protect people from the devastating consequences of SLT usage.

Materials and methods

Ethical permission to carry out the study was taken from Ethical Review Committee of Bangladesh Medical Research Council (BMRC). This cross-sectional study was carried out among the adult residents of Senbag Upazila of Noakhali district who were residents at least for 10 years and participated voluntarily. Residents with psychological problem were excluded. To reach a 95% confidence level with 5% standard error and 27.2% SLT prevalence, a sample size of 305 was required. There are 9 unions within Senbag upazila, randomly three unions were selected: Nabipur, Kadra and Chhatarpaia. There were 400-650 holdings within each union; 103-104 holdings were selected by systemic random sampling. From each holding, only one participant was selected according to selection criteria. Finally, 310 respondents were interviewed for the study with a structured pre-tested questionnaire consisting of closed-ended, open-ended and multiple response questions. The questionnaire was piloted among 20 respondents from Nabipur union and was modified accordingly. This study was conducted from May 2013 to November 2013. After taking consent data were collected by face-to-face interview. Respondents took up to 20 min to complete the questionnaire. IBM-SPSS (Version 20) was used to analyze the data. Descriptive statistics was used for all variables. Values were expressed as percentage and mean.

Results

Result showed that among the respondents SLT use was prevalent among 45.8% (n=142) respondents; 40.8% (n=97) in male and 62.5% (n=45) in female. More than half of current users (51.4%, n=73) were aged over 50 years. Majority of the respondents was educated (Table I).

Table I Distribution of the respondents by demographic characteristics (n=310)

Variables		Non-users (n=159) Number (%)	Current users (n=142) Number (%)	Former users (n=9) Number (%)	Mean ± SD
Sex	Male	132 (83.0)	97 (68.3)	9 (100.0)	
	Female	27 (17.0)	45 (31.7)	0 (0.0)	
Age (In years)	≤20	6 (3.8)	1 (0.7)	0 (0.0)	
	21-30	36 (22.6)	12 (8.5)	0 (0.0)	
	31-40	44 (27.7)	21 (14.8)	0 (0.0)	
	41-50	43 (27.0)	35 (24.6)	2 (22.2)	
	51-60	16 (10.1)	33 (23.2)	3 (33.3)	
	≥61	14 (8.8)	40 (28.2)	4 (44.4)	
Education	Illiterate	6 (3.8)	25 (17.6)	1 (11.1)	
	Class 1-5	35 (22.0)	59 (41.5)	4 (44.4)	
	Class 6-10	70 (44.0)	43 (30.3)	2 (22.2)	7.1±4.1
	Above class 10	48 (30.2)	15 (10.6)	2 (22.2)	
	Occupation	Housework	24 (15.1)	45 (31.7)	1 (11.1)
	Service	40 (25.2)	20 (14.1)	2 (22.2)	
	Farmer	22 (13.8)	28 (19.7)	0 (0.0)	
	Day laborer	7 (4.4)	7 (4.9)	0 (0.0)	
	Business	50 (31.4)	29 (20.4)	3 (33.3)	
	Unemployed	16 (10.1)	13 (9.2)	3 (33.3)	
Monthly income Tk.	No income	30 (18.9)	43 (30.3)	2 (22.2)	
	≤5000	19 (11.9)	30 (21.1)	1 (11.1)	
	5001-10000	60 (37.7)	42 (29.6)	1 (11.1)	11000
	10001-15000	25 (15.7)	14 (9.9)	3 (33.3)	±8470.54
	15001-20000	16 (10.1)	6 (4.2)	1 (11.1)	
	>20000	9 (5.7)	7 (4.9)	1 (11.1)	
Monthly family income Tk.	No income	6 (3.8)	5 (3.5)	0 (0.0)	
	≤5000	8 (5.0)	13 (9.2)	0 (0.0)	
	5001-10000	35 (22.0)	37 (26.1)	1 (11.1)	21968
	10001-15000	26 (16.4)	20 (14.1)	4 (44.4)	±17593
	15001-20000	14 (8.8)	15 (10.6)	0 (0.0)	
>20000	70 (44.0)	52 (36.6)	4 (44.4)		

Among the 142 current users of SLT 114 respondents (36.8% of total) were daily users and the rest 28 (9% of total) were irregular users (Those who didn't use SLT daily). Age of initiation of SLT was later than 30 years in 53.5% (n=61) of daily users with a mean of 35.27±14 years. Mean duration of use among daily users was 16.95±11.18 years. About one-fourth of each category started SLT use by their self-interest. Results showed that two-thirds of daily users used SLT 1-8 times per day while three-fourths of irregular users used SLT 1-8 times per week. Among daily users mean frequency per day was 9.05 ±7.8 times/day and mean expenditure per month was 39.96 ±26.90 Tk. (Table II).

Table II Pattern of smokeless tobacco use (n=142)

Variables		Daily users (n=114) Number (%)	Irregular users (n=28) Number (%)
		Age of initiation	≤20 years
	21-30 years	27 (23.7)	20 (71.4)
	≥31 years	61 (53.5)	6 (21.4)
Period of SLT use	Below 1 year	2 (1.8)	0 (0.0)
	1-5 years	27 (23.7)	7 (25.0)
	5-20 years	40 (35.1)	13 (46.4)
	21 years and above	45 (39.5)	8 (28.6)
Initiating factors	Parents/siblings	18 (15.8)	3 (10.7)
	Grandparents	9 (7.9)	7 (25.0)
	In law's relatives	14 (12.3)	4 (14.3)
	Friends	10 (8.8)	3 (10.7)
	Neighbors	13 (11.4)	4 (14.3)
	Self-interest	33 (28.9)	6 (21.4)
	Remedy for toothache	11 (9.6)	1 (3.6)
	Switch from smoking	6 (5.3)	0 (0.0)
Frequency (Per day for daily users, per week for irregular users)	1-8 times	76 (66.7)	23 (82.1)
	9-16 times	23 (20.1)	5 (17.9)
	17-24 times	5 (4.4)	0 (0.0)
	25 times and above	10 (8.8)	0 (0.0)
	Expenditure per month	Up to 30 Tk.	64 (56.1)
	31-60 Tk.	34 (29.8)	12 (42.9)
	61-90 Tk.	8 (7.0)	3 (10.7)
	91 Tk. and more	8 (7.0)	4 (14.3)
Smoking Habit	Bidi	(1.8)	3 (10.7)
	Cigarette	(16.7)	11 (39.3)
	No smoking	(81.6)	14 (50.0)
Illicit drug use	Spirit/ aphim	(4.4)	0 (0.0)
	Energy drinks	(7.9)	4 (14.3)
	No illicit drug	(87.7)	24 (85.7)
Additives with SLT	Betel quid	2 (1.8)	6 (21.4)
	Betel leaf + betel quid + slaked lime	111 (97.3)	22 (78.6)
	Nothing	1 (0.9)	0 (0.0)

Multiple responses were allowed for sources of knowledge about the effects of SLT use. Highest response was for physician followed by television. 'SLT consumption causes addiction' was known by majority. 'SLT consumption is injurious to health' was known by almost all and they were asked to specify. Among the non-users, the maximum frequency was for carcinoma 57 (33.3%) followed by stroke 46 (26.9%). Among the current users the maximum frequency was for stroke 43 (29.5%) followed by gastritis 34 (23.3%). During comparing the adverse effects of smoking and SLT more than one-third from each category opined that smoking was more injurious than SLT. Less than one-third from each category knew that both forms were equally addictive. Majority of the respondents knew that SLT could be quitted (Table III).

Table III Knowledge about smokeless tobacco

Variables		Non-users Number (%)	Current users Number (%)	Former users Number (%)	
Source of knowledge	Relatives	15 (8.8)	5 (3.4)	0 (0.0)	
	Friends	3 (1.8)	0 (0.0)	0 (0.0)	
	Neighbor	11 (6.4)	10 (6.8)	0 (0.0)	
	Physician	48 (28.1)	60 (40.8)	7 (77.8)	
	Health workers	20 (11.7)	23 (15.6)	1 (11.1)	
	Newspaper	7 (4.1)	3 (2.0)	0 (0.0)	
	Books	24 (14.0)	3 (2.0)	0 (0.0)	
	Radio	2 (1.2)	0 (0.0)	0 (0.0)	
	Television	33 (19.3)	39 (26.5)	1 (11.1)	
	Poster/handbill	8 (4.7)	4 (2.7)	0 (0.0)	
Total (*Multiple responses)		171* (100.0)	147* (100.0)	9 (100.0)	
SLT causes addiction	Yes	120 (75.5)	69 (48.6)	4 (44.4)	
	No	17 (10.7)	56 (39.4)	4 (44.4)	
	Don't know	22 (13.8)	16 (11.3)	1 (11.1)	
	No-unless used for few years	0 (0.0)	1 (0.7)	0 (0.0)	
	Total	159 (100.0)	142 (100.0)	9 (100.0)	
Injurious to health	Yes	156 (98.1)	131 (92.3)	9 (100)	
	No	0 (0.0)	6 (4.2)	0 (0.0)	
	Don't know	3 (1.9)	4 (2.8)	0 (0.0)	
	No-unless used for few years	0 (0.0)	1 (0.7)	0 (0.0)	
	Total	159 (100.0)	142 (100.0)	9 (100.0)	
Health effects due to SLT	Stroke	46 (26.9)	43 (29.5)	5 (50.0)	
	Heart attack	33 (19.3)	24 (16.4)	2 (20.0)	
	Carcinoma	57 (33.3)	33 (22.6)	0 (0.0)	
	Gastritis	1 (0.6)	34 (23.3)	0 (0.0)	
	Low birth weight	2 (1.2)	3 (2.1)	0 (0.0)	
	Preterm deliver	18 (10.5)	3 (2.1)	2 (20.0)	
	Oral ulcer	8 (4.7)	2 (1.4)	1 (10.0)	
	Hypertension	6 (3.5)	4 (2.7)	0 (0)	
	Total (*Multiple response)		171* (100.0)	146* (100.0)	10* (100.0)
	SLT causes financial loss	Yes	150 (94.3)	133 (93.7)	8 (88.9)
		No	9 (5.7)	4 (2.8)	1 (11.1)
Don't know		0 (0)	5 (3.5)	0 (0)	
Total		159 (100.0)	142 (100.0)	9 (100.0)	
More injurious to health	Smoking	53 (33.3)	55 (38.7)	4 (44.4)	
	SLT	29 (18.2)	15 (10.6)	2 (22.2)	
	Both equal	71 (44.7)	52 (36.6)	3 (33.3)	
	Don't know	6 (3.8)	20 (14.1)	0 (0)	
	Total	159 (100.0)	142 (100.0)	9 (100.0)	
More addictive	Smoking	71 (44.7)	67 (47.2)	6 (66.7)	
	Smokeless tobacco	26 (16.4)	16 (11.3)	0 (0)	
	Both equal	52 (32.7)	38 (26.8)	3 (33.3)	
	Don't know	10 (6.3)	21 (14.8)	0 (0)	
	Total	159 (100.0)	142 (100.0)	9 (100.0)	
SLT can be quitted	Yes	144 (90.6)	111 (78.2)	9 (100)	
	No	10 (6.3)	26 (18.3)	0 (0.0)	
	Don't know	5 (3.1)	5 (3.5)	0 (0.0)	
	Total	159 (100.0)	142 (100.0)	9 (100.0)	

This study showed that about one-fourth of both non-users and current users noticed health warnings on SLT-package. Only a few noticed some SLT to be sold without package. More than half of each category noticed health warning in electronic and print media. 'Incorporating anti-SLT law' and 'incorporating high tax on STP was appropriate' were mentioned essential by majority of each category. The current and former users were asked for perceived benefit of SLT use. The highest frequency was for 'no benefit' followed by relief of toothache, to refresh, improve appetite and remove halitosis. Majority agreed that SLT use by one can influence one's other family members. Regarding 'possible ways of prevention of SLT use' maximum frequency among the non-users was for awareness-raising 39% (n=62) but the current-users marked 'stop production' 39.4% (n=56) (Table IV).

Table IV Awareness regarding smokeless tobacco (n=310)

Variables		Non-users (n=159) Number (%)	Current users (n=142) Number (%)	Former users (n=9) Number (%)
Health warning on SLT package	Yes	45 (28.3)	37 (26.1)	0 (0)
	No	94 (59.1)	55 (38.7)	6 (66.7)
	Can't remember	16 (10.1)	36 (25.4)	2 (22.2)
Health warning elsewhere	Sold without pack	4 (2.5)	14 (9.9)	1 (11.1)
	No	34 (21.4)	36 (25.4)	0 (0)
	Can't remember	19 (11.9)	20 (14.1)	3 (33.3)
Incorporating anti-SLT law	Television	73 (45.9)	65 (45.7)	5 (55.6)
	Radio	2 (1.3)	0 (0)	0 (0)
	Poster	23 (14.5)	18 (12.7)	0 (0)
	Books	3 (1.9)	0 (0)	0 (0)
	Newspaper	5 (3.1)	3 (2.1)	1 (11.1)
	Essential	147 (92.5)	111 (78.2)	9 (100.0)
	Not essential	5 (3.1)	5 (3.5)	0 (0)
Incorporating high tax on SLT products	No comments	7 (4.4)	26 (18.3)	0 (0)
	Appropriate	134 (84.3)	102 (71.8)	8 (88.9)
	Not appropriate	18 (11.3)	17 (12.0)	1 (11.1)
Perceived benefit of SLT	No comments	7 (4.4)	23 (16.2)	0 (0)
	No benefit	-	83 (58.5)	8 (88.9)
	Relief of toothache	-	45 (31.7)	0 (0)
	Refresher	-	7 (4.9)	0 (0)
	Improved appetite	-	1 (0.7)	0 (0)
Influence on Family members	Removes halitosis	-	6 (4.2)	1 (11.1)
	Yes	136 (85.5)	78 (54.9)	8 (88.9)
	No	23 (14.5)	64 (45.1)	1 (11.1)
Way of prevention of SLT	Awareness-raising	62 (39.0)	29 (20.4)	1 (11.1)
	Law enforcement	22 (13.8)	30 (21.1)	0 (0)
	Penalty	8 (5.0)	7 (4.9)	0 (0)
	Stop production	49 (30.8)	56 (39.4)	4 (44.4)
	Stop retail market	13 (8.2)	11 (7.7)	4 (44.4)
	Increase price	3 (1.9)	3 (2.1)	0 (0)
Not known	Not known	2 (1.3)	6 (4.2)	0 (0)

Discussion

Despite scientific evidence about the detrimental effects of SLT, its use is wide in Bangladesh. People believed that they continued using SLT because of addiction (52%) and as a part of their lifestyle (23%).¹² But SLT use needs to be viewed in the same way as tobacco smoking.

This study depicts the SLT consumption situation of adults in the rural areas of Bangladesh where maximum participants were educated. Most of the female's occupations were household works, majority had no income. Most of the male's occupation was specific jobs with a monthly income ranging from Taka 5-10 thousand. The socioeconomic characteristics are consistent with national statistical data.¹³ The tobacco consumptions in relation to occupations and monthly family income in this study are relevant to another study where it was highly prevalent in the low monthly family income group and most common among the household workers (31.7%) followed by business person (20.4%) and cultivators (19.7%).¹⁴ Daily users were prevalent in lower-income groups and lesser education groups which matches with other study.¹⁵

SLT use was prevalent among 45.8% of respondents; 40.8% males and 62.5% females; 36.8% daily-users whereas 9% irregular-users. This was higher than GATS Bangladesh.² The reason may be local habituation of SLT. Maximum frequency was for zarda (52.1%) followed by sadapata (45.8%). Betel leaf, betel nut & slaked lime were used along with different forms of SLT by 93.7% users. Zarda, gul, sada pata, and khoinee are used even not knowing the fact that these are tobacco.¹⁶ Gul users were less than other study.² Among 28.9% daily users, self-interest was the main factor for initiation followed by family members (15.8%). Results are compatible to several studies.^{2, 17, 18, 19} The mean age of starting SLT use was 35.27 years in daily users and 28.21 years in irregular users. But this is not consistent with the study by Uddin G and some other studies where this mean age is 12.2±1.34.^{15,20, 21} SLT prevalence was dominant with advancing age. About 37.3% of the current users were using SLT for last 5-20 years while other 37.3% were using it for more than 20 years. Mean frequency of use was 9.05± 7.8/day which is consistent with other study.²² Most of the

respondents used SLT with betel leaf, betel quid and slaked lime at a time which concurs with study by Bissessur S.¹⁸ The mean monthly expenditure for SLT purchase among daily users was 39.96±26.90 Tk. which was a fraction of their monthly income. This was much lower than other study.²² Only 24.65% of respondents used both smoked and SLT with no female smoker. But according to GATS Bangladesh, the prevalence of rural female smokers was 1.6%.²

Knowledge about SLT was assessed. Source of knowledge was mainly physicians 35.2%, followed by television 22.3% and health workers 13.5%. So, involvement of health workers and mass media should be more emphasized. About 95.5% respondents knew that SLT is injurious to health, 30.7% of them mentioned stroke as adverse health effect. Carcinoma and heart attack was known to 29.4% and 19.3% respectively. None could distinguish the site of cancer. Adverse pregnancy outcomes were known only to 2.9% respondents. Responses are consistent to some extent with other study.²² This is minacious that 24.84% had no knowledge about the fact that SLT causes addiction and 12.6% didn't know whether it causes addiction or not. About 93.87% respondent realized that SLT causes financial loss. Though the monthly expenditure for SLT purchase is only about 0.36% of their monthly income, the respondents explained financial loss as they use SLT along with betel leaf, betel quid and slaked lime. Expenditure for these additives is often 3-10 times more than their expenditure for SLT. But they were unaware of the fact that health hazards caused by SLT cause financial loss. Knowledge about SLT products was not satisfactory among the respondents. Result is consistent with that of Srilanka and Malaysia^{23,24}.

While assessing awareness 'health warning' was noticed on television by 46.77% respondents but 22.6% noticed them neither in print nor in electronic media. GATS² showed that 54.1% noticed anti-SLT health warning in electronic media. But electronic media can also play a negative role.²⁵ Almost 58.5% current users used SLT getting no benefit. This resembles to a study¹². Among the users 31.7% believed to get relieved from toothache by SLT consumption. Other study also showed similar type of result.^{22, 26} Of the respondents 27.2% were influenced to

initiate SLT by family members (Parents, siblings, grandparents) but 17.1% of them disagreed for familial influence of SLT use. In response to possible preventive methods for SLT use, 35.2% responded to stop production followed by 29.7% for awareness-raising and 16.8% for law enforcement. SLT use was significantly decreased after banning in some countries.¹⁷

Limitations

Small sample size and single-center study does not represent the whole country. Adolescents were not included but they are also a vulnerable group.

Conclusion

Smokeless tobacco not only causes disease and incapacity in both men and women, but it also has an impact on pregnant women. Strengths and weaknesses of the past tobacco control strategies should be identified to combat future health and socio-economic implications of tobacco use in this country.

Recommendations

- Conducting multistage effective behavioral change intervention programs to overcome the lifestyle-related health hazards.
- Conducting training and mass awareness about health hazards and financial loss due to SLT-related hazards.
- Packaging and labeling of all SLT products & enable pictorial warning.
- Imparting knowledge to the public about the financial loss due to SLT-related hazards.

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Contribution of authors

TZ-Initial research design, data acquisition, analysis and interpretation, manuscript drafting, critical revision and final approval.

RP-Conception, initial research design, manuscript drafting, critical revision and final approval.

Disclosure

All the authors declared no competing interest.

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