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CHEWING TOBACCO AND WILLINGNESS TO QUIT ITS DEADLY HABIT IN MALE USERS

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Abstract

Chewing tobacco is nothing but smokeless tobacco which causes oral cancer if utilized more often. The same amount of nicotine is deposited in people who use chewing tobacco as regular smokers. It also increases risk of different heart diseases and stroke. Quitting tobacco habit is hard but after all it's a choice of user. Quitting such habits is actually in user's hand but there are certain factors proven as barriers in quitting process. The present study is an attempt to identify factors which affect the willingness of quitting tobacco chewing habit in users. The study sample of 574 male participants (tobacco chewers with age between 15 to 64 years) was selected by self organized population based survey. An un-weighted dataset is part of survey design and rates and ratios are estimated with 95% CI.

Keywords: Combusting tobacco, Male participants, Logit model (Logistic regression), prevalence.

1. Introduction

Tobacco is the ninth most harmful legal street drug used by humans. It get utilised more frequently as it is easily available in the market. Tobacco is explicitly exempted from drug scheduling, despite their detrimental impacts on individual health and society as a whole, due to economic and cultural reasons. Smoking and chewing of tobacco products pose a serious risk of death and diseases. Consumption of tobacco products is the largest preventable risk factor for morbidity and mortality in developed and developing countries. The epidemic of tobacco use among male is more frequent than female. Evidence suggests that most of the adolescents will continue to use tobacco into adulthood. Chewing tobacco is nothing but smokeless tobacco which causes oral cancer if utilized more often. The same amount of nicotine is deposited in people who use chewing tobacco as regular smokers. It also increases risk of different heart diseases and stroke. Quitting tobacco habit is hard but after all it's a choice of user. Quitting such habits is actually in user's hand but there are certain factors proven as barriers in quitting process. The present study is an attempt to identify factors which affect the willingness of quitting tobacco chewing habit in users either in positive or negative form.

2. Material, Methods and Data collection

Design of study: It was a self organized cross sectional population based survey

which includes study sample of 574 male participants (tobacco chewers with age between 15 to 64 years). The sample was selected by self organized population based survey. An un-weighted dataset is part of survey design and rates and ratios are estimated with 95% CI.

Selection of participants: To select the participants or respondents from male population of Ahmedabad city a random selection is used.

Data collection: The face to face survey was conducted to collect required data using a predesigned and pretested questionnaire (prepared in local language Gujarati). It was given to selected participants of age between 15 to 64 years who are male and residents of Ahmedabad city. An unbiased assistance was provided to those respondents who were unable to fill questionnaire at their own (e.g. illiterates, physically unable etc.). Non responses were excluded from the sample.

3. Statistical Analysis

The whole statistical analysis of the collected data was carried out by means of SPSS 21.0 using binary logistic regression.

3.1 Binary logistic regression with multiple independent variables

For m explanatory variables

$\text{logit}(p(Y)) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots + \beta_m X_m$,

Where $\text{logit}(p) = \ln\left(\frac{p}{1-p}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots + \beta_m X_m$

and the odds $= \frac{p}{1-p}$

Here parameter β_i = effect of covariate x_i on the log odds that Y assumes 1, controlling other covariates x_j , for instance, exp (β_i) is the multiplicative effect on the odds of a unit increase in covariate x_i , at fixed levels of other covariates x_j .

3.2 Selection of the variables

3.2.1 Response variable: The present study focuses on the phenomenon of willingness to quit tobacco consumption habit therefore it was considered as response variable with two categories willing to quit (code 1) and not willing to quit(code 0).

3.2.2 Explanatory Variables: The following is a detailed review of explanatory variables which we believe have an effect on responses.

Groups	Categories	Groups	Categories
Age	55-64(A-1)	Visible health effects of smoking on your own or others help in quitting smoking habit(VHE)	SA
	45-54(A-2)		A
	35-44(A-3)		DK
	25-34(A-4)		DA
	15-24(A-5)		SDA
Religion	Other religion(OTH)	Effects of environmental	SA

		tobacco smoke help in quitting smoking habit(ETS)	
	Christian(CHR)		A
	Sikh(SIKH)		DK
	Muslim(MUS)		DA
	Hindu(HIN)		SDA
Cast	Other backward Class (OBC)	Restriction or support of family and wellwishers help in quitting smoking habit(ROF)	SA
	Schedule tribe (ST)		A
	Schedule cast(SC)		DK
	General(OPEN)		DA
			SDA
Occupation	Professionals(PRO)		
	Employers(EMP)	The youth access measure help in quitting smoking habit(YAM)	SA
	Employees(EMPL)		A
	Self employed workers /street vendors(SE/SV)		DK
	Students(STD)		DA
	Unemployed / Unpaid workers/ Housewives(UEM/UPW/HSW)		SDA
	Labourers(LAB)		
		Adverse effects of smoking on Professional dealing help in quitting smoking habit(AOP)	SA
Level of Education	16 or more years of education(ED-1)		A
	13-15 years of education(ED-2)		DK
	8-12 years of education(ED-3)		DA
	1-7 years of education(ED-4)		SDA
	No education(ED-5)		

		Religious restriction n spirituality help in quitting smoking habit (RE)	SA
Annual Income:	10 lakhs or more(I-1)		A
	5-9.99 lakhs(I-2)		DK
	2.5-4.99 lakhs(I-3)		DA
	0-2.49 lakhs(I-4)		SDA
Awareness of health effect of active smoking	NOT AWARE(ASN)	Advise of a doctor or a well wisher help in quitting smoking habit(AOD)	SA
	AWARE(ASY)		A
			DK
Awareness of health effect of passive smoking	NOT AWARE (PSN)		DA
	AWARE (PSY)		SDA
Awareness of health effect of smokeless tobacco use(tobacco chewing)	NOT AWARE (SMLN)	Text or pictorial warnings on packages help in quitting smoking habit(PW)	SA
	AWARE (SMLY)		A
			DK
Tobacco price increase helps in quitting smoking habit(TPI)	Strongly agree(SA)		DA
	Agree(A)		SDA
	Don’t know(DK)		
	Disagree(DA)	knowledge of ill effects of smoking given by seminar, campaigns or mass media help in quitting smoking habit(SCM)	SA
	Strongly disagree(SDA)		A
			DK
Own will power helps in quitting smoking habit(OWP)	SA		DA

	A		SDA
	DK		
	DA		
	SDA		

Table 2 Odds ratios and percentages of willingness to quit tobacco in male tobacco chewers of Ahmedabad

Explanatory variables		Proportion	Odds ratio		
Groups	**Categories**	**%**	**Odds Ratio**	**Upper bound**	**Lower bound**
Age	A-1	33.3	1.644	0.502	5.385
	A-2	40.6	1.695	0.830	3.462
	A-3	43.8	1.986	0.960	4.110
	A-4	58.2	2.056	0.944	4.479
	A-5	39.8	1	-	-
Religion	OTH	60	4.705	0.427	51.788
	CHR	52.6	0.894	0.272	2.940
	SIKH	66.7	1.022	0.124	8.435
	MUS	37.9	0.874	0.511	1.496
	HIN	43.3	1	-	-
Cast	OBC	38.5	0.775	0.454	1.323
	ST	25.6	0.301*	0.120	0.752
	SC	45.3	1.009	0.559	1.820
	OPEN	46.7	1	-	-

Occupation	PRO	56.3	0.479	0.120	1.914
	EMP	27.9	0.233	0.049	1.113
	EMPL	52.2	0.418	0.142	1.233
	SE/SV	50.7	0.706	0.276	1.805
	STD	32.7	0.275	0.065	1.172
	UEM/UPW/HSW	39.6	0.526	0.175	1.584
	LAB	39	1	-	-
Level of Education	ED-1	70.3	3.793*	1.011	14.233
	ED-2	42.7	1.365	0.445	4.190
	ED-3	39.3	0.942	0.340	2.612
	ED-4	40.3	0.981	0.469	2.048
	ED-5	34.2	1	-	-
Annual Income	I-1	45.3	0.585	0.188	1.815
	I-2	39.7	0.528	0.199	1.398
	I-3	47	0.992	0.455	2.159
	I-4	40.7	1	-	-
AS	ASN	24.6	0.814	0.373	1.776
	ASY	45	1	-	-
PS	PSN	36.1	0.605	0.33	1.093

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	PSY	53	1	-	-
SML	SMLN	30.3	0.572	0.302	1.085
	SMLY	48.4	1	-	-
TPI	SA	42.4	1.077	0.430	2.694
	A	43.2	1.173	0.610	2.255
	DK	35.7	1.302	0.452	3.749
	DA	40.9	1.016	0.584	1.770
	SDA	43.9	1	-	-
OWP	SA	46.6	1.117	0.322	3.876
	A	42.3	1.455	0.424	4.995
	DK	18.9	0.347	0.073	1.647
	DA	44.2	1.879	0.456	7.749
	SDA	31.6	1	-	-
HEV	SA	49.6	0.959	0.452	2.036
	A	50	1.623	0.820	3.213
	DK	38.6	0.851	0.398	1.822
	DA	32.6	1.002	0.495	2.026
	SDA	39	1	-	-
ROF	SA	45.3	1.166	0.576	2.360

	A	48.3	1.456	0.700	3.026
	DK	37.5	1.103	0.342	3.557
	DA	39.5	1.204	0.618	2.348
	SDA	35.7	1	-	-
YAM	SA	25	0.569	0.044	7.305
	A	38.5	0.912	0.309	.2.691
	DK	30	0.342*	0.140	0.836
	DA	42.7	1.066	0.620	1.832
	SDA	44.8	1	-	-
RLA	SA	28.6	0.431	0.166	1.115
	A	27.1	0.309*	0.144	0.663
	DK	37.3	0.621	0.342	1.129
	DA	52.4	1.066	0.589	1.930
	SDA	48.4	1	-	-
EOP	SA	41.7	0.716	0.230	2.232
	A	62.7	1.082	0.433	2.703
	DK	37.5	1.419	0.636	3.164
	DA	40.2	0.790	0.413	1.511
	SDA	40.9	1	-	-
RE	SA	57.7	1.676	0.58	4.813

				4	
	A	41.7	1.240	0.512	3.001
	DK	34.7	0.980	0.474	2.028
	DA	44	1.142	0.694	1.881
	SDA	42.1	1	-	-
AOD	SA	45.1	1.291	0.516	3.231
	A	53.6	1.609	0.794	3.262
	DK	29.4	0.498	0.233	1.062
	DA	43.5	1.333	0.642	2.768
	SDA	37.8	1	-	-
PW	SA	50	1.338	0.231	7.741
	A	81	8.934*	2.197	36.327
	DK	45.5	12.114*	2.925	50.162
	DA	44	1.596	0.869	2.932
	SDA	39.9	1	-	-
SCM	SA	42.1	0.633	0.254	1.579
	A	39.5	0.435*	0.210	0.903
	DK	39.3	0.496*	0.261	0.944
	DA	39.3	0.414*	0.224	0.765
	SDA	51.8	1	-	-

4. Discussion The basic study results in terms of proportions only may not clear the picture of combined effects of set of predictors as they are individual proportions. To overcome this problem an advance statistical analysis is needed.

Like all other regressions, Logistic regression is also a predictive analysis. Logistic regression is used to predict membership of categories of response variable. It can be considered as a zoomed profile of simple proportionate values of willingness of quitting tobacco chewing habit according to their socio-demographic characteristics, awareness of ill effects and individual perceptions. Table 1 represents detailed review of explanatory variables which we believe have an effect on responses and Table 2 presents estimated odds ratios for willingness of quitting habit of non combusting (chewing) tobacco use in male participants using MLR model. It can be seen that some of the categories of predictors are not statistically significant (without *). Odds ratios or EXP (b) of the independent variables are predicted changes in odds for the unit increase in respective dependent variable. The values greater than 1, less than 1 and equal to 1 of odds ratio represent corresponding increase, decrease and no effect on response variable respectively.

5. Results Table 2 summarizes the analysis of data of willingness to quit tobacco habits of current non combusting tobacco products male addicts of different categories residing in Ahmadabad including covariates awareness of ill effects of tobacco use and different perceptions towards successful cessations.

Explanation of odds ratios of Table 2

Odds ratios with * sign in Table 2 are O.R.s with statistical significance with p values less than 0.05.They can be interpreted in following way.

Male users of non combusting tobacco of schedule tribe are less likely to willing to quit tobacco addiction than general cast male tobacco chewers with odds ratio 0.301*(0.120-0.752). Male users of non combusting tobacco with education of 16 or more years are more likely to willing to quit tobacco addiction than illiterate male tobacco chewers with odds ratio 3.793*(1.011-14.233). Male tobacco chewers who agree with the statement “Regulatory/legal approaches(Gutkha ban) help in quitting chewing tobacco habit” are significantly less likely to willing to quit tobacco chewing habit than male tobacco chewers who strongly disagree with the statement with odds ratio 0.309*. Male tobacco chewers who agree with or don’t have any opinion about the statement “Text or pictorial warnings on packages help in quitting tobacco chewing habit” are significantly more likely to willing to quit tobacco chewing habit than male tobacco chewers who strongly disagree with the statement with odds ratios 8.934* and 12.114* respectively.

Predicting response probabilities

Log odds (p) = 0.544 + 0.497(A-1) + 0.528(A-2) + 0.686(A-3) + 0.721(A-4) + 1.549(OTH) - 0.112(CHR) + 0.021(SIKH) - 0.134(MUS) - 0.254(OBC) - 1.201(ST) + 0.008(SC) - 0.737(PRO) - 1.456(EMP) - 0.871(EMPL) - 0.348(SE/SV) - 1.289(STD) - 0.642(UEM/UPW/HSW) + 1.333(ED-1) + 0.311(ED-2) - 0.06(ED-3) - 0.2(ED-4) - 0.536(I-1) - 0.634(I-2) - 0.009(I-3) - 0.205(ASN) - 0.502(PSN) - 0.558(SMLN) + 0.074(TPI-SA) + 0.160(TPI-A) + 0.264(TPI-DK) + 0.016(TPI-DA)

+ 0.111(OWP-SA) + 0.375(OWP-A) - 1.058(OWP-DK) + 0.631(OWP-DA) - 0.042(VHE-SA) + 0.484(VHE-A) - 0.161(VHE-DK) + 0.002(VHE-DA) + 0.154(ROF-SA) + 0.376(ROF-A) + 0.098(ROF-DK) + 0.186(ROF-DA) - 0.564(YAM-SA) - 0.092(YAM-A) - 1.073(YAM-DK) + 0.063(YAM-DA) - 0.843(RLA-SA) - 1.175(RLA-A) – 0.476(RLA-DK) + 0.064(RLA-DA) - 0.334(EOP-SA) + 0.079(EOP-A) + 0.350(EOP-DK) - 0.236(EOP-DA) + 0.516(RE-SA) + 0.215(RE-A) - 0.020(RE-DK) + 0.133(RE-DA) + 0.255(AOD-SA) + 0.476(AOD-A) - 0.698(AOD-DK) + 0.287(AOD-DA) + 0.291(PW-SA) + 2.190(PW-A) + 2.494(PW-DK) + 0.468(PW-DA) - 0.458(SCM-SA) - 0.832(SCM-A) - 0.701(SCM-DK) - 0.881(SCM-DA)

AGE	RELIGION	CAST	OCCUPATION	EDUCATION	INCOME	AS	PS	SML	TPI
57 YRS	HIN	SC	SV	ILLITERATE	2 LAKHS	ASN	PSN	SMLN	DK

OWP	VHE	ROF	YAM	RLA	EOP	RA	AOD	PW	SCM
A	A	DA	DK	DK	DK	DA	DA	DK	DK

Log odds = 0.544 + 0.497(1) + 0(1) + 0.008(1) - 0.348(1) + 0(1) + 0(1) - 0.205(1) - 0.502(1) - 0.558(1) + 0.264(1) + 0.375(1) + 0.484(1) + 0.186(1) - 1.073(1) – 0.476(1) + 0.350(1) + 0.133(1) + 0.287(1) + 2.494(1) - 0.701(1) = 1.759

Odds = EXP (1.759) = 5.81

Predicted Probability = 5.81 /1+5.81 = 0.85

This value 0.85 is the probability of the considered case willing to quit tobacco chewing.

6. Conclusion From the above study results it can be concluded that as a combined effect of all factors together male users of non combusting tobacco of general cast, highly educated male and those who strongly agree with statement “Regulatory/legal approaches(Gutkha ban) help in quitting chewing tobacco habit” are significantly more likely to willing to quit tobacco chewing habit. Male tobacco chewers who agree with or don’t have any opinion about the statement “Text or pictorial warnings on packages help in quitting tobacco chewing habit” are significantly more likely to willing to quit tobacco chewing habit.

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