RESEARCH COMMUNICATION

Smoking among Nepali Youth - Prevalence and Predictors

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Abstract

   Tobacco is the single largest risk factor for various diseases and its presence in the young heralds more serious problems as they may be exposed for longer periods. Prevalence and predictors of smoking among youth will aid in formulating effective preventive and control measures. A cross-sectional study was therefore conducted among 816 students selected from five colleges of Western Nepal using a self-administered questionnaire. Prevalence of ever smoking was 34.2% (males 47.6% and females 18.4%) and for current smoking was 17%. It was higher among youth belonging to 21 years or older as compared to younger age groups. Mean age of initiation was 16.8 years (standard deviation 2.8 years) and the most common reasons cited for smoking were; like it, to feel more relaxed, out of boredom and to look more mature. Proportion of youth who said they felt they were addicted was 43.1% and 64.7% said that they had tried to quit the habit. Most important predictors having independent effects on youth being ever smokers were having three or more smoker friends (OR=18), their own chewing (OR=4.8) or alcohol use (OR=4.2), male gender (OR=3.65) and the type of course they were pursuing, with professional course students having higher risk. With almost one fifth of college-going youth smoking and a higher prevalence in older age groups within them, smoking is a serious concern for young people in Western Nepal.

Key Words: Nepali youth - smoking - prevalence - predictors

Introduction

   Tobacco is the single largest agent implicated in a number of diseases and is a risk factor for the six of the eight leading causes of death in the world. It has killed an estimated 100 million people in the 20th century and continues to kill 5.4 million people every year and this figure is expected to rise to 8 million per year by 2030, 80% of which will occur in the developing countries (World Health Organization,2008).

   Mortality effect of tobacco smoking results due to its role in the causation of various diseases, of which cancer is one of the most common. Around 30% of the mortality caused by smoking in 2000 was through cancer, of which lung cancer was the commonest in both genders (Ezzati and Lopez, 2000). This effect has been evident in various parts of the world in the form of increasing death rates with increasing smoking prevalence or vice versa in both genders (Vecchia, 1985; Bhurgri et al., 2000; Wakai et al., 2001; Hemelrijck et al., 2009). In Nepal, one of the most common cancers has been found to be lung cancer in both genders (Binu et al., 2007).

   In spite of volumes of data suggesting the increased risk for various diseases like cancer and cardiovascular

disorders by smoking, it is still prevalent in most parts of the world. Developing countries share a bigger burden of smoking associated mortality (WHO Report, 2008). Smoking is prevalent in all ages but youth have been particularly vulnerable and smoking among them means exposure will be longer with subsequent higher adverse consequences. Therefore, knowledge of smoking among them becomes essential to monitor the trend of smoking in a country and to assess the effectiveness of control efforts. Global Youth Tobacco Survey (GYTS) has good data on smoking among school students of 8th to 10th standard in many parts of the world but data among young college going students is fewer in number. This group is particularly vulnerable as they leave school and enter into the world of adulthood and will be seeking avenues to express their maturity, thus take up such habits as smoking that is perceived as adult behaviour.

   Nepal does not have regular systematic data collection for monitoring the trend among college youth unlike in US where, smoking among them increased over time from 1991 to 1997 by 4.9% (Czart et al., 2001). Studies have shown that around one in four college students are smokers in some countries (Czart et al., 2001; Rozi et al., 2007). Thus identification of factors that favour smoking

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among the college youth and their own perceived reasons for the same, will aid in making the control measures more effective. Therefore, this study was initiated to find the prevalence of smoking among youth of Western Nepal, their reasons and the factors that predict their use.

Materials and Methods

Study participants

This cross-sectional survey was conducted in Pokhara, capital city of Western Nepal. It constitutes one fifth of the total population of Nepal which is around 24 million. Pokhara has one of the highest growth rates among all cities in Nepal (Population Monograph, Nepal, 2006). Sample size was calculated based on an anticipated current smoking prevalence of 15%, absolute precision of 3% and 95% confidence level, the minimum number observed to be 544. Assuming a minimum participation of 100 students from one college, we selected five colleges of different streams; 2 professional and 3 general stream colleges. One professional college was medical and the other hotel management. All the students in these five colleges were requested to participate in the study. The survey was carried out during the period of May 2006-February 2007.

Data collection

A semi-structured questionnaire was constructed covering socio-demographic variables, smoking habit, its initiation, duration and amount, reasons for smoking, factors that influence their habit, whether they tried to stop the habit and their perception of what kind of users they were. Ever smokers were taken as those who had ever smoked any form of tobacco in the past and current smokers as those who had smoked in the last 30 days. Socio-economic status was categorized according to household assets and profession of parents as it was not possible to get valid household economic information from students. It was a self-administered questionnaire in English language as the medium of instruction in all the colleges was English. They had an option in the questionnaire to either remain anonymous or reveal their identity and seek help if needed.

Students were first explained the purpose of study and its implications and verbal informed consent taken from them. Questionnaire was distributed and sufficient time given to fill them. It took around 10-15 minutes to fill the entire questionnaire.

Data analysis

Data was entered and analyzed using SPSS (SPSS for windows, Rel. 15.01, 22 November 2006, Chicago, SPSS Inc). The results were reported as percentages, odds ratio and 95% confidence interval [CI]. Univariate and multiple logistic regression (stepwise forward likelihood ratio) was used to see the association between various factors and smoking and identify the predictor variables. Smoking was taken as the dependent variable and age, sex, socio-economic status, family members' smoking habits, number of friends as smokers and their own tobacco chewing or alcohol use were taken as independent variables. P value <0.05 was considered as statistically significant.

Results

A total of 816 subjects participated in the study of which 375 (46%) were females and 441 (54%) were males. Overall prevalence of ever smokers was 34.2% (279) while that for current smokers was 17% (139).

Of the 139 current smokers, 58 (41.7%) reported smoking daily and 44 (31.7%) reported varying frequencies in a week. Pattern of smoking also showed that 32 (23%) smoked their first cigarette within one hour of waking up and 99 (71.2%) smokers smoked with their friends. Only 17 (12.2%) smoked alone. Students' most preferred place to indulge in smoking was shops at 46 (33.1%) followed by their own rooms 38 (27.3%) and college premises 24 (17.3%).

Mean age at initiation of smoking was 16.8 years (standard deviation (SD) = 2.8 years) with 101 (72.7%) smokers reporting that their friends had introduced them to the habit, 29 (20.9%) had self introduced and 9 (6.4%) by relatives.

Reasons cited for smoking were, because they just liked it as reported by 35 (25.2%), to feel more relaxed by 33 (23.7%), and 19 (13.7%) said without smoke they felt restless. (Figure1) About 20% (28) cited the reason as boredom and a smaller number to look more mature. It was interesting to note that 17 (12.2%) smokers felt that smoking made them appear more attractive and 32 (23%) said smoking made them feel more comfortable in social

Table 1. Univariate Analysis for Associations between Ever Smoking and Selected Factors

| Variables	Smoking habit		Odds ratio	P
	Yes (%)	No (%)	(95% CI)	value
Sex				
Female (375)	69 (18)	306 (82)	1	
Male (441)	210 (48)	231 (54)	4.0 (2.9-5.6)	<0.001
Age groups				
≤ 18 (262)	55 (21)	207 (79)	1	
19–20 (315)	101 (32)	214 (68)	1.8 (1.2-2.6)	0.003
≥ 21 (239)	123 (52)	116 (49)	4.1 (2.7-5.9)	<0.001
Undergraduate course				
ARTS (401)	56 (14)	345 (86)	1	
Manage (230)	125 (54)	105 (46)	7.7 (5.0-10.8)	<0.001
MBBS (185)	98 (53)	87 (47)	6.9 (4.6-10.4)	<0.001
Income category				
Low (361)	79 (22)	282 (78)	1	
Middle (304)	123 (41)	181 (60)	2.4 (1.7-3.4)	<0.001
High (151)	77 (51)	74 (49)	3.7 (2.5-5.6)	<0.001
Number of smoker friends				
None (409)	50 (12)	359 (88)	1	
1 or 2 (155)	61 (39)	94 (61)	4.7 (3.0-7.2)	<0.001
≥3 (252)	168 (66.7)	84 (33)	14.4 (9.7-21)	<0.001
Family member smokers				
None (445)	144 (32)	301 (68)	1	
Parents* (177)	76 (43)	101 (57)	1.6 (1.1- 2.3)	0.013
Others (194)	59 (30.4)	135 (69.6)	0.9 (0.6-1.3)	0.630
Ever chewers				
No (642)	154 (24)	488 (76)	1	
Yes (174)	125 (72)	49 (28)	8.1 (5.6-11.8)	<0.001
Ever consumer of alcoholic beverages				
No (480)	65 (14)	415 (87)	1	
Yes (336)	214 (64)	122 (36)	11.2 (8.0-15.8)	<0.001

*or siblings

Table 2. Univariate Analysis for Associations between Current Smoking and Selected Factors

Variables	Smoking habit		Odds ratio	P
	Yes (%)	No (%)	(95% CI)	value
Sex				
Female (375)	14 (4)	361 (96)	1	
Male (441)	125 (28)	316 (72)	10.2 (5.8-18)	<0.001
Age groups (in years)				
≤ 18 (262)	32 (12)	230 (88)	1	
19–20 (315)	42 (13)	273 (87)	1.1 (0.7-1.8)	0.690
≥ 21 (239)	65 (27)	174 (73)	2.7 (1.7-4.3)	<0.001
Undergraduate Course				
ARTS (401)	29 (7)	372 (93)	1	
Manage (230)	66 (29)	164 (71)	5.2 (3.2-8.2-)	<0.001
MBBS (185)	44 (24)	141 (76)	4.0 (2.4-6.7)	<0.001
Income category				
Low (361)	40 (11)	321 (89)	1	
Middle (304)	62 (20)	242 (80)	2.1 (1.3-3.2)	0.001
High (151)	37 (24)	114 (76)	2.6 (1.6-4.3)	<0.001
Number of smoker friends				
None (409)	9 (2)	400 (98)	1	
1 or 2 (155)	20 (13)	135 (87)	6.6 (2.9-14.8)	<0.001
≥3 (252)	10 (44)	142 (56)	34.4 (17-9.8)	<0.001
Family member smokers				
None (445)	76 (17)	369 (83)	1	
Parents* (177)	33 (19)	144 (81)	1.1 (0.7-1.8)	0.643
Others (194)	30 (16)	164 (84)	0.9 (0.6-1.4)	0.614
Current chewers				
No (748)	99 (13.2)	649 (86.8)	1	
Yes (68)	40 (58.8)	28 (41.2)	9.4 (5.5-5.9)	<0.001
Current consumers of alcoholic beverages				
No (622)	49 (8)	573 (92)	1	
Yes (194)	90 (46)	104 (54)	10.1 (6.8-5.2)	<0.001

*or siblings

gatherings. Among the current smokers, 45 (32.4%) admitted to smoking more during exam times. Regarding role of media, 42 (30.2%) smokers reported media had no role in their taking up the habit while 15 (10.8%) said media played a major role. More than half (53.2%) of current smokers think smoker students have more friends compared to 21.7% (147) among non smokers and this difference was statistically significant (p<0.001)

Only 29 (20.9%) of the smokers said that their parents knew about their smoking habit. Proportion of smokers who felt they were addicted to smoking was 43.1% (60), however, 90 (64.7%) said they had tried to quit smoking. Among the current smokers, 116 (83.5%) knew that second hand smoke could be harmful as compared to 392 (73%) among non-smokers and this difference was statistically significant (p=0.01).
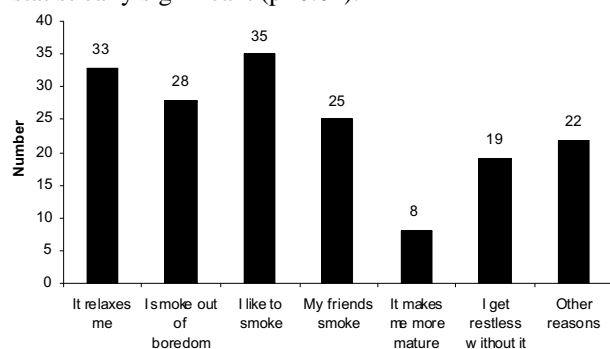
Figure 1. Reasons Cited for Smoking

Table 3. Multivariate Analysis for Associations between Smoking and Selected Factors

Variables	Ever smoker		Current smoker	
	OR (95% CI)	P-value	OR (95% CI)	P-value
Sex				
Female	-		1	
Male	-		3.7 (1.9-7.1)	<0.001
Undergraduate Course				
ARTS/ BA	1		-	
Management	2.3 (1.4-4.2)	0.001	-	
MBBS	2.2 (1.3-3.7)	0.002	-	
Number of smoker friends				
None	1		1	
1 or 2	2.5 (1.5-4.2)	<0.001	5.7 (2.4-13.8)	<0.001
≥3	5.3 (3.2-8.5)	<0.001	18.0 (8.2-39.9)	<0.001
Ever chewers				
None	1		1	
Yes	3.4 (2.1-5.3)	<0.001	4.8 (2.4-9.8)	<0.001
Ever alcoholic				
No	1		1	
Yes	4.3 (2.8-6.4)	<0.001	4.2 (2.6-6.9)	<0.001

Relationship of ever smokers with various socio-demographic factors by univariate analysis showed that being of male gender had 4.3 times more likelihood of being an ever smoker, belonging to middle and higher socio-economic group also had higher chances with OR=1.7 and 3.4 respectively and studying in a professional course also meant that youth were more likely to be ever smokers (OR=6.9). Among other factors, the most strongly related one was having three or more smoker friends (OR=14.7) followed by the status of youth themselves being ever alcohol user (OR=11.2) and ever chewer (OR=8.1) (Table 1).

Current smokers relationship with various factors by univariate analysis also showed similar associations with a few exceptions like the age group of 19-21 years which had significantly higher prevalence among ever users did not hold true for current smokers (p=.63) and there was no association between current smoking status and any relatives being smokers themselves.(Table 2)

Independent variables that best predicted students being ever smokers through multiple logistic regression analysis were; having smoker friends with increasing odds ratio as the number of smoking friends, their own ever alcohol use (OR=4.3) or ever chewing (OR=3.4) and being in a professional course (Table 3). For current smokers, the factors that had independent effect on smoking status of youth were; gender with male more than three times likely to take up smoking compared to females, number of smoker friends (OR=18 for those having three or more smoker friends) and their own current use of chewable tobacco or alcohol. If the youth were current chewers or alcohol users, then they were more than four times likely to take up smoking habit.

Discussion

Worldwide, tobacco kills' one person every six seconds (Mathers and Loncar, 2006) and it could be responsible for one billion deaths in the 21st century (Peto and Lopez, 2001). Tobacco industry on the other hand is concentrating

on young people who were initially not smoking in large numbers (WHO Report, 2008). Public health team has to have effective measures to counter the problem and prevent them from either taking up or continuing with tobacco use. This can be done more effectively with the help of accurate information of tobacco use and its trend and influencing factors.

In the present study, prevalence of ever smoking was 34.3% and current smoking 17%. This is much higher than results of GYTS that ranged from 14% to 20% for ever smokers and 10%-14% for current smokers in various parts of the world, which is mainly because latter are school students of younger age (GYTS Nepal Report, 2007; Sinha and Gupta, 2005; Kyaing, 2007). Even among youth, smoking prevalence is higher in older youth as evidenced by various studies (Yunus, 2001; Nichter et al., 2004; Pradeepkumar et al., 2005; Rozi S et al., 2007; Chandrashekhar et al., 2008). The ever smoker figure is closer to the studies done among college students in India where ever smokers of cigarettes was 36% and 37% (Nichter et al., 2004; Pradeepkumar et al., 2005). Current smoker of 17% is lower than those reported in other college youth studies which had prevalence of 23%-28% (Johnson, 2006; Nichter et al., 2004; Phong, 2008; Sharma et al., 2006). It could be reflective of the differences in setting and cultural factors in different countries as these studies were done in India, China and Vietnam. Yet, Nepal is culturally more close to these countries and therefore if control measures are not taken it may show similar figures in future. This should give impetus to the public health officials to be more concerned to act on time.

Pattern of smoking showed that more than 40% of the current smokers were daily smokers, which is higher than found by other studies where daily smokers were between 5.8% and 31% (Shah et al., 2005; Nichter et al., 2004; Singh et al., 2003). This is a serious concern as more number of Nepali youth seems to be regular smokers indicating the likelihood of comparatively higher clinico-social impact among them. Almost one fourth smoked within first hour of waking up and majority of the youth smoked at the shops or in their own rooms. An Indian study revealed similar finding where students preferred to smoke at shops or rooms as it was prohibited within the campuses, reason similar to Nepal (Nichter et al., 2004). In one of the professional colleges in the present study, the college authorities had assigned a particular place just beyond the campus walls for students to smoke. Even then almost one fifth of them managed to smoke within the college premises.

Mean age at initiation of smoking was of 16.8 years which is similar to findings of two Indian studies where age of initiation was 16 and 17 years. In a study of Vietnamese college students mean age of initiation was slightly higher at 18.6 years (Nichter et al., 2004; Pradeepkumar et al., 2005; Phong, 2008). In contrast, age of initiation found by a study in Canada was 14.8 years which is lower than other studies (Hammond, 2005). Bangladesh study revealed that initiation for male students was 16 years and for females was lower at 14 years (Yunus, 2001). Another Indian study showed that more than 80% of initiation was done between 15-19 years (Sharma et al,

2006). Initiation in all places seem to be below 20 years therefore it is pertinent that these age groups be targeted to prevent their first puffs as after that age the likelihood of starting is very low. Almost three fourth of the youth said that initiation was done in the company of friends signifying the implication of peers pressure in developing the habit. Similar observations were made by other studies (Sharma et al., 2006; Nichter et al., 2004).

Reasons for smoking were most commonly; just liking it, need to feel more relaxed and out of boredom. They also reported smoking more due to exam stress and to feel more comfortable in social gatherings. These reasons are same as found by other studies where the youth reported that they smoked because it made them feel one with their company, made them relaxed and it felt "cool" in front of others. More than one tenth of the smokers felt that smoking made them look more attractive and this finding was similar to other studies (Nichter et al., 2004; Shah et al., 2005; Sharma et al., 2006). This may be due to the influence of advertisements where 10.8% of the current smokers said that their smoking was due to effect of advertising and media. On the contrary, a study in India found that 80% of the students felt that advertising had an influence on youth smoking and 40% said they had tried it because of advertising. However, situational difference may be responsible because according to the authors, at the time of that study, there was cricket match going on and heavy advertising by companies may have influenced the results as another Indian study found that movies and advertisements only accounted for 7.9% of the reasons for smoking (Nichter et al., 2004; Shah et al., 2005). Interestingly, significantly higher percentage of smokers (53.2%) felt that smokers had more friends as compared to less than one fourth of non-smokers who felt the same. There seems to a pervasive thought among the youth that smoking somehow enhances their attractiveness, make them look more mature and more popular (Nichter et al., 2004; Siziya et al., 2008). This observation points towards the need of qualitative research to look deeper into the reasons for such a notion that would make it easier to control problem of smoking among them. It may be easier among these youth as almost four out of five of them hide their smoking habit from their parents and parental negative opinion has been found to be protective in an Icelandic study (Kristjansson et al., 2008). Percentage of youth who felt that they were addicted to smoking was 43.1% which is much lower than 71% found in a study in India. Another Indian study reported that 3.1% of the smokers cited addiction as a reason for smoking. This could probably due to what they perceived to be addiction and as observed by Nichter et al., it varied from individual to individual (Nichter et al., 2004; Sharma et al., 2006). A significantly higher percentage of smokers knew about the harmfulness of second hand smoke as compared to non-smokers indicating that their knowledge had no effect on their smoking status. Knowledge about harmfulness to self and others alone doesn't motivate the youth to either not take up the habit or quit, rather there is a need to change the perception among them that it is cool to smoke and it makes one popular.

The factors that were consistently associated with

youth being ever and current smokers in univariate analysis were having smoker friends, gender, types of course, and their own chewing or alcohol use. Having smoker friends had the strongest association even after multivariate analysis (OR=34) and the observation that friends are one of the most important factor that influences a youth's smoking habit is also evidenced by other studies. Studies in India and Pakistan both revealed that those who had best friend as smoker were more than 5 times prone to be smokers themselves (Nichter et al., 2004; Rozi S et al., 2007). This has been observed even in younger school age population in Nepal and other countries (Siziya et al., 2008; Chandrashekhar et al., 2008; Singh et al., 2003). In a study of adolescents in Iceland, this was the strongest risk factor for smoking among them (Kristjansson et al., 2008). The fact that peers have so much influence over ones' chances of smoking highlights the importance of peer education in getting rid of the habit too. There has to be optimal use of peer influence for changing the perception of youth regarding smoking, only then can significant foray be made into the area of youth smoking reduction. Gender was the next important predictor of smoking among the Nepali youth with males ten times more likely to be smokers than females. This corresponds to the findings of other studies where proportion of female smokers was lower than males and in fact some studies found that there were no female smokers at all in their sample (Singh et al., 2003; Nichter et al., 2004; Shah et al., 2005; Pradeepkumar et al., 2005; Sharma et al., 2006; Chandrashekhar et al., 2008; Siziya et al., 2008). This is not necessarily the same in all parts of the world as a study in young adults in Canada showed that females were more likely to be daily smokers as compared to males though the number of cigarettes they smoked was fewer (Hammond, 2005). Other strong predictors were youth's own tobacco chewing and alcohol use which increased the chances by nine to ten times. Similar findings were seen in studies where they also claimed that their smoking was increased in situations where they were drinking alcohol (Shah et al., 2005; Singh et al., 2003; Nichter et al., 2004; Kristjansson et al., 2008). Type of course the youth were pursuing also had an effect on their smoking status with those pursuing professional (MBBS and Management) courses four to five times more likely to be smokers compared to other type of courses. This is consistent with finding of another study done in India where professional course students were more likely to be smokers than other courses (Nichter et al., 2004). This may be due to the level of stress that students doing professional course undergo but there are other methods of stress reduction that are safe and effective which has to be made known to them and included in the preventive measures.

Even though less than half of the smokers said that they felt they were addicted to smoking, almost two thirds of them had tried to quit the habit. Other studies have found the proportion of those who tried to quit smoking anywhere from 15.2% to 63.3% (Pradeepkumar et al., 2005; Sharma et al, 2006; Chandrashekhar et al., 2008). Moreover, in the present study, significantly higher proportion of smokers knew that second hand smoke was

harmful as compared to non-smokers. This may indicate that to some extent, their knowledge was influencing them to quit the habit. It is also an encouraging aspect of youth smoking i.e. majority of the youth are motivated to stop smoking but are unable to do so for some reasons. Therefore they will be more amenable to preventive and cessation efforts. Countries need to do more to help such youth who are in the grip of smoking addiction but are looking for opportunities to quit. This can have a major impact on smoking prevalence overall as well as bring down smoking associated morbidity and mortality.

The limitation in this study is inherent to cross-sectional studies where one cannot establish temporal association between predictors and dependent factor. The result of prevalence is based on self report of students and though there is no reason to believe that they had any reason to report falsely, there is no way to establish the absence of the same.

It was observed that almost two fifth of the college going youth of Western Nepal were current smokers and reasons for doing so were to counter stress, to be comfortable, to be more popular and addiction. The predictors that had independent effect on youth smoking were having smoker friends, gender, their own chewing or alcohol use and type of course being pursued by them. These findings will be useful while formulating the control measures. Since a large majority of them had already tried to quit, it gives an edge to the policy makers in planning for cessation efforts.

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