

MOTIVATION OF UNIVERSITY STUDENTS FOR SMOKING: A STUDY OF VARIOUS ASPECTS

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ABSTRACT

A Statistical technique of odds ratio analysis was performed to look at the association of students smoking with boarder students belonged to rural areas, fathers' smokers, friends' smokers, sex and family type. A sample of 700 students residing on Peshawar University Campus including all the constituents' colleges, NWFP Agriculture University, NWFP University of Engineering and Technology and all the Post-Graduate Departments have been investigated through a questionnaire with regard to smoking status, their knowledge and attitude towards smoking. The analysis suggests that students smoking were significantly associated with boarder students belonged to rural areas, fathers' smokers, friends' smokers and male students.

Keywords: Confidence Interval, Odds Ratio Analysis, Smokers

INTRODUCTION

Smoking is regarded as socially attractive activity but it is hazardous and injurious to human health. Smoking is responsible for 90% of all cases of lung cancer and 10% of cancer of tongue, larynx, oral cavity, esophagus, pancreas and bladder. Other diseases caused by the use of tobacco include angina pectoris, coronary heart diseases, dental disease, gastric ulcer, respiratory disease and myocardial infarction. Smoking also affects non-smokers who are near by; who inhale smoky air and this phenomenon is termed as passive smoking. Bronchitis is easily developed in young children if their parents are smoking. Tobacco accounts for three million deaths annually, more than one million out of which taking place in developing countries. The World Health Organization (WHO) forecast that after 2 to 3 years, smoking would account 7-million deaths every year in developing countries. Furthermore, smoking causes about one million premature deaths worldwide annually. In America during 1965-1980, three millions premature deaths were related to heart disease attributed to cigarette smoking. In Cuba, smoking related diseases account for over 30% of all deaths and in the United Kingdom for about 15-20% (WHO, 1998).

Cigarette smoking is the most preventable cause of mortality in the United States, responsible for the deaths of 430000 Americans each year. Eighty-nine percent of adults who smoke cigarettes began at the age 16. In 1999, 23% of high school seniors smoked daily, up from 18.5 % in 1991. These trends make preventing youth smoking a critical public health issue. One key to reducing youth smoking is identifying the social influences on smoking. These influences include parents, siblings and peers. Regarding parents, there is evidence that current parent smoking behavior influences children's smoking behavior. However, few studies have reported on the impact of parent smoking

cessation on children's smoking behavior. If the risk for future smoking among children of former smoker were less than that of children of current smokers, then the immediate public health implication would be to help parents to quit smoking. The literature on parent smoking cessation and children's smoking has conflicting findings and methodological limitations. Two of the nine published studies on this topic suggest that parent smoking cessation places children at similar risk for smoking compared with current parent smoking (Bailey *et al.* (1993); Bauman *et al.* (1990)).

Two studies present ambiguous data (Donato *et al.* 1994; Stanton and Silva 1992). It is difficult to compare these studies' result because majority of them used different measures of parent or child smoking. Moreover, most measured child smoking takes place early or midway through the smoking acquisition period (children were 8-14 years old), failing to account for acquisition that took place after the age of 14. The majority used children's proxy reports of parent's smoking - a method of questionable accuracy (Bricker *et al.* 1998).

The present smoking situation in China is a matter of serious concern. According to 1984 and 1989 statistics in China, 56.95% and 66% male doctors were smoker respectively. In 1991, the smoking rate for the medical students in Shanghai was 21.20%, the prevalence of daily smoking showed a marked increase from 9.09% in 1988 to 25.94% in 1992. With infectious diseases now largely under control in China, the high levels of smoking are projected to cause a chronic disease pandemic of over 2 million premature tobacco-induced deaths per year by 2025 (Lei *et al.* 1997).

As future doctors, medical student's smoking status and their knowledge of and attitudes toward

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smoking and anti-smoking campaigns will have much influence on their future work. Studies conducted on more than 9000 medical students in 42 countries by the Tobacco and Health Committee of the International Union against Tuberculosis and Lung Disease revealed that although there existed wide differences in different medical Universities, there were serious deficiencies in knowledge, attitudes and behaviour regarding smoking and its widespread defects in current medical education about smoking and health (Lei, et al. 1997).

METHODS AND MATERIALS

Data was collected during the session 2003-2004, through a questionnaire for this study, from 700 students on the Peshawar University campus: three universities and seven colleges. The questionnaire was prepared according to the aims and objectives of the study. The strength of the students on the campus is 15218. One of the sampling techniques known as the stratified random sampling with proportional allocation was used. According to this technique, the whole campus is divided in to four strata, that is, $n_i = \{(N_i/N) * n\}$ where, $i= 1, 2, 3, 4$, $n = n_1 + n_2 + n_3 + n_4$ and $N= N_1+ N_2+ N_3+ N_4$. These strata are:

- i) University of Peshawar, Post-Graduates Departments: $N_1 = 5298$ & $n_1 = 244$
- ii) N.W.F.P. University of Engineering and Technology: $N_2 = 1352$ & $n_2 = 62$
- iii) N.W.F.P. Agriculture University: $N_3 = 2479$ & $n_3 = 114$
- iv) Colleges on the main campus are: Islamia College Peshawar, Khyber Medical College, Khyber College of Dentistry, College of Home Economics, Jinnah College for Women, Quaid-I-Azam College of Commerce & Law College, that is $N_4 = 6089$ & $n_4 = 280$.

The response variable for this study is a student's smoker on the university campus. That is, the response variable is a binary variable taking the value 1 for smoker and 0 for non-smoker.

Odds and the Odds Ratio

The logistic model quantifies the effect of a predictor variable in terms of an odds ratio. An odds ratio is a natural description of an effect in a probability model since an odds ratio can be constant (Harrell, 2001). The odds of success are defined to be the ratio of probability of success to the probability of failure. Hence if p is the true success probability, the odds of a success are

$$\frac{p}{1-p}$$

. If the observed binary data consists of y

successes in n observations, the odds of a success

can be estimated by:
$$\frac{\hat{p}}{1-\hat{p}} = \frac{y}{n-y}$$

When two sets of binary data are to be compared, a relative measure of the odds of success in one set relative to that in the other is the odds ratio.

Consider the two sets of binary data are arranged in the following (2 x 2) Contingency table.

	Number of Success	Number of Failure
Data set-1	a	b
Data set-2	c	d

The estimated success probabilities in the two data

sets are $\hat{p}_1 = \frac{a}{a+b}$ and $\hat{p}_2 = \frac{c}{c+d}$, and so

the estimated odds ratio, $\hat{\psi}$, is given by

$$\hat{\psi} = \frac{\hat{p}_1 / (1 - \hat{p}_1)}{\hat{p}_2 / (1 - \hat{p}_2)} = \frac{ad}{bc}$$

This estimate is the ratio of the products of the two pairs of diagonal elements in the above (2 x 2) table, and for this reason, $\hat{\psi}$ is sometimes referred to as the cross-product ratio.

Odds ratio is widely used as a measure of association between an event like smoking and its risk factors in observational studies. To test such an association, we generally set the hypothesis $H_0: \psi = 1$, or equivalently, $H_0: \ln(\psi) = 0$.

The hypothesis indicates that we are basically testing for the independence of the two dichotomous variables. The null hypothesis $H_0: \psi = 1$ or $\ln(\psi) = 0$ may be tested using the test statistic:

$$Z = \frac{\ln(\hat{\psi})}{s.e.\{\ln(\hat{\psi})\}}$$

which has an approximate standard normal distribution. Where $\ln(\hat{\psi}) = \ln(\frac{ad}{bc})$.

An approximation to the estimated standard error of $\ln(\hat{\psi})$ is

$$s.e.\{\ln(\hat{\psi})\} = \left(\frac{1}{a} + \frac{1}{b} + \frac{1}{c} + \frac{1}{d} \right)^{1/2}$$

An approximate 100(1- ψ)% confidence interval for $\ln(\psi)$ is constructed as:

$$\ln(\hat{\psi}) \pm Z_{\alpha/2} s.e.\{\ln(\hat{\psi})\} \tag{*}$$

For example, a 95% confidence interval for $\ln(\psi)$ is given by

$$\ln(\hat{\psi}) \pm 1.96 s.e.\{\ln(\hat{\psi})\}$$

The confidence interval (*) on inversion will give us the confidence interval for ψ as

$$[\hat{\psi}e^{-z \frac{s.e.\{\ln(\hat{\psi})\}}{\alpha/2}} < \psi < \hat{\psi}e^{z \frac{s.e.\{\ln(\hat{\psi})\}}{\alpha/2}}]$$

If the interval contains unity, it indicates independence; otherwise an association is indicated.

Odds Ratio Analyses

It is obvious from Table I that the estimated odds of according to locality-wise distribution of the smoking students at university are 2.6 times more smoker students whose are living in the hostels (boarder) as compared to those who are day scholar.

A 95% confidence interval for the true odd ratio is then (0.415, 1.465). This confidence interval shows a significant relationship between smoking and students living in hostels.

It is obvious from Table II that the estimated odds of university smoker students are 2.5 times more vulnerable to smoking that their fathers are smoker as compared to non-smoker fathers. A 95% confidence interval for the true odd ratio is (0.61, 1.24). This confidence interval shows a significant relationship between fathers' smokers and sons' smokers.

It is clear from Table III that the estimated odds of the university students are 12.16 times more chance for smoking, if their friends are smokers as compared to those students whose friends are non-smokers. The 95% confidence interval is (2.10, 2.89). This confidence interval shows a significant relationship between students' smokers and friends' smokers.

It is obvious from Table IV that the odd ratio of the smoker students at university level are 12.78 times higher risk for male students smoking cigarette as compared to female students. The 95% confidence interval is (1.85, 3.243). This confidence interval shows a significant relationship between smoking and males' students.

It is obvious from Table V that the estimated odds ratio for smokers students at university level are 2.54 times higher risk to smoke cigarettes as they belong to single family system when we compared it with joint family system. The 95% confidence interval is (0.62, 1.24). In our society the joint family system has more members to prohibit their younger from smoking.

CONCLUSION

The main aim of this study was to determine various aspects; the university students are motivated towards smoking. A sample of 700 students residing on Peshawar University Campus including all the constituents' colleges, NWFP Agriculture University, NWFP University of Engineering and Technology and all the Post-Graduate Departments, have been investigated through a questionnaire with regard to smoking status, their knowledge and attitude towards smoking. Out of the total of 700 students, 277 were smokers and 423 non-smokers.

The data were analyzed through the statistical technique of odds ratio and the association of students smoking with boarder students belonged to rural areas, fathers' smokers, friends' smokers, sex and family type was investigated. The analysis suggests that students smoking were significantly associated with boarder students belonged to rural areas, fathers' smokers, friends' smokers and male students belonged to single family.

It is concluded that the students who are living in hostels are more likely to have tried smoking tobacco. Father smokers, friend smokers are also the main causes that the students are motivated for smoking. The results suggest that students would greatly benefit if parents who quit smoking before their child enters the main period of smoking acquisition. Those parents that are quitting will not only improve their own health, but may reduce risk that the child will become daily smokers. Parental cessation should be considered a key component of future interventions designed to prevent children from smoking.

Table I : Association of Rural and Urban Smoker Students

Locality	Residence		Total
	Boarder	Day-Scholar	
Rural	84	89	173
Urban	28	76	104
Total	112	165	277

Table II : Association of Smoker Students to Smoker Fathers

Students Smokers	Father Smokers		Total
	No	Yes	
No	255	168	423
Yes	104	173	277
Total	359	341	700

Table III: *Association of Smokers' Students Versus Smokers' Friends*

Students Smokers	Friends Smokers		Total
	Yes	No	
Yes	180	97	277
No	56	367	423
Total	236	464	700

Table IV: *Association of Smokers Versus Sex*

Students Smokers	Sex		Total
	Male	Female	
Yes	268	09	277
No	296	127	423
Total	564	136	700

Table V: *Association of Smokers' Students Versus Family Type*

Students Smokers	Family System		Total
	Single	Joint	
Yes	152	125	277
No	137	286	423
Total	289	411	700

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