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Health Hazards of Tobacco

Nilabha Sharma*, Deeksha Singh*, Anupma Kumari**
*B.Sc III (2007-2010), Department of Zoology, Patna Women's College, Patna University
**Lecturer, Department of Zoology, Patna Women's College, Patna University

The blood-profile of cigarette smokers and oral mucosa tobacco chewers has been investigated with an objective to determine the health hazards of consumption of tobacco. Blood samples of 20 smokers and 20 non- smokers of two age groups (18-25 yrs. and 30-60 yrs) were analyzed for their serum cholesterol.

Similarly, oral fluid was collected from 19 tobacco chewers and 19 non- chewers of two age groups (18-25 yrs. and 30-60 yrs) and assessed by histology test. The tests revealed high levels of serum cholesterol (mean = 216 mg/dl, t-stat = 4.99, t-critical = 2.26) in smokers of 18-25 yrs. age group and still higher in smokers of 30-60 yrs age group (mean = 235.7 mg/dl, t-stat = 4.68, t-critical = 2.26) as compared to non- smokers of both the age groups. The histology test revealed precancerous condition like leukoplakia in tobacco chewers of 18-25 yrs. age group and further aggravated precancerous condition like dysplasia and erythroplakia in chewers of 30-60 yrs age group as compared to the control subjects.

Key words :- *Cigarette smokers, tobacco chewers, serum cholesterol, oral histology, leukoplakia, dysplasia and erythroplakia.*

Introduction : The World Health Organization has named tobacco as one of the greatest public threats of the twenty-first century. The consumption of tobacco is commonly in the form of smoking, chewing, snuffing or dipping tobacco. The characteristic constituent is nicotine and nornicotine. In India 120 million people are cigarette smokers (Rani et al, 2003).

Cigarette smoke contains toxic carcinogens like nicotine, tar, acrolein, carbon monoxide, formaldehyde, ammonia, hydrogen cyanide, arsenic and DDT (Sandra et al, 2006), while guthka contains polynuclear aromatic hydrocarbons, polonium-210, N-nitrosoamines, radium-226, and lead-210 which leads to oral sub-mucous fibrosis, a precancerous condition (Main and Lecavalier, 1988). Nicotine is a powerful vasoconstrictor that causes rise in blood pressure (Slone et al, 1989 and Shaper et al, 1989). Tobacco use leads to diseases affecting the heart and lungs, with smoking being a major risk factor for increased level of serum cholesterol, heart attack and stroke. Neki (2002) observed that mean serum cholesterol was significantly higher in smokers as compared to non-smokers.

The risk of oral cancer was 4.2 times greater in those who used snuff than those who did not (Winn et al, 1981).

The objective of the present investigations was to see the effect of tobacco use on the health of the consumers of two different age groups and to spread awareness about the misery that accompanies the addiction to tobacco.

Materials and Methods :

This study has been conducted in Patna. All the subjects (male) belonged to middle-lower income group. The younger smokers were found to consume on an average 12 cigarettes per day while the older ones consumed on an average 8 cigarettes per day. Blood samples of 20 smokers and 20 non-smokers of two age groups (18-25 yrs. and 30-60 yrs) were analyzed for serum cholesterol by an enzymatic method. Oral fluid was collected from 19 tobacco chewers and 19 non-chewers of two age groups (18-25 yrs. and 30-60 yrs) and assessed by histology test.

The statistical analysis was done with student's 't'test for significance.

Results :

Table 1 shows the comparison between the serum cholesterol levels (mg/dl) in smokers and control persons of age group (18-25 yrs.). The 't' test for two variables with unequal variance shows that t (stat) value is higher than t (critical) value. This means that the difference is significant. The serum cholesterol levels in smokers is significantly higher than those of controls.

Table 1 : Comparison between the serum cholesterol levels (mg/dl) in smokers and control persons of age group (18-25 yrs.)

Normal Range : 130-20 mg/dl

	Smokers	Control
Mean	216	138.8
S.D. (±)	48.52	6.20

t-stat	→	4.99
t-critical	→	2.26

Since t-stat > t-critical value, the difference between the two means is significant.

Table 2 shows the comparison between the serum cholesterol levels (mg/dl) in smokers and control persons of age group (30-60 yrs.). Since t (stat) value is higher than t (critical) value, the difference is significant. This implies that they might or are likely to suffer from heart ailments.

Table 2 : Comparison between the serum cholesterol levels (mg/dl) in smokers and control persons of age group (30-60 yrs.)

Normal Range : 130-200 mg/dl

	Smokers	Control
Mean	235.7	142.2
S.D. (±)	62.75	7.61

t-stat	→	4.68
t-critical	→	2.26

Since t-stat > t-critical value, the difference between the two means is significant.

The difference in serum cholesterol levels of two age groups was due to longer duration of smoking in older persons as compared to the younger ones. However, the difference between the mean values of younger and older ages in merely (235 – 216) 19. The standard deviations being as high as 48.52 and 62.75, this difference of 19 appears to be insignificant!

Among tobacco chewers, various degrees of abrasions in the buccal mucosa was seen. In tobacco chewers of (18-25 yrs.) age group, 80% showed leukoplakia and no change was found in the remaining 20% of the subjects. On the other hand, all the chewers of (30-60 yrs.) age group had either dysplasia (in 44% of the cases) or erythroplakia (in 56% of the cases). Thus, we see that the older tobacco chewers, owing to longer duration of tobacco consumption suffered from serious oral histopathology.

Discussions :

Acrolein present in cigarette smoke increases low density lipoproteins (Smith et al 1992). Wald (1973) observed that influence of smoking is synergistic with other risk factors such as hypertension and elevated serum cholesterol. Several studies have shown an association between cigarette smoking and altered serum lipids and lipoprotein concentrations (Craig et al.,1989 ; Calder et al.,1963 ; Pelletier ,1968 ; Sharma et al, 2000). Neki (2002) also observed that mean serum cholesterol (181±28.10 mg/dl) were significantly higher in smokers as compared to mean serum cholesterol (164±20.26 mg/dl) level of non smokers. Mallika et al (2003) studied cigarette smoking among masons and she found that cigarette smoking masons had more total cholesterol than normal masons. Each year about 150000 cardio-vascular deaths in USA are attributed to cigarette smoking and of these 30000 are attributed to passive smokers, who do not smoke but work or live in proximity of active smokers (Mc Ginnis et al., 1999).

In a study involving Indian villages, it has been reported that 98% (48 out of 49) of those with Candida-infected leukoplakias chewed tobacco (Daftary et al, 1972). Pindborg et al (1973) showed that the use of smokeless tobacco had the transformation rate greater than 6%, for malignancy

or epithelial dysplasia of oral leukoplakia . Banoczy et al (2001) did cross-sectional studies to find the relationship between tobacco use and leukoplakia, and found a higher prevalence rate of leukoplakia among tobacco users.

Chewing of areca nut (tobacco) in Pakistan , India and mainland China was the major etiologic factor for oral leukoplakia and oral sub-mucous fibrosis (Mehta et al., 1981; Maher et a.l, 1994; Tang et al., 1997). Wray and Mc Guirt (1993) showed that people who used smokeless tobacco for 40 or more years developed leukoplakia and erythroplakia or both. Smokeless tobacco is also responsible for the development of oral leukoplakias in both teenage and adult users especially in Scandinavia and USA (Kallischnigg and Rolf Weitkunat , 2008).

Conclusion :

The present study indicates that smokers have higher levels of serum cholesterol. Further it was observed that the level of serum cholesterol was significantly higher in the older age group (30-60 yrs.) as compared to the younger age group (18-25 yrs.) indicating that the serum cholesterol increased with the duration a person consumed tobacco. In case of tobacco chewers, degree of abrasions in the buccal mucosa increases in severity with the increase in duration of use as indicated by the results of the two age groups, i.e. (18-25 yrs.) and (30-60 yrs.) respectively.

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