

A Consequence of Chewing Tobacco on Fasting Blood Sugar Level in Bihar Population

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ABSTRACT

Background: Tobacco consumption is the biggest problem nowadays, and quitting also becomes difficult. The aim of this study was to determine the consequence of chewing tobacco on fasting blood sugar level (F.B.S.).

Material & Methods: In the study, there is a comparison of data between the study and the control groups. It is divided into two subgroups which are on the basis of age: group I= 18-30 years of age and group II = 31- 50 years of age. For the analysis of blood sugar level, blood samples from all subjects collected in the morning.

Results: The mean value of blood sugar in chewing tobacco users was 22.66 ± 0.5889 & 22.35 ± 0.5987 in group I & group II, respectively, But the difference of the mean value of blood sugar is statistically non-significant in both group I ($p=0.4945$ N.S.) & group II ($p=0.6471$) his study showed the mean value of F.B.S. in group I in chewing tobacco non-users & users 83.72 ± 2.071 & 92.24 ± 3.418 respectively.

Conclusion: There is an increase in the blood sugar level in people consuming chewing tobacco. Increasing awareness about the harmful effects of tobacco consumption on oral health should be incorporated in smoking campaign and programs.

Keywords: Smokeless Tobacco, F.B.S., Tobacco Chewers.

INTRODUCTION

Chewing tobacco is a type of smokeless tobacco (S.L.T.) that is consumed directly without a change in its physical form and can be used orally or nasally. In India, according to recent epidemiological studies, S.L.T. users contribute about 40% of the total tobacco used epidemiological.[1] The use of pan masala/ gutkha is considered a socially most acceptable habit by Indians in the last two decades. Gutka is a chewing tobacco preparation. The addictive nature of tobacco compounds the problem, as quitting becomes difficult even for concerned users. This "socially accepted addiction" is, in fact, proving

more dangerous than other addictions.[2] According to WHO estimates, there are nearly 2.5 crore tobacco users in India, including both smoked and chewed forms. Among the 28 known carcinogen in S.L.T., tobacco-specific nitrosamines are considered to be the most responsible agent for half of all cancers in men and a quarter of all cancers in women in India. The National Family Health Survey conducted in 1998- 1999 reported a prevalence rate of 28.3% for chewing tobacco and 29.4% for smoking tobacco in men aged 15 years and above. 289 Population attributable risk percentage was observed to be 66.1 for tobacco

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chewers for the development of oral cavity cancer, a possible effect on blood sugar levels, possibly increasing the risk of type 2 diabetes. [3,4] The habit of chewing pan masala not only a serious health problem for the individual, but it poses a big health problem.[5] So above background, the aim and objectives of this study were to determine the consequence of chewing tobacco on fasting blood sugar level.

MATERIAL & METHODS

The present study was a cross-sectional study conducted on Bihar Population, aged between eighteen years to fifty years in the Department of oral medicine and radiology, B.I.D.S.H. (Patna) Bihar on 100 patients, i.e. 50 chewing tobacco users (study group) and 50 chewing tobacco non-users (control group).

Selection Criteria for Study Group

1. Age should be between eighteen to fifty years.
2. Exclusive smokeless tobacco users for at least the last six years.
3. Body mass index should be within the normal range.

Selection Criteria for Control Group

1. Same age group as a study group.
2. Same Socioeconomic Status.
3. Subjects who had never taken any type of tobacco in any form.

Exclusion Criteria

1. Smokers.
2. Presence of any self-reported systemic diseases & history of heavy alcohol consumption will be excluded from the study.

In the study, the data were compared between the study and control groups. Each group is divided into two subgroups on the basis of age: group I= 18-30years of age and group II= 31 -50 years of age. Sample Collection: Blood samples from all the subjects were collected in the morning after overnight fasting for the analysis of fasting blood sugar. Fasting blood sugar (F.B.S.): The quantitative estimation of the fasting blood sugar was done by the glucose oxidase method, using enzymatic kits

(GOD-POD) provided by the Diabetes Care and Research Centre.

RESULTS

In this study, the chewing tobacco non-users & users were twenty-five subjects each in group I (18-30 yr) and group II (31-50yrs). (Table 1) This study showed the mean value of B.M.I. in chewing tobacco non-users was 22.77 ± 0.5053 & 22.45 ± 0.8627 in group I & group II, respectively. In chewing tobacco users was 22.66 ± 0.5889 & 22.35 ± 0.5987 in group I & group II, respectively, But the difference of the mean value of B.M.I. is statistically non-significant in both group I ($p=0.4945$ N.S.) & group II ($p=0.6471$). (Table 2) The present study showed the mean value of F.B.S. in group I in chewing tobacco non-users & users 83.72 ± 2.071 & 92.24 ± 3.418 , respectively. The difference between the mean value of F.B.S. was statistically highly significant ($p<0.0001^{***}$) in group II. (Table 3)

Table 1: Age-based distribution of patients (tobacco users & non-users)

Age group	Number of tobacco non users	Number of tobacco users
Group 1 (18-30yrs)	25	25
Group 2 (31- 50 yrs)	25	25
Total	50	50

Table 2. Shows the B.M.I. (mean $\pm$ sd) in chewing tobacco non-users and users.

Age group	Tobacco non users B.M.I. (kg/m ²)	Tobacco users B.M.I. (kg/m ²)
Group 1(18-30 yrs)	22.77 ± 0.5053	22.66 ± 0.5889
Group 2 (31-50yrs)	22.45 ± 0.8627	22.35 ± 0.5987

Table 3. Shows the F.B.S. (mean $\pm$ S.D.) in Chewing tobacco non-users and users in Group I.

	Tobacco non users(Mean $\pm$ S.D)	Chewing tobacco users(Mean $\pm$ S.D)	t value	P value
FBS(mg / dl)	83.72 ± 2.071	92.24 ± 3.418	10.66	<0.0001

DISCUSSION

The subjects included in this study was B.I.D.S.H. Bihar. There was no significant difference in the anthropometric parameters, including age, height, weight and B.M.I. There was no considerable difference between the economic status of the control and study group of individuals. Education standard has been found worse among chewing tobacco users in comparison with chewing tobacco non-users counterpart. Expenditure on tobacco has been found significantly higher in the proportion of their daily income in India.[7]

Rooban et al. [8] observed that 34% of the study population (15 years or older) used chewable smokeless tobacco. Smokeless tobacco consumption was significantly higher in poor, less educated populations in comparison to the rich and educated ones. The present study shows the difference in the mean value of B.M.I. is a statistically non-significant in-between group I ($p=0.4945$ N.S.) and Group II ($p=0.6471$ N.S.). Similar findings were suggested by Rooban et al. [8], Purushottam Pramanik et al. [9], and Dr Rajesh Shrivastava et al.[10] The present study shows that chewing tobacco users have a significantly higher level of Fasting blood sugar than in the control group (p -value.[11] It has been proposed that nicotine present in tobacco may hamper the maintenance of blood glucose level by insulin. Nicotine possibly lowers insulin sensitivity.[12] Moreover, adiponectin (a hormone secreted by adipocytes) gets lowered due to the nicotine component of tobacco.[13] Adiponectin is involved in the maintenance of blood glucose levels.[14] Lowering adiponectin had been linked to the possibility of developing type 2 diabetes.[15] The rise in mean values of glucose levels in gutkha consumers has also been noted by P. Jaganmohan et al.[16]

CONCLUSION

The present study also shows an increase in blood sugar level in people consuming chewing tobacco. There is a good Awareness campaign among youths regarding the deleterious effect of tobacco may lower the trend of using chewing tobacco products.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

REFERENCES

1. Indian Council of Medical Research Bulletin, November 2000.
2. Dr Anannd Balan. Pan masala/Gutkha-Consulting psychiatrist. Available at www.anandbalan.in/pmgpro.html. [Accessed on 22/10/2010].
3. Kuruvilla. Article on utilizing dental colleges for the eradication of oral cancer. The year 2008; Vol 19: Issue 4: page.349-353.
4. Shah S, Qureshi R, Azam I. Is Chaalia/Pan Masalaharmful for health? Practices and knowledge of children of schools in Mahmoodabad and Chanesar Goth, Karachi. Jun 2010; 60(6):515.
5. www.ummathooronline.blogspot.com/sideeffects of panmasala- html [Accessed on 25/10/10].
6. G. Rajasekhar, M.Ramgopal, A. Sridevi and G. Narasimha; Some haematological and biochemical parameters in smokeless tobacco (Jharda) chewers. African Journal of Biotechnology, January 2007; Vol. 6(1): 53-54.
7. Efroymson D, FitzGerald S. Tobacco and poverty: Observation from India and Bangladesh. Path Can 2003;10:56-60.
8. T Rooban, J Elizabeth, KR Umadevi, K Ranganathan. Sociodemographic correlates of male chewable smokeless tobacco users in India: A preliminary report of analysis of national family health survey, 2005-2006; Smokeless Tobacco, 2010, 47 (5), pp. 91-110.
9. Purushottam pramanik, Manas ghosh, Archana choudhary, Basudev ghosh and Indra Narayan Ganguli. Effect of 'khaini' – a form of smokeless chewing tobacco on pulmonary functions. Indian J Physiolpharmacol 2013; 57(1) : 84–86.
10. Dr. Rajesh Kumar Shrivastava, Dr. Rajesh Kumar Jha, Dr. Ravindra Kumar. Comparative Study of Tobacco Chewer & Smokers as a Risk Factor For Cardiovascular Disease Indian Journal Of Applied Research, Jan 2014,Vol. 4 (1).
11. Roan Mukherjee and Amal Chatterjee. Assessment of the effects of smoking and

consuming gutka (smokeless tobacco) on selected hematological and biochemical parameters: a study on healthy adult males of hazaribag, Jharkhand. IJPCBS 2013, 3(4), 1172-78.

12. Targher G, Alberiche M, Zenere MB, Bonadonna RC, Muggeo M, Bonora. Cigarette smoking and insulin resistance in patients with noninsulindependent diabetes mellitus, J. Clin. Endocrinol. Metab.,1997 Nov;82(11):3619-24.

13. Iwashima Y, Katsuya T, Ishikawa K, Kida I, Ohishi M, Horio T, Ouchi N, Ohashi K, Kihara S, Funahashi T, Rakugi H, Ogihara T. Association of hypoadiponectinemia with smoking habit in men. Hypertension.,2005 Jun;45(6):1094-100.

14. Díez JJ, Iglesias P. The role of the novel adipocyte derived hormone adiponectin in human disease, Eur. J. Endocrinol., 2003;148 (3): 293–300.

15. Chandran M, Phillips SA, Ciaraldi T, Henry RR: Adiponectin: more than just another fat cell hormone?Diabetes Care,2003,26(8):2442-50.

16. P. Jaganmohan and A. Phaninanatha Sarma. Studies on changes in hematological and biochemical parameters in smokeless tobacco (Gutka) chewing auto drivers in Nellore district of Andhra Pradesh, Indian Journal of Applied and Natural Science, 2011, 3. (1): 106-10