SNUFFED TOBACCO MIGHTIER THAN SMOKED TOBACCO: FREQUENCY DETERMINATION OF UPPER AND LOWER RESPIRATORY TRACT DISEASES

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ABSTRACT

Objective: To assess the frequency of upper and lower respiratory tract diseases in people addicted to snuffed tobacco.

Methods: A retrospective cross sectional study conducted from patient data, who presented at the outpatient departments at Civil Hospital, Karachi and Ankleseria Hospital, Karachi for a period of 6 months from January 2014 to June 2014. A total of 131 patients were screened who were using snuff tobacco for variable period of time and presented with a series of signs and symptoms. 70 patients were included in the study, after meeting the eligibility criteria. A detailed history, physical examination, ENT examination and baselines investigations were recovered from patient record. Data was entered and frequencies were calculated.

Results: Out of 70 patients, 41 (58.5%) were males while 29 (41.5%) were females. 63 (90%) of the patients presented with cough, 52 (74.3%) with productive cough, 20 (28.5%) with dyspnoea, 11 (15.7%) with fever, 3 (4.3 %) with bleeding from nose and mouth, 8 (11 .4%) with facial pain and 4 (5.7%) with weight loss. On the basis of history, examination and investigations, 31(44.3%) of the patients were diagnosed as COPD, 10 (14.3%) as pharyngitis, 12 (17.1%) as sinusitis, 7 (10%) as nasal polyps or nasal ulcers, 06 (8.5 %) as pneumonia. 2 patients (2.85%) were diagnosed as lung cancer and 2 patients (2.85%) were diagnosed as nasopharyngeal carcinoma.

Conclusion: Snuffed tobacco can cause diseases of upper & lower respiratory tract and can also lead to more grievous pathologies like lung cancer and nasopharyngeal carcinoma.

Key Words: Snuffed; Tobacco; COPD; Lung Cancer; Nasopharyngeal Carcinoma; NAS.

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INTRODUCTION

According to World Health Organization (WHO) tobacco is the lone, most common cause of preventable death in today's world.[1] It has been estimated that tobacco use is responsible for over 5.4 million deaths every year,[2] with a projected number of more than 8 million by 2030, of which more than two thirds will be in third world countries.[1,2] In Pakistan, tobacco use is very common with about 32% of men and 5.7% of women using it,[1] with 6.3% of youth involved in smoking tobacco.[3]

Around 3800 chemicals and carcinogens have been identified in tobacco smoking, affecting tumor suppressor genes like p53.[4] Increase in cancer chances has been associated with long term tobacco and nicotine exposure,[5,6] resulting due to nicotine dependence and addiction.[7] Nicotine is known to be one of the most addicting substances and because of the addictive properties of nicotine, tolerance and dependence develops.

Tobacco smoking can cause cancers of lung, bladder, esophagus, kidneys, oral cavity, larynx, pharynx, pancreas, and stomach and also can cause

myeloid leukemia.[8] It is a major risk factor for coronary heart disease and chronic obstructive pulmonary disease (COPD).[9] About 90% of all deaths from COPD are attributable to tobacco smoking.[8]

Over the years, tobacco use has evolved of which smokeless tobacco has gained popularity. With the advent of declining cigarette smoking in the western world, there has been an increase in smokeless tobacco use worldwide; especially in the youth.[10]

Smokeless tobacco is highly addictive and a high risk factor for oropharyngeal cancer as well as of esophageal, pancreatic and head and neck region cancers.[1] A study showed that the frequency of oropharyngeal cancers were much higher in Pakistan compared with other countries from WHO's Eastern Mediterranean Region [11]

In Pakistan, smokeless tobacco are readily available and include Paan, Gutka, Naswar, Mewa and Tumbaku,[10] in the chewable form and in the snuffed form by the name of "NAS"[10] commonly known by the name of "Dry Snuff'.

Snuff is a kind of smokeless tobacco, made by grounding or pulverizing tobacco leaves, with origins in America. It is a common household use in Indian subcontinent as well.[12]

Smokeless tobacco products, has almost the same carcinogens as smoked tobacco.[13] A study on smokeless tobacco users showed that they have less chances of having lung cancer but increased risk of oral cancers; compared to smokers, and have a higher cancer risk as compared to people who do not use any form of tobacco.[14] Nasal snuff has been associated with increased risk of chronic Bronchitis in South Africa.[15] Sreedharan et al. concluded in their study that nasal snuff causes chronic rhinitis and not suitable for health.[13] Nasal cancer have also been associated with snuff.[16]

There is some literature on chewable smokeless tobacco in Pakistan but there is no national data on snuffed smokeless tobacco. The objective of this study is to assess the burden of upper and lower respiratory tract diseases in people addicted to snuffed tobacco, locally known as NAS.

MATERIALS AND METHODS

Study Design:

We conducted a retrospective cross sectional study from patient records of Civil Hospital, Karachi and Ankleseria Hospital, Karachi. The study included all the patients that presented at both the facilities with history of snuffed tobacco use, during the period of January 2014 till June 2014. Detailed history and physical examination was extracted from the records including ENT examination. Investigations including Complete Blood Picture, Urea, Creatinine, Electrolytes, Chest X-Ray, Sputum Examination, Sputum Culture and Sensitivity, Bronchoscopy, Pulmonary Function Tests, CT Scan Chest and CT Scan Paranasal Sinus were also obtained to establish the health status of the participant. Data was entered and simple frequencies were calculated on SPSS 18.

Inclusion Criteria

All patients who presented with upper and lower respiratory tract signs and symptoms were included with a positive history of snuffed tobacco use for at least a year or so.

Exclusion Criteria

Patients with incomplete records and addiction to addictive products other than snuffed tobacco were excluded. This included tobacco smokers, chewable tobacco users. Patients with history of asthma, allergic rhinitis, pharyngitis, and occupational exposure were also excluded. Patients with positive history of snuffed tobacco use who presented with non-respiratory complains were also excluded.

Ethical Consideration

Prior permission was taken from both the hospitals before accessing patient data records. Patient record confidentiality was maintained and no data other than the mentioned above in study design was accessed or analyzed.

RESULT

Between January 2014 to June 2014, a total of 131 patients presented in the outpatient facility at the two hospitals who were using snuffed tobacco for variable period of time and presented with a series of signs and symptoms. 103 presented at Civil Hospital, Karachi while 28 presented at Ankelseria Hospital. Out of these 131, 70 patients who presented with respiratory symptoms were screened out. Out of 70 patients, 41 (58.5%) were males while 29 (41.5%) were females. The male to female ratio was 1.4 : 1 with a mean age of 44 years (range 30 - 75 years). Table 1 shows the demographics and gender break up.

Of all the 70 patients, 63 (90%) of the patients presented with cough, 52 (74.3%) had sputum production and 20 (28.5%) with dyspnea. All presenting signs and symptoms along with percentages are shown in Table 2 and Figure 1 shows time since addiction.

On the basis of history, clinical examination & investigations, 31 (44.3%) of the patients were

Table 1: Demographics of Patients

VARIABLE	NUMBER	PERCENT (%)
AGE (YEARS)		
<35	01	1.4
35-45	39	55.7
45-55	15	21.4
55-65	11	15.7
>65	04	5.7
Total	**70**	**100%**
GENDER		
Male	41	58.6
Female	29	41.4
Total	**70**	**100%**

diagnosed as COPD, 10 (14.3%) as pharyngitis, 12 (17.1 %) as sinusitis, 7 (10%) as nasal polyps or nasal ulcers and 6 (8.5 %) as pneumonia. 2 patients (2.85%) were diagnosed as lung cancer & 2 patients (2.85%) were diagnosed as nasopharyngeal carcinoma. An incidental finding in this study was that 33 (47.1 %) were hypertensive in which 22 (66.6%) were females and 11 (33.3%) were males.

22 (70.96%) diagnosed COPD cases, both cases of lung cancer and 1 nasopharyngeal carcinoma was found in patients who had used snuffed tobacco for more than 5 years.

DISCUSSION

Pakistan has about 22 million smokers, making it one of the highest tobacco consumption rates in the South East Asia, with 55% of the households at least having one tobacco user.[17] Snuffed tobacco locally known as NAS and other smokeless tobacco products are becoming more popular especially in the masses. Ali et al, in their study concluded that 52.4% of the population that presented in family practitioner clinics has had used smokeless tobacco in one form or the other.[18] Another study in squatter settlements of Karachi showed that almost 40% of the participating population was using smokeless tobacco products.[19]

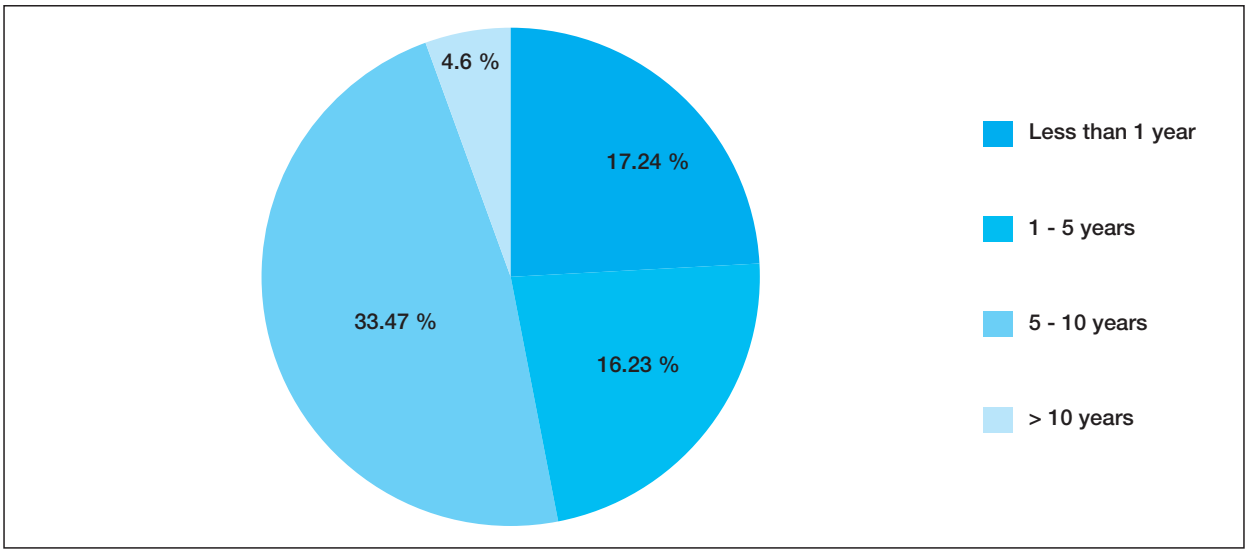
Smokeless tobacco has been associated with Chronic Bronchitis,[14] Diabetes Mellitus Type 2,[20] Preterm Delivery,[21] Preeclampsia[21] and increased risk of myocardial infarction compared to non users.[22] A study also concluded that nasal snuff use was associated with younger age, high BMI, lower education and higher socioeconomic position.[23]

Our study showed that COPD was prevalent in participants with snuffed tobacco exposure. Like Sreedharan et al,[13] our study also showed that snuffed tobacco use had association with pharyngitis and

Table 2: Presenting Signs and Symptoms of patients addicted to snuffed tobacco

Signs and Symptoms	Numbers	PERCENTAGES
Cough	63	90
Sputum	52	74.3
Dyspnea	20	28.5
Fever	11	15.7
Facial Pain	808	11.4
Weight loss	404	5.7
Epistaxsis	02	2.8
Haemoptysis	01	1.4

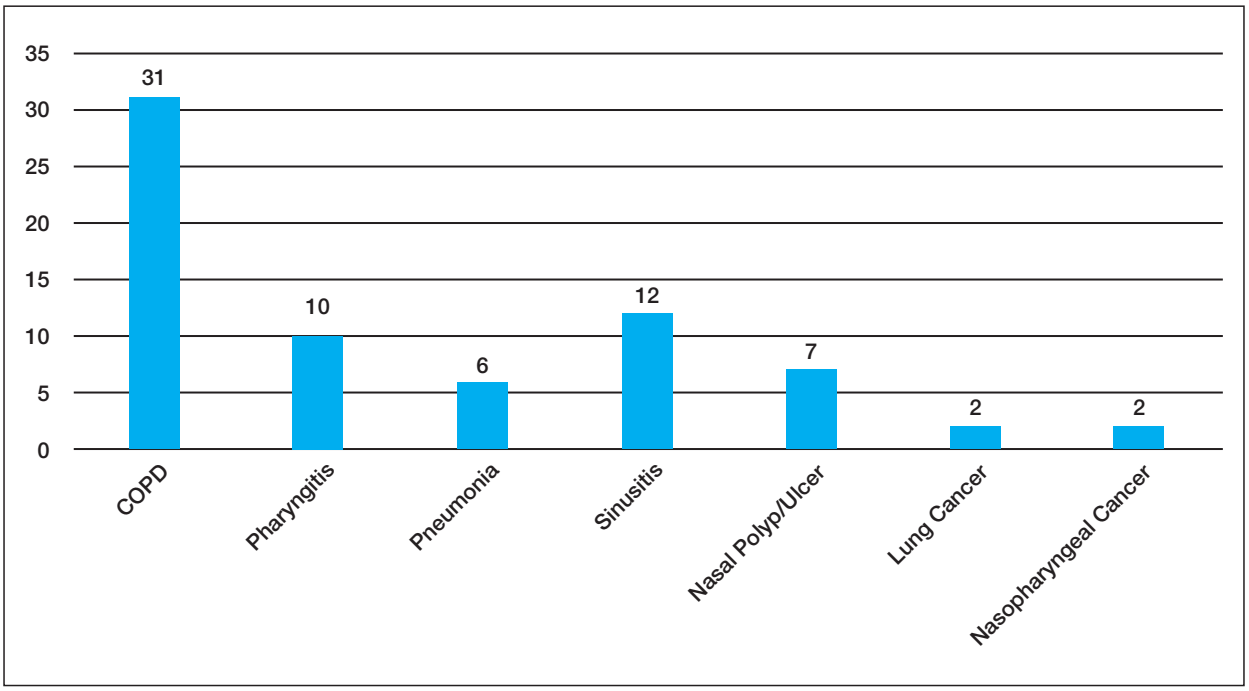
Figure 1: Time Since addiction



chronic sinusitis, with 31.4% participants being affected all together. Snuffed tobacco was not only presented with significantly indolent diseases but also with more grievous outcomes including lung and nasopharyngeal carcinomas (5.6%). A German study showed that nasal snuff use is associated with increased risk of nasal carcinomas especially paranasal sinus cancers.[24] Tomar et al. also in their paper concluded that smokeless tobacco (snuff and chewable tobacco) was associated with whitish oral lesions with possible malignant potential, in United States adolescents.[25]

Complications were directly associated with the length of snuffed tobacco use. 70.96% of the patients who developed COPD had used snuffed tobacco for over 5 years while the cases of lung and nasopharyn-

Figure 2: Complications in patients using snuffed tobacco



geal cancer were also reported in chronic use.

The possible mechanism of complications is still unknown and needs to be worked up but smokeless tobacco use facilitates users to shift from exclusive smokeless tobacco, to smoking or dual use,[26] which exponentially increases the chances of complications.

An incidental finding of hypertension in 47 % of the snuffed tobacco users with female predominance was reported in our study, though the mechanism is unclear and this finding needs to be further evaluated.

The interventions recommended by WHO Framework Convention on Tobacco Control were exclusively targeted towards the control of cigarette smoking with very little focus on control of smokeless tobacco.[27] World needs to strengthen its political and public health efforts to control this issue and build a corporation with involvement of all major departments including the health ministry, agricultural department and the central board of revenue and taxation. The state governments should play their role to ban all forms of tobacco sponsorships, and advertisements, decrease tobacco consumption and increase the taxes on all forms of tobacco.

A national registry for respiratory diseases and cancers should be formed to generate an epidemiological data recording of incidence, risk factor and patterns of using tobacco in the country. This body will determine the population at risk and the risk factors associated with engaging in tobacco use. Such a knowledge base will facilitate interventions that can be specifically directed keeping in view the cultural, social and economic factors of the population, to prevent grievous outcomes of this addiction. It should be an integral part of the national chest disease control and national cancer control program.

CONCLUSION

Snuffed Tobacco also known as NAS, a form of smokeless tobacco is a common addictive used especially in low socioeconomic class. No previous data was available regarding the hazards that snuffed tobacco can cause for the comparison of the results of this study. This study demonstrated that snuffed tobacco can cause significant upper & lower respiratory tract diseases including COPD, pharyngitis, sinusitis, nasal polyps/ulcers and also lung and nasapharyngeal carcinomas. Therefore patient awareness regarding the hazards of snuffed tobacco through seminars, lectures, print and electronic media is inevitable and early identification and comprehensive evaluation of people addicted to snuffed tobacco is the need of time, which can lead to a significant reduction in more grievous pathologies although more detailed and comprehensive studies are required in this regard.

CONFLICT OF INTEREST

Authors have no conflict of interests to disclose.

FINANCIAL DISCLOSURE

This study was funded and conducted by the authors themselves. There is no financial disclosures.

AUTHOR CONTRIBUTIONS

Everyone played their role equally in paper conceptualization, synopsis, data collection, data analysis and final drafting.

REFERENCES

1. WHO report on the global tobacco epidemic [Internet]. Geneva: World Health Organization MPOWER Project; 2008 [cited 2014 Nov 19]. Available from: www.who.int/tobacco/mpower/mpower_report_full_2008.pdf
2. Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. PLoS medicine. 2006;3(11):e442. PMID: 17132052
3. Aslam SK, Zaheer S, Rao S, Shafique K. Prevalence and determinants of susceptibility to cigarette smoking among school students in Pakistan: secondary analysis of Global Youth Tobacco Survey. Substance abuse treatment, prevention, and policy. 2014;9:10. PMID: 24555481
4. Cook JL. Tobacco smoke: chemical carcinogenesis and genetic lesions. The Ochsner journal. 1999;1(3):130-5. PMID: 21845130
5. Johnson N. Tobacco use and oral cancer: a global perspective. Journal of dental education. 2001;65(4):328-39. PMID: 11336118
6. Sankaranarayanan R, Masuyer E, Swaminathan R, Ferlay J, Whelan S. Head and neck cancer: a global perspective on epidemiology and prognosis. Anticancer research. 1998;18(6b):4779-86. PMID: 9891557
7. Henningfield JE, Nemeth-Coslett R. Nicotine dependence. Interface between tobacco and tobacco-related disease. Chest. 1988;93(2 Suppl):37s-55s. PMID: 3276461
8. U.S. Department of Health and Human Services [Internet]. The Health Consequences of Smoking: A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services,

Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2004 [cited 2014 Dec 5]. Available from: http://www.cdc.gov/tobacco/data_statistics/sgr/2004/complete_report/index.htm

9. U.S. Department of Health and Human Services. Reducing the Health Consequences of Smoking: 25 Years of Progress. A Report of the Surgeon General. U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. DHHS Publication No. (CDC) 89-8411. 1989. [cited 2014 Dec 5] Available from: http://profiles.nlm.nih.gov/NN/B/B/X/S/.

10. Nisar MI, Iqbal R. Smokeless tobacco use prevention and cessation (S-TUPAC): a need of the time. JPMA The Journal of the Pakistan Medical Association. 2011;61(7):711-2. PMID: 22204257

11. Bile KM, Shaikh JA, Afridi HU, Khan Y. Smokeless tobacco use in Pakistan and its association with oropharyngeal cancer. Eastern Mediterranean health journal = La revue de sante de la Mediterranee orientale = al-Majallah al-sihhiyah li-sharq al-mutawassit. 2010;16 Suppl:S24-30. PMID: 21495585

12. Sreedharan S, Kamath MP, Khadilkar U, Hegde MC, Kumar RM, Mudunuri RR, et al. Effect of snuff on nasal mucosa. American journal of otolaryngology. 2005;26(3):151-6. PMID: 15858768

13. Whitehead TP, Havel C, Metayer C, Benowitz NL, Jacob P, 3rd. Tobacco Alkaloids and Tobacco-Specific Nitrosamines in Dust from Homes of Smokeless Tobacco Users, Active Smokers, and Nontobacco Users. Chemical research in toxicology. 2015. PMID:25794360

14. Ayo-Yusuf OA, Reddy PS, van den Borne BW. Association of snuff use with chronic bronchitis among South African women: implications for tobacco harm reduction. Tobacco control. 2008;17(2):99-104. Epub 2008 Feb 19. PMID: 18285381

15. Acheson ED, Cowdell RH, Jolles B. Nasal cancer in the Northamptonshire boot and shoe industry. British medical journal. 1970;1(5693):385-93. PMCID: 1699250

16. Boffetta P, Hecht S, Gray N, Gupta P, Strait K. Smokeless tobacco and cancer. Lancet Oncology. 2008;9(7):667—75. doi: 10.1016/S 1470-2045(08)70173-6. PMID: 18598931

17. Coalition for Tobacco Control – Pakistan [Internet]; c2007-08 [cited on 2014 Dec 27]. Available from: http://www.ctcpak.org/pak.htm

18. Ali NS, Khuwaja AK, Ali T, Hameed R. Smokeless tobacco use among adult patients who visited family practice clinics in Karachi, Pakistan. Journal of oral pathology & medicine : official publication of the International Association of Oral Pathologists and the American Academy of Oral Pathology. 2009;38(5):416-21. PMID: 19434816

19. Mazahir S, Malik R, Maqsood M, Merchant KA, Malik F, Majeed A, et al. Socio-demographic correlates of betel, areca and smokeless tobacco use as a high risk behavior for head and neck cancers in a squatter settlement of Karachi, Pakistan. Substance abuse treatment, prevention, and policy. 2006;1:10. doi:10.1186/1747-597X-1-10. PMCID: PMC1475829

20. Ostenson CG, Hilding A, Grill V, Efendic S. High consumption of smokeless tobacco ("snus") predicts increased risk of type 2 diabetes in a 10-year prospective study of middle-aged Swedish men. Scandinavian journal of public health. 2012;40(8):730-7. PMID: 23117209

21. England LJ, Levine RJ, Mills JL, Klebanoff MA, Yu KF, Cnattingius S. Adverse pregnancy outcomes in snuff users. American journal of obstetrics and gynecology. 2003;189(4):939-43. PMID: 14586330

22. Bolinder G, Alfredsson L, Englund A, de Faire U. Smokeless tobacco use and increased cardiovascular mortality among Swedish construction workers. American journal of public health. 1994;84(3):399-404. PMID: 8129055

23. Fischer R, Clair C, Studer J, Cornuz J, Gmel G. Prevalence and factors associated with use of smokeless tobacco in young Swiss men. European journal of public health. 2014;24(3):459-64. doi: 10.1093/eurpub/ckt086. Epub 2013 Jun 28. PMID: 23813708

24. Greiser EM, Greiser KH, Ahrens W, Hagen R, Lazszig R, Maier H, et al. Risk factors for nasal malignancies in German men: the South-German Nasal cancer study. BMC cancer. 2012;12:506. doi:10.1186/1471-2407-12-506. PMID: 23130889

25. Tomar SL, Winn DM, Swango PA, Giovino GA, Kleinman DV. Oral mucosal smokeless tobacco lesions among adolescents in the United States. Journal of dental research. 1997;76(6):1277-86. PMID: 9168861

26. Grotvedt L, Forsen L, Stavem K, Graff-Iversen S. Patterns of snus and cigarette use: a study of Norwegian men followed from age 16 to 19. Tobacco control. 2013;22(6):382-8. doi: 10.1136/tobaccocontrol-2011-050158. Epub 2012 May 26. PMID: 22634571

27. WHO Framework Convention on Tobacco Control [Internet]. Geneva: World Health Organization; 2003 [cited 2015 Jan 3]. Available from: http://www.who.int/fctc/text_download/en/