PREVALENCE AND HEALTH CONSEQUENCES OF SMOKELESS TOBACCO IN INDIA

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Abstract: According to WHO [1], presently tobacco causes 6 million deaths and is expected to grow more than 8 million by 2030. In India it causes 1 million deaths which may grow to 1.5 by 2020. Therefore the main objective of this paper is to review broadly the issues of smokeless tobacco use in India. The present review is based on secondary data published in various journals, case reports, reviews, media clips etc. Tobacco is the most preventable but yet leading cause of cancer in our society. Hence tobacco related health hazards have been a major area of concern in many countries including India.

Currently India has around 275 million tobacco users. Though there are many laws to prevent tobacco use India is failing to implement them effectively. As a result people are more vulnerable and falling in addiction to tobacco. The main harm from tobacco accounts for cancer heart and lung diseases. According to the Global Adult Tobacco Survey, In India 26% of adults consume smokeless tobacco (33% men and 18.4% women) [2] which causes cancer to various organs including mouth and lungs. Therefore, in this review we attempt to highlight the toxic and carcinogenic effects of smokeless tobacco products. This review also concentrates on the availability and affordability of smokeless tobacco products, awareness about the consequences of smokeless tobacco use among population and various policies to fight smokeless tobacco epidemic in India.

Keywords: Smokeless tobacco (SLT), cancer, health hazards. India

Introduction: Tobacco is the most dangerous consumer product in the world in the 21st century. It kills half of its consumers and its very existence is a curse to mankind. India ranks second with nearly 275 million tobacco users in which 26% consumers use smokeless tobacco. Smokeless tobacco is a term that refers to a number of tobacco products that are used by means other than smoking. These uses include chewing, sniffing, placing the product between the teeth and gum, and application to the skin. Tobacco companies have also created dissolvable forms of smokeless tobacco. These are available as sweet, candy-like tobacco lozenges, orbs, or pellets; strips (like melt away breath strips); and toothpick-sized sticks. SLT products are designed in a way that they can keep in the mouth, chewed, or sucked until they dissolve. Some SLT products are mint-flavored and look a lot like candy. They tempt the children and pets to consume.

Tobacco use is causes premature death and various diseases worldwide. At present, approximately 5.4 million people die each year due to tobacco use and this number is expected to rise up to 8 million a year by 2030. The term, smokeless tobacco (SLT) is used to describe tobacco that is not burned before or at the time of use. SLT products also contain many chemical ingredients and additives which are mutagenic and carcinogenic. [4]. Therefore in this article we specifically highlighted the chemistry and toxic effects of smokeless tobacco products.

Smokeless Tobacco (SLT) use is widely prevalent in many forms in India [5]. Chewing betel quid with tobacco has been a part of cultural practice among Indians for centuries. The SLT use, especially in rural parts of India, has been reported to be high. The availability of different manufactured smokeless tobacco products with different flavours in different parts of the country among users add new dimension to the tobacco epidemic in the country [6]. SLT not only causes the cancer but also causes a number of non cancerous oral diseases which can lead to nicotine addiction similar to that produced by cigarette smoking. The morbidity and mortality are also increasingly becoming apparent due to smokeless tobacco use [7]. Therefore in this article we analysed the health effects of smokeless tobacco and its use in India.

Methodology: This review paper is based on information from the fact sheets from GATS, CDC WHO, SEARO and NCI. Information was also obtained from Ministry of health and nutrition. Information was also obtained on from web sites and articles addressing tobacco issues. Selected references to the articles reviewed can be found in the Appendices of the working document. In addition, many press releases have been reviewed on a regular basis. Meetings with tobacco users and local doctors have also been a useful source of information and have provided opportunities for exchanging views.

Results: India has one of the highest rates of smokeless tobacco use in the world. Results indicate that there are many factors, including socio-economic and cultural, behind the increasing use of smokeless tobacco. Out of 346 million tobacco users 75% of them consume smokeless tobacco products. We observed that the main cause of using SLT is flavor which is not allowed in cigarettes and bidis. As SLT gives flavor and different tastes it is more

attracting the young people.

Data collected in 2012 showed that about 34.6% of adults (47.9% and 20.3) female) aged in India. 25.9% adults in India used smokeless tobacco which is that's about 300 million people. Use of smokeless tobacco was higher in younger age groups, with more than 23.2 of people aged 15 to 24 saying they were current users. About 25 million people age 14 and older started using smokeless tobacco in the year before the survey. About 46% of the new users were younger than 18 when they first used it [8] (Fig.1, Fig.2, Fig.3).

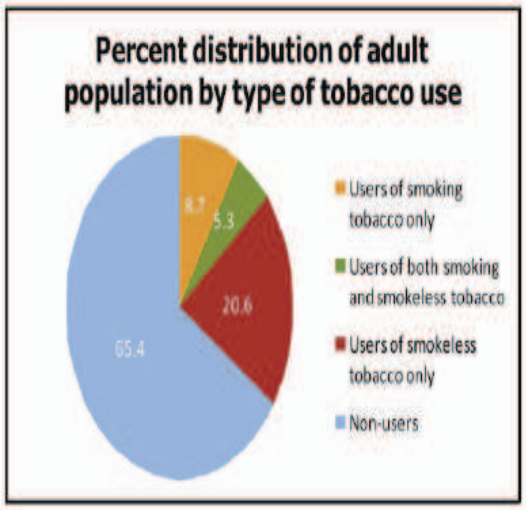

Fig.1 Indian adult population by tobacco use.

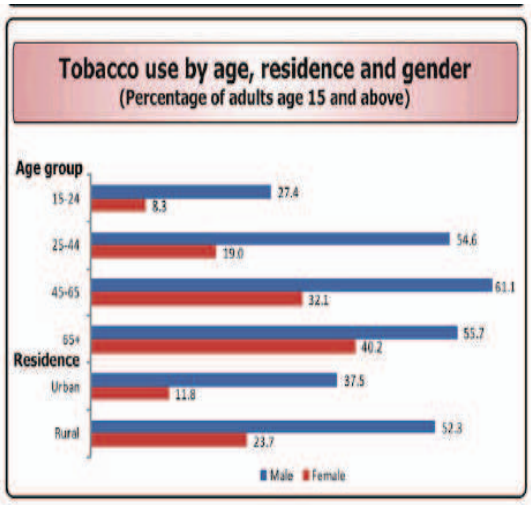

Fig.2.Tobacco use by Indian by age and gender

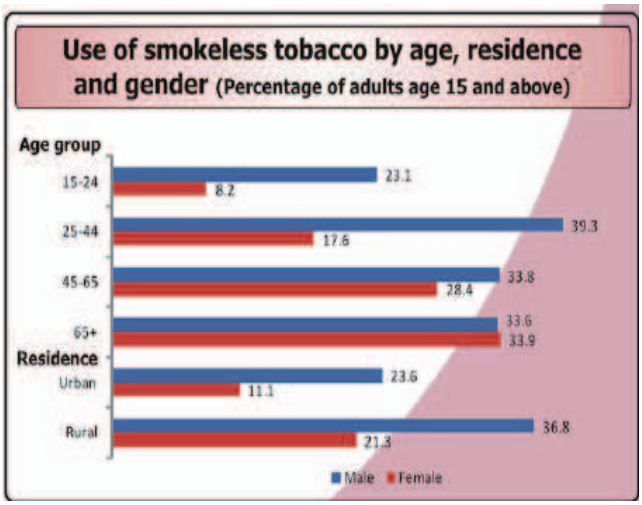

Fig.3. Use of smokeless tobacco by Indians

This data is supported by the CDC's 2012 National Youth Tobacco Survey [5] which found that use of SLT among high school children is much higher than adults. They found that about 29.1% of male high school students and 8.2% of female high school students had used smokeless tobacco in the month before the survey.

Toxic and carcinogenic chemicals in SLT: SLT is known to contain approximately 4,200 chemicals [9]. Chemical composition of tobacco changes as the plant grows and also during curing, fermentation, processing, and storage of processed products [10]. During the curing process, sugar content decreases and during fermentation sugars and polyphenols vanished. Only the chemicals like alkaloids such as nicotine, nornicotine, cotinine, anabasine, anatabine, aliphatic hydrocarbons, and hundreds of isoprenoids persists and they produce typical aroma of tobacco leaves. The alkaloid content of tobacco leaves varies greatly depending on the soil conditions, use of fertilizers, and the degree to which the plant is ripened [11]. A number of plant sterols such as cholesterol, campesterols and alcohols, phenolics, carboxylic acids, turpenes, polyphenols, aromatic hydrocarbons, aldehydes, ketones, amines, and alkali nitrates have also been detected [12]. Toxic metals including mercury, lead, chromium, and other trace elements and several free amino are also present [13]. Nicotine is exists in two forms, acid (bound) and base (free). Free or unionized nicotine is most rapidly and easily absorbed in the mouth [14]. Slaked lime or other alkaline additives contribute to high pH at

which increased amount of free nicotine is delivered to the user.

Factors linked for tobacco use

- Examples set by parents
- Peer pressure
- Local lifestyles and fashions
- General attitudes toward authority
- Economic conditions
- Examples set by teachers and school staff
- Presence of gangs
- Use of illegal drugs and alcohol
- Tobacco company advertising and exposure can influence youth. Athletes are a large marketing source for smokeless tobacco, and are often seen on TV using it during a game.

Difference between smokeless tobacco and smoking: The route is of entry into the body is different, but the nicotine addiction is the same. Nicotine in smokeless tobacco products absorbs from the mouth or nose along with other compounds in the tobacco. Cigarettes, pipes, and cigars burn the tobacco, and the nicotine from the smoke gets into the body through the mouth, nose, and lungs along with other particles generated by combustion. Burning tobacco also sends out secondhand smoke, which other people and the smoker breathe in as it lingers in the air and settles on surfaces. All forms of tobacco and nicotine can harm or kill children and pets if accidentally or otherwise ingested.

Harmful health effects of smokeless tobacco: Smokeless tobacco products are less lethal than cigarettes: On average, they kill fewer people than cigarettes. But smokeless tobacco hurts and kills people all the same. Even though they are marketed as a less harmful alternative to smoking, smokeless products can be deadly. And they have not been proven to help smokers quit.

Health Impacts of gutka, khaini and other forms of smokeless tobacco:

- SLT products are sold as mouth fresheners. These products use menthol, perfume, spices, sugar, etc. to hide the bitter taste of tobacco which traps the young very easily. These additives force the dependency by which people find difficulty to quit. [15].
- SLT products also contain other harmful metal content like lead, cadmium, chromium, arsenic, copper and nickel. It is also reported that betel nut, which is the main ingredients of SLT is a confirmed carcinogen [15] and can also cause other health disorders.
- According WHO [1] SLT mainly causes 95,000 oral cancer cases each year in SE-Asia Region.
- IARC [13] (International Agency for Research on Cancer) also reported that half of all oral cancers in Asia are caused by smokeless tobacco only. Smokeless tobacco is also associated with cardiovascular diseases, pregnancy related risks, low birth weight babies and even mortality risk among women. [16].
- Recent studies in India found that use of tobacco not only causes cancer but it can also cause to genetic damage [17] and leukoplakia [18]. Some users who take snuff believed to face less health risks but infact they are still at greater risk than people who do not use any tobacco products.

Economic effects: Tobacco use costs about $1.7 billion (about Rs 10,540 crore at the current exchange rate), which was more than the annual government expenditure on tobacco control, and 16% more than the total tax revenue generated from tobacco. The direct medical cost for treating smokeless tobacco-related cancers and diseases stood at $285 million, while indirect morbidity costs, including costs of caregivers and work loss due to illness, amounted to $104 million [19].

Conclusions and Recommendations:

- Spread awareness: Large, graphic warnings are most effective at informing consumers about the health risks of tobacco use, motivating smokers to quit and discouraging non-smokers, including children, from taking to this habit.
- Recently the government launched a new campaign 'Tears You Apart' with technical and financial support from WLF and the Bloomberg Philanthropies in July. Lack of public awareness and incomplete knowledge about the harmful effects of smokeless tobacco are powerful obstacles in creating effective tobacco control policies [15].

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