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Short Communication

Awareness regarding role of 'mishri' (smokeless tobacco) on health among women in rural Western India - a pilot study

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ABSTRACT

Tobacco is roasted and ashes used to clean the teeth, is called 'mishri' which is a form of smokeless tobacco. It is observed that smokeless tobacco is used routinely at many places to clean their teeth without knowing the harmful side effects of it on health. The aim was to assess awareness regarding role of Mishri (smokeless tobacco) on health among rural women attending NCD camp. Objectives were to know their knowledge and perception about smokeless tobacco and to find out effects of smokeless tobacco on oral health. A total of 30 women from a village of rural India participated in the study. To assess their knowledge and perception participants were interviewed in depth. Data was collected in google form after taking their consent. Oral health was examined by torch light. Among the attendees 22 (73.33%) was having poor oral health. Fifteen among these 22 women (68%) were using a form of roasted tobacco ash traditionally applied as a dentifrice. Majority of them were unaware of the fact that mishri is a form of tobacco and have been dependent on it for their daily physiological activities. They believe it is a 'paste for cleaning teeth'. All cases belong to poor families and had poor general health as well. Oral cancer screening programme has to be strengthened to raise awareness and to detect precancerous lesions early, so that it can be prevented.

Keywords: Mishri, Smokeless tobacco, Pilot study

INTRODUCTION

Smokeless tobacco is a form of tobacco-containing product that is consumed directly after roasting the tobacco leaves and applied over gums and teeth. These products deliver nicotine and a variety of carcinogenic substances directly through the mucosal lining, leading to addiction and long-term health consequences.[1,2] Commonly used types of smokeless tobacco in India includes 'mishri' which is roasted tobacco ash, 'gudakhu' which is a paste made of powdered tobacco and molasses, 'Zarda' which is a flavoured chewing tobacco mixed with slaked lime, 'Khaini' which is a mixture of tobacco and lime, chewed and kept in the buccal pouch. These products are often culturally accepted, especially in rural areas, and are used as part of daily routines without recognition of their addictive potential.[3,4]

Globally, over 300 million people use smokeless tobacco, with the majority residing in South and Southeast Asia.[5,6] The World Health Organization (WHO) identifies smokeless tobacco as carcinogen due to its proven link to cancers, particularly of the oral cavity, pharynx, and oesophagus.[7–9]

India accounts for the highest number of smokeless tobacco users worldwide, with over 200 million consumers and women make up to 13-18% in some rural areas of India according to National Family Health Survey (NFHS-5) data.[6,10] Tobacco is often embedded in traditional

practices. Even though the law exists due to lack of awareness and regulation of such products, particularly among women the use of smokeless tobacco remains prevalent. According to the Global Adult Tobacco Survey (GATS-2, 2016–17), around 29.6% of Indian adults use smokeless tobacco.[11] The data further reveals that 18.4% of women in rural India use some form of smokeless tobacco, with mishri being prevalent due to its cultural acceptance and easy availability.[12] In Maharashtra, 40–50% of women in certain tribal and rural communities use mishri regularly, often starting from adolescence or after marriage due to influence of the elders of the family.[12] Mishri is a roasted tobacco product traditionally used by women especially in Maharashtra, Gujarat, Madhya Pradesh and parts of Orissa. The tobacco is roasted until it turns black, then ground into a fine powder or ash and applied with a finger or brush directly to the teeth and gums, often 2–3 times a day, as part of oral hygiene practices.[13] Due to its wide cultural acceptance, users typically do not identify it as a tobacco product and are unaware of its harmful effects.

India has one of the highest burdens of oral cancer globally, mainly due to smokeless tobacco use.[9] Staining, bad breath, periodontal disease and tooth loss seen as common dental issues. Chronic use even can cause systemic diseases like increase risk of hypertension, low birth weight baby, cardiovascular diseases and type 2 diabetes mellitus.[14] Even reproductive health issues, including low birth weight and stillbirths happens due to tobacco exposure during pregnancy.[15] Despite these risks, smokeless tobacco use continues, particularly among rural population due to cultural acceptance and lack of awareness.[16] Unlike smoking tobacco, mishri use is considered as a part of personal hygiene. This normalization leads to underreporting of addiction and dependence in women, delayed diagnosis of oral precancerous conditions, neglected gender-specific interventions in tobacco control programs and generational transfer of this practice from family to adolescent girls and young women. These in turn causes increased burden on dental and oncology services, particularly in public health systems with limited resources.[17]

The aim of the study was to assess awareness regarding role of mishri (smokeless tobacco) on health among rural women attending non-communicable disease (NCD) camp. The objectives were to know their knowledge and perception about smokeless tobacco and to find out effects of smokeless tobacco on oral health. This study was conducted as a pilot among 30 participants to understand the knowledge and awareness of rural women regarding smokeless tobacco use, particularly "mishri" and to explore its visible health impacts specifically oral health.

METHODS

This was a cross-sectional, community-based, mixed method study conducted as a pilot testing during a NCD screening camp organized by a rural health centre at the village level in rural Maharashtra. The study population consisted of 30 adult women aged 18 years and above attending the NCD camp. Participants were selected purposively based on their willingness to participate in the study after taking their informed consent. Women with prior oral surgeries that altered normal mucosal appearance were excluded from the study. A semi-structured questionnaire-based proforma was used which was administered through Google Forms. It covered areas like-Socio-demographic details (age, income, education, occupation, family type), lifestyle and addiction behaviours (including mishri usage), awareness and perception questions about mishri, general and oral health status. Oral examination was conducted using torchlight to identify signs of poor oral and dental hygiene and potential precancerous lesions. Verbal and digital informed consent of participants was taken before participation. Ethical clearance has been taken from the institutional ethics committee (IEC) before conduction of the study.

RESULTS

Results have been shown in Table 1. Among the 30 women, majority were aged between 30–55 years and were housewives with limited formal education. All participants belonged to low-income households, earning less than ₹10,000 per month. Sixteen participants (53.33%) reported using mishri daily, mostly applied it 2–3 times a day. Eighty percent (80%) of the mishri users considered it to be a "tooth-cleaning paste" and were unaware that it is a form of tobacco. Some mentioned that it "reduces sensitivity" of teeth. On probing only 3 participants associated its use with cancer. Also, 68% had never heard that mishri could cause cancer or other diseases. Five reported dependence and withdrawal symptoms like irritability when skipped. On examination, 22 out of 30 (73.3%) women had visibly poor oral health. Common findings were white patches in 6 women, ulcers or nodules in 5 women, black discoloration of teeth in 12 women and foul oral smell found in 8 women.

Table 1: Details of the participants.

Variables		Number (n=30)	Percentage (%)
Socio-demographic details of the participants (n=30)			
Mean age		52.47 (30-75)	
Median age		52	
Occupation	House wife	16	53.33
	Others (farmer and village administration)	14	46.67

Continued.

Variables		Number (n=30)	Percentage (%)
Education	Illiterate	11	36.67
Family type	Nuclear	13	43.33
	Joint	17	56.67
Socio economic status (updated BG Prasad scale 2023)	Lower middle and lower (class IV and V)	21	70.00
	Middle and upper middle (class III and II)	9	30.00
Daily habits and health conditions of the participants (n=30)			
Daily mode of travel	Walking	23	76.67
Participants using mishri	Yes	16	53.33
	No	14	46.67
Existing medical condition		25 (2 were in antenatal period)	83.33
Not brushing the teeth with toothpaste		14	46.67
Poor oral hygiene		22	73.33
Poor oral hygiene among the "mishri" users (n=16)			Out of 16 "mishri" users
Participants among mishri users who are aware that 'mishri' is tobacco (n=16)		6	20.0 (of "mishri" users)
Participants believe "mishri" causes cancer		3	10.0
Participants believing "mishri" cleans teeth		4	13.3
Participants reporting dependence/withdrawal		5	16.7

DISCUSSION

This study observed the widespread practice of mishri as a toothpaste among rural women, with a large proportion unaware of that it is tobacco and it is associated with health risks. Similar findings have been reported from rural Maharashtra and Gujrat by Gupta et al and Kulkarni et al, where tobacco-based dentifrices remain common among women, pointing out the deep cultural acceptance of these practices.[3,12]

The prevalence of oral lesions such as poor oral health, leucoplakia and ulcers among mishri users in our study is consistent with evidence linking smokeless tobacco to oral precancer and malignancy. Recent global data indicate that nearly one in three oral cancer cases can be attributed to smokeless tobacco and areca nut use, especially in South East Asia carries a high burden.[9] This is similar to previous WHO estimates that up to 90% of oral cancers in the region are associated.[5,9]

Public health in India have largely focused on smoking-related harms, while gender-specific smokeless tobacco practices have received limited attention. Though the National Tobacco Control Programme recognizes the problem, operationalization of interventions targeting rural women remains inadequate.[17] This gap is probably due to intergenerational persistence of mishri use, as practices are transmitted within households.

There is also underreporting of tobacco use among women due to stigma, which doesn't show the actual burden. It is reported in previous study by Mishra et al and Radhika et al smoking the use of mishri is perceived as a part of daily hygiene rather than an addictive behaviour, leading to normalization and reduced motivation to quit.[16,17]

In general, our findings are similar to previous literatures which calls for prioritizing smokeless tobacco control in women as a public health issue. The awareness generation, oral health screening and integration of tobacco cessation to be integrated within primary care services.[12,17]

Limitations

Self-reported data on mishri use might be underreported due to stigma.

CONCLUSION

The use of mishri as a toothpaste among rural women remains a neglected public health issue. High prevalence of poor oral health among mishri users and a lack of awareness regarding its health impacts were found. The novelty of this study lies in its focus on an under-researched gender specific use of tobacco and conducted in a community-based setting of an NCD screening camp. By combining behavioural data with clinical oral examination, this study provides initial evidence of the link between low awareness, cultural practices and adverse oral health outcomes. The tailored IEC can be made based on the study findings and a large-scale study can be developed for rural women in India.

Recommendations

Culturally appropriate IEC materials to raise awareness about the harmful effects of "mishri". Strengthen community-based oral screening for early detection of

precancerous lesions and sensitize young generation on oral hygiene and smokeless tobacco risks to prevent intergenerational transmission of such practices.

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