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Research Article

The Impact of Snuffing (Tombak) on Erectile Dysfunction Etiology Among Sudanese Patients: A Case-Control Study

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Abstract

Background: Erectile Dysfunction (ED) is the term used to describe the failure to attain or sustain a penile erection adequate for sexual intercourse.

Aim: This work aimed to examine the impact of Snuff (Tombak) on erectile dysfunction among Sudanese Patients 2023.

Methods: This was a case control study. It was done in Gezira Hospital for Renal Diseases and Surgery (GHRDS), in Gezira State, Sudan in 2023. The study population was male adults who were 20-55 years old and used snuff (Tombak). A total of 100 adult patients with erectile dysfunction aged 20-55 years were compared with 100 healthy men. Data was gathered through questionnaire.

Results: The study showed that there was a link between daily use of snuff per day and ED (P value=0.000). ED was more common among snuff users who used 50-100 gm. per day than among non-snuff users (Patient=11; 84.6% vs. Patient=2; 15.4%). The chance of having ED among snuff users was high among snuff users who used 50-100 gm. per day than among non-snuff users (Patient=21; 67.7% vs. Patient=0; 0.0%).

Conclusion: The main factors related to ED were daily use of snuff per day. More future studies with large sample size are needed to make the study findings more general.

Keywords: Erectile Dysfunction; Snuffing; Tombak; Gezira Hospital for Renal Diseases and Surgery; Sudan

Abbreviations: CI: Confidence Interval; DF: Degree of Freedom; ED: Erectile Dysfunction; GHRDS: Gezira Hospital for Renal Diseases and Surgery; NSAIDs: Non-Steroidal Ant-Inflammatory Drugs; OR: Odds Ratio; SLT: Smokeless Tobacco; SPSS: Statistical Package for the Social Sciences; US: United States; VS: Versus; WHO: World Health Organization

Introduction

A common and serious problem for men is Erectile Dysfunction (ED), which means they cannot get or keep an erection that is good enough for sexual pleasure [1]. Sometimes, this may be related to psychological issues, especially in younger men, but the main and frequent reason for ED is problems with the blood vessels [2]. Tobacco use can worsen ED by making the blood vessels shrink a lot, which affects the blood flow in the body and the penis [2]. It also raises the risk of getting diseases that can lead to ED, such as atherosclerosis, heart disease and high blood pressure. Tobacco consumption is associated with a 1.5- to 2-fold increased risk of erectile dysfunction compared with non-tobacco users [3]. According to the World Health Organization (WHO), 28.6% of the people in the world use tobacco, either by smoking (10.7%) or by using smokeless tobacco (SLT) (21.4%), which can be snuffed, chewed or dipped in the mouth or nose [4,5 and 6]. SLT consumption is prevalent among over 300 million individuals in more than 70 nations worldwide [7]. The global burden of disease due to tobacco use is substantial and leads to various impairments and mortalities; therefore, the WHO predicts that tobacco use will cause 8.3 million deaths in 2030 and more than one billion deaths in the 21st century [5-8]. Snuff and chewing tobacco are the two main forms of SLT globally. Snuff can be either dry or moist, and moist snuff is typically used orally [9]. Nicotine, a highly addictive substance, is present in all tobacco products, including SLT. Nicotine is absorbed through the oral mucosa and the bloodstream, and it persists longer in the blood of SLT users than smokers [4].

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Tombak is a form of SLT that is produced and consumed in Sudan by placing it in the oral cavity. It has a long history of use among adolescents and young adults in the nation [10-13]. Past studies indicated that the prevalence of tombak use ranged from 34% in adult males to 25% in late adolescents, with higher rates in rural regions [10-13]. Sudanese Tombak is smokeless tobacco that is made from the leaves of the plant nicotiana rustica and mixed with water and sodium bicarbonate to be used in a loose wet form. The practice of tombak dipping is common among different ethnic groups in Sudan with different economic and social statuses. Tombak has a high alkalinity and nicotine content, and contains considerable amounts of tobacco-specific nitrosamines [14]. Tombak consumption was more prevalent in rural than urban regions (35% vs. 24%) among males aged 18 years and above [13]. The peak prevalence of tombak use was observed in rural males aged 30 years and over (mean 46.6%, range 45-47%) [4].

Tombak is made from the Solanaceae species, Nicotiana rustica, a plant that has up to nine times more nicotine than Nicotiana tabacum that is more commonly used in the production of tobacco products around the world. Nicotiana rustica is also used to make smokeless tobacco products in Turkey, South America, Vietnam and Russia [15].

Among the 76 Nicotiana species (Solanaccae), only Nicotiana rustica L. and Nicotiana tabacum L. (common tobacco) are used for making various tobacco products for human consumption (by smoking, chewing, snuffing). Common tobacco (N. tabacum L.), which is cultivated worldwide in many commercial forms and varieties, is one of the most studied plants in the world. The other Nicotiana species are less understood in terms of their chemical, technological and other features. Nicotine (3-((2S)-1 methylpyrrolidin2-yl) pyridine), the main natural alkaloid of N. rustica L., can reach up to 8 to 10 % (and in some cases even 15 to 18 %), depending largely on the type, environment and growing conditions [16].

Materials and Methods

Design

Case control study.

Study Area

The study was done in Gezira Hospital for Renal Diseases and Surgery (GHRDS), in Gezira State, Sudan. The hospital has three urological and three nephrological units. Each urological unit has one prof and three consultants. An andrology unit is being constructed at this time.

Study Duration

The study took place from March 2023 to September 2023.

Study Population

The study population was male adults who were 20-55 years old and used snuff (tombak).

Inclusion Criteria

Patients

1. Patients with idiopathic ED.
2. Patients who used tombak for at least three years
3. Age from 20 to 55 years old.
4. During Study Period.

Control

1. Healthy individuals.

Exclusion Criteria

1. Participants with any condition that could impair erectile function, such as hepatic disorders, hypertension, cardiac diseases, alcoholism history, current medication affecting coagulation and platelet levels, and chronic use of anticoagulants (Heparin, Warfarin, and aspirin) or NSAIDs.
2. Any psychological cause of ED.

Sample Size and Technique

The study enrolled 100 patients and 100 controls who satisfied the eligibility criteria within the study duration.

Data Collection Tools and Data Processing

The demographic and laboratory data were verified, coded, and analyzed using SPSS Software (Statistical Package for the Social Sciences) version 25.0. Descriptive statistics such as frequency, percentage mean, and standard deviation were reported.

Results

This study compared 100 males with Erectile Dysfunction (ED) to 100 healthy males. Among the ED patients, 13(13%) used snuff and 87 (87%) did not. The average age was 36.3± 8.5 years with the youngest being 20 and the oldest being 55 years. The ED patients in the age group 20-30 years were more common among the snuff users than the non-snuff users but not significantly (46.2% vs. 29.9%; P value= 0.293) (Figure 1).

There was a link between age groups among snuff and non-snuff users (P value=0.023). The average age of non-snuff users was 35.5± 8.4 years with the lowest being 22 and the high-

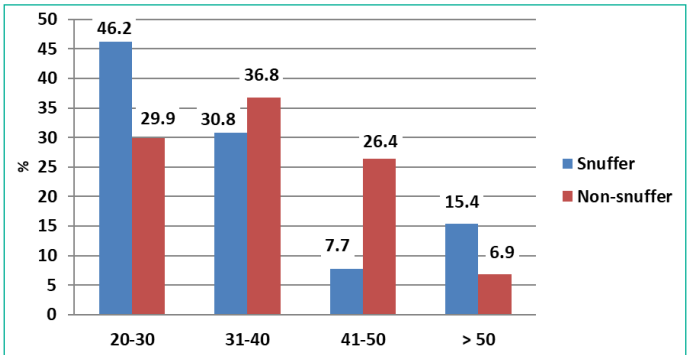

Figure 1: Age distribution of cases among snuffer no-suffer group (n=100).
P-Value=0.293

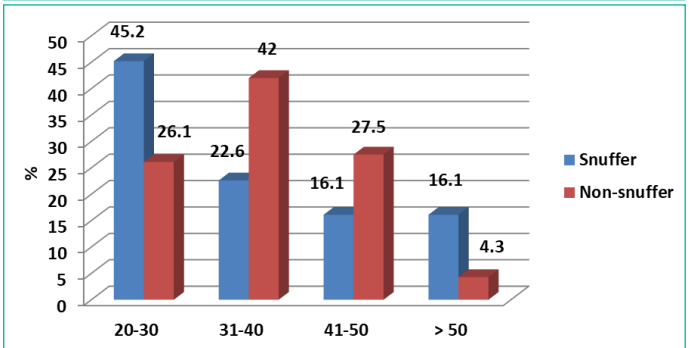

Figure 2: Age distribution of control group among snuffer and no-snuffer group (n=100)
P-Value=0.023

est being 53 years. The chance of having ED in the age 20-30 years was high among snuff users compared to non-snuff users (45.2% vs. 26.1%) (Figure 2).

All of the ED patients who used snuff (n=13; 100%) were married but it was not significant (P value=0.122). The chance of having ED in snuff users was significantly increased 0.849 times among married snuff users (Odds Ratio=0.849; 95% Confidence Interval: 0.776-0.928) (Table 1).

Most of the snuff users in control group (n=18; 58.1%) were not married (P value=0.002). The chance of having ED was significantly increased 0.810 times among non-married snuff users (Odds Ratio=0.810; 95%Confidence Interval: 0.320-0.842) (Table 2).

This research showed a significant relationship between daily use of snuff per day and Idiopathic ED (P value=0.000). Idiopathic Ed was significantly high among snuff users who used 50-100 gm. per day 11 (84.6%) and those who used less than 50 gm. per day 2 (15.4%) (Table 3).

Table 1: Marital distribution of cases among snuffer and non-snuffer group.

Marital status		Cases (n=100)		Total	P-value	Odds Ratio	95% CI	
		Snuffer	Non-snuffer				Lower	Upper
Married	n	13	73	86	0.122	0.849	0.776	0.928
	%	100.00%	83.90%	86.00%				
Non-married	n	0	14	14				
	%	0.00%	16.10%	14.00%				
Total	n	13	87	100				
	%	100.00%	100.00%	100.00%				

Table 2: Marital distribution of control group among snuffer and no-snuffer group.

Marital status		Control (n=100)		Total	P-value	Odds Ratio	95% CI	
		Snuffer	Non-snuffer				Lower	Upper
Married	N	13	45	58	0.002	0.81	0.32	0.842
	%	41.90%	65.20%	100%				
Non-married	N	18	24	42				
	%	58.10%	34.80%	100%				
Total	N	31	69	100				
	%	100.00%	100.00%	100.00%				

Table 3: Association between daily consumption per day and idiopathic ED.

Daily consumption per/day		Idiopathic ED		Total
		Snuffer	Non-snuffer	
<50 gm. per day	n	2	0	2
	%	15.40%	0.00%	2%
50-100 gm. per day	n	11	0	11
	%	84.60%	0.00%	11%
Total	n	13	87	100
	%	100.00%	100.00%	100.00%

Discussion

This study found high rates of ED among young adults 20-30 years old. Unlike the findings of John P. *et al*., we observed that the frequency of ED diagnosis or treatment increased with age, but declined in very old age. This could be explained by the absence of a sexual partner, the loss of sexual desire, the lack of health care, the impact of other diseases, or the embarrassment of physicians to inquire about ED in elderly men [17].

The current study had a similar age distribution of men with ED as the US study by Sun P. *et al*., which reported 5%-7% for <35 years, 16%-17% for 36-45 years, 34%-36% for 46-55 years, 34%-36% for 56-65 years, 5%-7% for 66-75 years, and 2% for >76 years [19]. However, the UK study by Cameron A. *et al*. did not provide the age range of the men [18]. According to Park et al.'s recent report, the prevalence of ED among men from Asian countries varied from 2.0 to 88% [20]. The mean prevalence in each age group was 15 % for 20-29, 30% for 30-39, 41% for 40-49, 54% for 50-59, and 70% for 60-69. Shaeer *et al*.'s research found that the prevalence of ED among men was 57.4% in Nigeria, 63.6% in Egypt, and 80.8% in Pakistan [21]. Kinsey AC. *et al.* also stated that aging was a major risk factor for ED in men. Their research revealed that the prevalence of ED increased with age from 01% at 20 years old to 75% at 80 years old [22]. Feldman HA. *et al*.'s findings confirmed this trend with a prevalence of ED of 39% in men aged 40 rising to 67% for men in their 70s [23].

This research found that all of the ED patients in snuff group (Patient=13; 100%) were married but it was not significant (P value=0.122). The chance of having ED in snuff group was significantly increased 0.849 times among married snuff group (Odds Ratio= 0.849; 95% Confidence Interval: 0.776-0.928). But, one third of control group (Patient=100; 31%) used snuff (P value=0.008). The chance of having ED among non-affected snuff group was significantly increased 0.810 times among non-married group (Odds Ratio=0.810; 95% Confidence Interval: 0.320-0.842). The reason for ED among married may be because of more sexual activity. Anh TQ. *et al.* reported a similar finding in their study of 764 married men, which revealed an ED prevalence of 10.8% in the 18-30 age group, 44.0% in the 40-45 age group, and 57% in the 60 and above age group [24]. Thang *et al.* conducted another study and found that over three-quarters of the participants (78.6%) had sexual intercourse in the previous 4 weeks, and 86.9% had consensual sex with their spouses/partners. The risk of ED was 1.80 times higher for those who did not have consensual sex with their spouse/partner than for those who did (Confidence Interval: 1.03-3.15) [25].

This study also showed that there was a link between daily use of snuff per day and Idiopathic ED (P value=0.000). Idiopathic ED was significantly high among snuff users who used 50-100 gm. per day 11 (84.6%) and those who used less than 50 gm. per day 2 (15.4%). Many other studies support this finding and show that almost 10% of the people had erectile dysfunction for at least a month in the past year. Over a quarter (27.2%) of people smoked tobacco, with 20.9% smoking fewer than 20 cigarettes daily, and 6.3% smoking more than 20 cigarettes daily. After controlling for other factors, the risk of erectile dysfunction was 1.24 times higher (95% CI 1.01 to 1.52, P value=0.04) for those who smoked fewer than 20 cigarettes daily and 1.39 times higher (95% CI 1.05 to 1.83, P value=0.02) for those who smoked more than 20 cigarettes daily, compared with non-smokers [15]. Also big cross sectional study done in Australia by Chapman *et al*. shows that the result of a tobacco users male 40–49 year old having long-lasting erectile problems compared to a non-tobacco users is 3.50, going up to 5.96 for tobacco user aged 50–59 years [16].

Conclusion

The current study concluded that Snuff (Tombak) affected erectile dysfunction among Sudanese Patients 2023. There was significant link between amount of Tombak use and getting erectile dysfunction.

Recommendations

Using snuff is a bad habit especially when the amount is more than 50 grams a day. Therefore, we recommend the following:

- Health education should be delivered to men and their families in the community and the health settings.

- Establishing suitable and effective approaches and messages for the Sudanese people to overcome any shame or stigma felt by men and/or their spouses is the first step to make men seek diagnosis and treatment.

- Health education should be offered to the whole community to increase knowledge about erectile and sexual dysfunction to avoid unnecessary worry and to make men talk to health professionals about sexual function issues.

- Use and integration of consultant services in reproductive health overall, and men's sexual health specifically, by screening for early detection and treatment.

More future studies with big sample size are needed to make the study findings more general.

References

1. Virag R, Zwang G, Dermange H, Legman M. Vasculogenic Impotence: A Review of 92 Cases with 54 Surgical Operations. Vascular Surgery. 1981; 15: 9-17.
2. Yafi FA, Jenkins L, Albersen M, Corona G, Isidori AM, Goldfarb S, et al. Erectile dysfunction. Nat Rev Dis Primers. 2016; 2: 16003.
3. Hehemann MC, Kashanian JA. Can lifestyle modification affect men's erectile function? Transl Androl Urol. 2016; 5: 187-94.
4. Mohammedi F, Hazari MAH, Khatoon F, Naeem KHA, Ali SI. Effect of nicotine on platelet function. MedPulse Int J Physiol. 2017; 5:13–16.
5. World Health Organization. Report on Global Tobacco Epidemic. World Health Organization; Geneva, Switzerland. 2011.
6. Mohan P, Lando HA, Panneer S. Assessment of Tobacco Consumption and Control in India. Indian Journal of Clinical Medicine. 2018; 9.
7. National Cancer Institute. Centers for Disease Control and Prevention. Smokeless Tobacco and Public Health: A Global Perspective. NCI; Bethesda, MD, USA. 2014.
8. WHO. WHO Report on the Global Tobacco Epidemic, 2017: Monitoring Tobacco Use and Prevention Policies World Health Organization; Geneva, Switzerland. 2017.
9. Walsh PM, Epstein JB. The oral effects of smokeless tobacco. J Can Dent Assoc. 2000; 66: 22-5.
10. Ahmed HG, Babiker AE. Assessment of cytological atypia, Ag-NOR and nuclear area in epithelial cells of normal oral mucosa exposed to toombak and smoking. Rare Tumors. 2009; 1: e18.
11. Almahdi HM, Åstrøm AN, Ali RW, Nasir EF. School workers' knowledge, attitude and behaviour related to use of Toombak: a cross sectional study from Khartoum state, Sudan. BMC Oral Health. 2017; 17: 160.
12. El-Amin Sel-T, Nwaru BI, Ginawi I, Pisani P, Hakama M. The role of parents, friends and teachers in adolescents' cigarette smoking and tombak dipping in Sudan. Tob Control. 2011; 20: 94-9.
13. Idris AM, Ibrahim YE, Warnakulasuriya KA, Cooper DJ, Johnson NW, Nilsen R. Toombak use and cigarette smoking in the Sudan: estimates of prevalence in the Nile state. Prev Med. 1998; 27: 597-603.
14. Idris AM, Prokopczyk B, Hoffmann D. Toombak: a major risk factor for cancer of the oral cavity in Sudan. Prev Med. 1994; 23: 832-9.
15. Millett C, Wen LM, Rissel C, Smith A, Richters J, Grulich A, de Visser R. Smoking and erectile dysfunction: findings from a representative sample of Australian men. Tob Control. 2006; 15: 136-9.
16. Chapman S. Erectile dysfunction and smoking: subverting tobacco industry images of masculine potency. Tob Control. 2006; 15: 73-4.
17. Mulhall JP, Luo X, Zou KH, Stecher V, Galaznik A. Relationship between age and erectile dysfunction diagnosis or treatment using real-world observational data in the USA. Int J Clin Pract. 2016; 70: 1012-1018.
18. Cameron A, Sun P, Lage M. Comorbid conditions in men with ED before and after ED diagnosis: a retrospective database study. Int J Impot Res. 2006; 18: 375-81.
19. Sun P, Swindle R. Are men with erectile dysfunction more likely to have hypertension than men without erectile dysfunction? A naturalistic national cohort study. J Urol. 2005; 174: 244-8.
20. Park K, Hwang EC, Kim SO. Prevalence and medical management of erectile dysfunction in Asia. Asian J Androl. 2011; 13: 543-9.
21. Shaeer KZ, Osegbe DN, Siddiqui SH, Razzaque A, Glasser DB, Jaguste V. Prevalence of erectile dysfunction and its correlates among men attending primary care clinics in three countries: Pakistan, Egypt, and Nigeria. Int J Impot Res. 2003; 15: S8-14.
22. Kinsey AC. Sexual Behavior in the Human Female. Bloomington: Indiana University Press. 1953.
23. Feldman HA, Johannes CB, Derby CA, Kleinman KP, Mohr BA, Araujo AB, McKinlay JB. Erectile dysfunction and coronary risk factors: prospective results from the Massachusetts male aging study. Prev Med. 2000; 30: 328-38.
24. Anh TQ. Assessment of Effectiveness and Safety of Levitra in Erectile Dysfunction Treatment in Patients at the Viet Duc Hospital. Vietnam: Ministry of Health. 2004.
25. Van Vo T, Hoang HD, Thanh Nguyen NP. Prevalence and Associated Factors of Erectile Dysfunction among Married Men in Vietnam. Front Public Health. 2017; 5: 94.