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Research Article

ADVERSE EFFECTS OF SMOKELESS TOBACCO USE IN PREGNANCY

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 Abstract: Background: In rural India, the use of smokeless form of tobacco is prevalent among women of child bearing age. Hence, our study was aimed at determining the impact of smokeless tobacco use in pregnancy on adverse maternal and foetal outcomes in rural Karnataka. Methodology: A prospective cohort study was carried out in a nursing home of Manvi taluk, Karnataka. The pregnant women, who had the habit of using smokeless tobacco (SLT) were recruited into our study. During the antenatal care (ANC) visits, these subjects were educated by the clinical pharmacist about the diet, exercise and lifestyle changes required during pregnancy and were followed up for four ANC visits until delivery. Later, their feto-maternal outcomes were recorded. Results: A total of 70 pregnant women using SLT were included into the study. Among these pregnant women, 27.14% claimed that they had quit the use of smokeless tobacco, after counselling. However, 82.85% of the study participants were still anaemic. While the prevalence of adverse pregnancy outcomes such as lower segment caesarean section (LSCS), low birth weight (LBW), preterm birth and stillbirth was 22.85%, 60%, 12.85% and 1.42% respectively. Conclusion: Pregnant women who use SLT often end up having adverse feto-maternal outcomes. Many of the pregnant women fail to quit the use of smokeless tobacco and the reasons for this maybe illiteracy, lack of awareness or just their inability to overcome addiction. Hence, the need for comprehensive health education programs at grass root levels is paramount. Keywords: Smokeless tobacco, pregnancy, anaemia, feto-maternal outcomes. 			
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INTRODUCTION:

Smokeless tobacco (SLT) products are tobacco products without combustion or pyrolysis at the time of use. These products are traditionally marketed in two types (i.e.) chewing tobacco or snuff (WHO; US FDA, 2019). The prevalence of use of smokeless tobacco is relatively high in South Asian countries. According to Global Adult Tobacco Survey 2, (GATS 2), between 2016-2017, India is the second largest consumer of tobacco world-wide. The use of smokeless tobacco was more prevalent in rural India as compared to Urban parts (24.6% v/s 15.2%). In India, women preferred smokeless tobacco as compared to the men. The Ministry of law and Justice, Government of India (2003) implemented the "Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution Act" (COTPA) for cigarettes and other tobacco products in order to discourage the use of tobacco. In addition, the government also came up with several health programs such as Accredited Social Health Activist (ASHA) program implemented by National Rural Health Mission (NRHM), Pradhan Mantri Surakhit Matritva Abhiyan (PMSMA), etc. to promote the health of rural women during pregnancy (Ministry of health and family welfare. Government of India, 2016). Despite all such measures, rural women along with their men-folk tend to continue the use of smokeless tobacco. This may be due to the lack of awareness about the undesired effects of nicotine (one of the major component of tobacco) (Wickstrom R., 2007). The data on poor feto-maternal outcomes associated with the use of tobacco during pregnancy has been well established. However, there is a dearth of evidence on the effect of SLT use in pregnancy. Hence, our study was aimed at determining the impact of the use of smokeless tobacco in pregnant women in rural Karnataka.

RESULTS AND DISCUSSION:

METHODOLOGY:

A prospective cohort study was carried out from June 2017 to June 2018 at a nursing home of Manvi taluk, Karnataka. The study included pregnant women with gestational age less than 12 weeks and had the habit of using SLT. Written consent was obtained from all the recruited subjects. The study was approved by the institutional ethics committee. During their antenatal care (ANC) visits, patient demographics, medical and medication history, blood pressure, pulse rate, patient's complaints and all other relevant laboratory and radiographic details were recorded. Later, as a part of antenatal care, these pregnant women were educated by the clinical pharmacist about the diet, exercise, lifestyle changes and cessation of SLT use during pregnancy. These subjects were followed up for four antenatal visits at 8-12 weeks of gestation; 24-26 weeks, 32 weeks and 36-38 weeks of gestation until delivery. The maternal outcomes such as mode of delivery, placenta previa(low-lying placenta, which is partially or completely covering the cervix) and abruptio placentae (premature separation of placenta from uterus), while the foetal outcomes such Low birth weight ((birth weight < 2500gms), preterm birth (gestational age < 37 weeks at delivery) and still birth (intrauterine death of fetus, after 20 weeks of gestation) were recorded. Data Analysis:

The data analysis was carried out using Microsoft excel. Descriptive statistics was done to describe the participants and then Sign test was used to find out the association between the use of smokeless tobacco (SLT) use in pregnancy and the feto-maternal outcomes. Statistical significance was put at a p-value of less than 0.05.

SI No.	Socio-demographic Characteristics	No. of Subjects (%) (n = 70)
1.	Age group	
	18 - 25 years	53 (75.71%)
	26 - 35 years	17 (24.28%)
2.	Parity	
	Primigravida	22 (31.42%)
	Multigravida	48 (68.57%)
3.	BMI*	

Table I. Socio-demographic characteristics of the study subjects

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1		1
	Underweight	66 (94.28%)
	Normal weight	4 (5.71%)
4.	Maternal Education	
	High school education	3(4.28%)
	Secondary School education	38(54.28%)
	Primary school education	10 (14.28%)
	Illiterate	19 (27.14%)
5.	SES†	
	Lower class	69 (98.66%)
	Lower middle class	1 (1.33%)
6.	Mother's employment status	
	Employed	63 (90%)
	Homemaker / Housewife	7 (10%)
7.	Diet	

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Mixed	62 (88.57%)
Vegetarian	8 (11.42%)

* Body Mass Index

† Socio-Economic Status





Figure II: Adverse maternal outcomes observed among the study subjects.



Figure III: Adverse foetal outcomes observed in neonates born to our study subjects



A total of 77 pregnant women using smokeless tobacco were recruited into our study, of which 70 women gave birth at our study site. About seven pregnant women were lost to follow up in our study, because they went to their maternal home for delivery. The mean age of the study participants was 23.66±2.8years. The socio-economic status (SES) of the subjects was determined using Kuppuswamy scale and the results indicated that 69 (98.66%) belonged to lower class (Table I) (Sharma R., 2017). Many of these pregnant women belonged to Below Poverty Line (BPL) category, and they were availing Government healthcare schemes too, which entitled them to free ANC check-up, free iron and calcium supplements and financial assistance to encourage rest and nutrition. The medical and obstetric history of the study subjects did not exhibit any significant health concerns. However, 5.7% of the study subjects were diagnosed with hypothyroidism during their first ANC visit and were prescribed with levothyroxine.

The average weight of these pregnant women was 43.58 ± 2.78 kgs and 56 (80%) were underweight women with low Body Mass Index (BMI). A study by Mistry R. et al. reported a 72% prevalence of anaemia in pregnancy and that one of the leading factors associated with anaemia was SLT use in pregnancy (Mistry R et al.,2018). Our study also had the similar findings (i.e.) about 82.85% of the study participants were anaemic at the time of delivery. The mean haemoglobin (Hb) value at the time of delivery was

found to be 9.25 \pm 0.54gm/dl. The prevalence of moderate anaemia (Hb 7-9.9gm/dl) and mild anaemia (Hb 10-10.9gm/dl) at the time of delivery was 67.14% and 15.71%. Ferrous sulphate was the most widely used iron supplement (84.28%) among the study participants. About 12 (17.14%) of them had received either iron-sucrose injection or blood transfusion, because their haemoglobin level was less than 7gm/dl (severe anaemia) during the period of pregnancy. The high prevalence of anaemia may be attributed to poor adherence to iron-folic acid supplements, use of tobacco products, poverty leading to food insecurity and inadequate maternal educational status (Mistry R et al., 2018; Singh J et al., 2017; Boti N et al., 2018; Suryanarayana R et al., 2017; Kiwanuka T et al., 2017). In addition, there was a significant association between the maternal SLT use and anaemia in pregnancy at p=0.03 (CI 95%, P<0.05).

In contrast, the study participants did not exhibit any other risks in pregnancy such as preeclampsia, eclampsia and gestational diabetes mellitus (GDM). This may be due to the good amount of physical activity carried out by our study subjects, since most of these women work as agricultural labourers. The current study supports the findings of Spracklen C N et al. (2016) study on the positive impact of physical activity during pregnancy on preeclampsia and gestational hypertension.

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Our study subjects used only one type of SLT during pregnancy i.e. either moist snuff (92.85%) or chewable tobacco (7.14%) (Figure I). The mean age at which these pregnant women initiated the use of tobacco products was 13.64±2.63 years. This may be due to easy availability of SLT with low cost, lack of awareness and education among our study subjects. Among these 70 pregnant women, 3 (4.28%) had high school education, 38 (54.28%) had middle school education, 10 (14.28%) had primary school education and 19 (27.14%) were illiterate (Table I). The poor educational status of rural women belonging to lowereconomic class may be the reason for their lack of awareness and early initiation of tobacco use. Hence there is a need for the comprehensive awareness programs at schools and at women's organizations regarding the adverse effects of SLT as well as to regulate the use of various forms of SLT. (U.S. Department of Health and Human Services, 2012; Nair S et al 2015; Thakur JS and Paika R, 2018).

According to Kulkarni PY et al. (2015) study, it was found that an important factor for foetal low birth weight is using tobacco during pregnancy and only 2% women knew about the effects it has on the foetus. In our study, in spite of antenatal counselling the cessation of smokeless tobacco use in pregnancy was found to be 19 (27.14%).

In our study, it was found that the prevalence of adverse maternal outcomes such as lower segment caesarean section (LSCS) and placenta previa were 22.85% and 4.28% respectively (Figure II). While abruptio placentae was not observed in any of the study subjects. In addition, the prevalence of adverse foetal outcomes such as low birth weight, preterm birth and stillbirth were 60%, 12.85% and 1.42% respectively (Figure III). The median birth weight of newborn babies was 2300gms. In the study by Gupta PC and Sreevidya S (2004), there was a strong association between the smokeless tobacco use in pregnancy and low birth weight. Similarly in our study it was found that, there was a statistically significant association between the maternal SLT use and newborn LBW at p=0.014 (CI 95%, P<0.05).

Our study indicates that the use of smokeless tobacco during pregnancy may lead to a high prevalence of anaemia. Thus, anaemia can affect the growth of the foetus, leading to Low Birth Weight (LBW), as indicated by Rahmati S et al. (2017) study. This requires an immediate attention to develop an effective strategy to prevent and control smokeless tobacco use among pregnant women.

CONCLUSION:

Many pregnant women fail to quit the use of smokeless tobacco. This may be for reasons, which may include, but are not limited to, illiteracy, lack of awareness or just their inability to overcome addiction. So, the need for a comprehensive health education program at grass root levels is paramount. As the quote "Prevention is better than cure", government and non government organizations (NGOs) should concentrate on preventing the use of tobacco at childhood, because overcoming the addiction is a major challenge. These programs should make rural women aware about the hazardous effects of smokeless tobacco, through health education sessions, health campaign's in local language, use of social and digital media like, television, radio, face book and individualized educational sessions at antenatal clinics to wean them off addiction.

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