



Pregnancy (Maternal and Fetal) Outcome in Women Who Used Smokeless Tobacco: A Cross-sectional Study

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aim: To assess the pregnancy (maternal and fetal) outcome in pregnant women who used smokeless tobacco in tertiary care hospital.

Study Design: A cross-sectional study.

Place and Duration: Department of Obstetrics and Gynecology, LUMHS, Jamshoro/Hyderabad from August 2016 to February 2017.

Methodology: Total 169 pregnant women who used smokeless tobacco (gutka, paan, naswar, mainpuri) were included. General examination was performed. Laboratory investigations were ordered for complete blood counts. Ultrasonography was performed for gestational age and fetal weight. We calculated descriptive statistics. The stratification was completed. After stratification, the Chi-square test was used.

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Results: Mean gestational age was 29.15±8.80 weeks. Mean birth weight was 1.96±0.81Kg. Among smokeless tobacco, 24.3% used Paan, 18.9% used Gutka, 23.7% used naswar and 47.3% used mainpuri. Mean duration of use of smokeless tobacco was 32.94±17.63 months. 62.1% have low weight birth and 34.3% have still birth. 28.4% had spontaneous abortion, 58% had anemia and 34.9% had premature delivery.

Conclusion: This study concludes that mothers who used smokeless tobacco had a higher rate of abortion, preterm delivery, stillbirth, and delivery of low birth weight newborns.

Keywords: Maternal outcome; smokeless tobacco; fetal outcome.

1. INTRODUCTION

Tobacco is used in a variety of ways, from smoking cigarettes, cigars, and bidis to chewing smokeless tobacco. The latter group comprises a variety of tobaccos, the most prevalent of which is paan/betel nut quid [1]. Naswar, gutka, qiwam, mainpuri, and other lesser-known goods are examples. Regional preferences influence the exact makeup of various shapes. Most individuals put these in their mandibular or labial grooves and slowly suck on them for 10–15 minutes, or just apply them to their teeth and gums [2]. South Asian culture includes the use of smokeless tobacco [3]. Users of smokeless tobacco are believed to number 100 million in India and Pakistan combined. In India, roughly 35–40% of tobacco consumption is in smokeless forms, while a previous study in Pakistan found that betel quid was used by 21% of men and 12% of women [4].

Furthermore, increased use has been recorded among vulnerable groups including as children, adolescents, mothers, and South Asian immigrants, wherever they have landed [5]. Women use various forms of smokeless tobacco at a rate of 12-17 percent in Pakistan [6, 7].

Furthermore, unlike cigarettes, there is no prohibition against using smokeless tobacco, and government efforts have mostly targeted cigarette use rather than tobacco in general. Tobacco use is currently the greatest preventable cause of death worldwide, with estimates that it will account for nearly 10 million annual fatalities by 2030, with 70% of those deaths occurring in developing countries [8]. Tobacco use has major health repercussions, particularly oral and pharyngeal cancers, as well as other cancers of the upper aero-digestive tract [9].

Using smokeless tobacco during pregnancy lowers the mother's haemoglobin levels. Use of smokeless tobacco during pregnancy may be

harmful to the mother and fetus [10]. Preterm delivery, placental abnormalities and spontaneous abortion, are among the other health risks factors [11].

Smokeless tobacco usage is on the rise in Pakistan, including among pregnant women. A local search of medical literature reveals that just a few research on maternal and fetal outcomes in pregnant women who use smokeless tobacco have been published. This study was planned to determine the frequency of pregnancy (both mother and fetal) outcomes in tertiary care hospital LUMHS. As a result, this study would dissuade pregnant women and women of childbearing age from using smokeless tobacco.

2. METHODOLOGY

By taken prevalence of spontaneous abortion who used smokeless tobacco P=31.33%, [12] Margin of error d=7%, the calculated sample size is 169 patients with the help of WHO software for sample size calculation taking 95% confidence level.

This study included pregnant women (at all stages of pregnancy), multigravida, aged 20-40, who smoked smokeless tobacco (gutka, paan, naswar, mainpuri). Smokeless tobacco has the mean nicotine content of 9.9 ± 4.7 mg/g of tobacco. The ethical review committee of the institute granted permission.

Women having the history of hypertension, diabetes mellitus or previous history of miscarriage were excluded from the study. The lead investigator took patient demographics and clinical history. All of the information was entered into a pre-designed proforma. Age, parity, socioeconomic level, ethnicity, and usage of smokeless tobacco – kind, amount, and duration – were all taken into account. The presenting medical and obstetrical issues were discussed. A general physical examination as well as necessary clinical examinations were conducted.

According to the operational criteria, laboratory investigations for complete blood counts were ordered. The gestational age and fetal weight were determined by ultrasonography.

At birth, study characteristics such as anaemia, preterm delivery, spontaneous abortion, fetal outcome such as stillbirths, and low birth weights were reported as determined by clinical and ultrasound examinations according to the operational definition. By closely following the inclusion, the effect modifiers and biasness were controlled.

The statistical software SPSS version 21 was used for data handling. For age, gestational age, parity, birth weight, and duration of smokeless tobacco use, mean and standard deviation were calculated. For each type of smokeless tobacco used, occupation, anaemia, early delivery, spontaneous abortion, and fetal outcome (stillbirths and low birth weight), the frequency and percentage were computed. Age, gestational age, occupation, parity, length of smokeless tobacco use, and type of smokeless tobacco use were stratified.

3. RESULTS

Total 169 female patients of age 20 to 40 years, were evaluated to determine the frequency of maternal and fetal outcome in pregnant women who used smokeless tobacco. Post stratification was done fetal outcome (i.e. low birth weight and still birth) and on maternal outcome (i.e. Spontaneous abortion, anemia, and premature delivery). P-value ≤ 0.05 was considered as significant. Table 1 demonstrates the various demographic characteristics of the study participants, while in Table 2 mean age and parity is mentioned. Table 3 demonstrates the effect of tobacco on fetus and mother. Stratification with respect to age, gestational age, parity, occupation, use of smokeless tobacco (paan, gutka, naswar and mainpuri) and duration of usage of smokeless tobacco use was done.

There was significant association of low birth weight with occupation ($p=0.020$) while no significant association was found with age ($p=0.679$), gestational age ($p=0.561$), parity ($p=0.082$), use of paan ($p=0.790$), use of gutka ($p=0.212$), use of naswar ($p=0.973$), use of main puri ($p=0.955$) and duration of smokeless tobacco use ($p=0.880$). There was significant association of still birth with gestational age ($p=0.014$) while no significant association was

found with age ($p=0.150$), occupation ($p=0.388$), parity ($p=0.298$), use of paan ($p=0.941$), use of gutka ($p=0.886$), use of naswar ($p=0.989$), use of main puri ($p=0.626$) and duration of smokeless tobacco use ($p=0.554$).

There was significant association of spontaneous abortion with gestational age ($p=0.000$) and occupation ($p=0.002$) while no significant association was found with age ($p=0.258$), parity ($p=0.414$), use of paan ($p=0.218$), use of gutka ($p=0.324$), use of naswar ($p=0.300$), use of main puri ($p=0.196$) and duration of smokeless tobacco use ($p=0.887$). There was significant association of anemia was observed with duration ($p=0.006$). No significant association of anemia was observed with age ($p=0.105$), gestational age ($p=0.334$), occupation ($p=0.807$), parity ($p=0.666$), use of paan ($p=0.066$), use of gutka ($p=0.147$), use of naswar ($p=0.147$) and use of main puri ($p=0.775$). Significant association of premature delivery with gestational age ($p=0.003$) and use of pan ($p=0.040$) was found while no significant association was found with age ($p=0.791$), parity ($p=0.830$), occupation ($p=0.944$), use of ghutka ($p=0.216$), use of naswar ($p=0.288$), use of main puri ($p=0.943$), and duration of smokeless tobacco use ($p=0.511$).

Table 1. Characteristics of the women (n=169)

Age (Years)	Number	Percentage
< 30	92	54
>30	77	46
Tobacco duration (months)		
<38	98	58
>38	71	42
Working status		
House wife	148	87.6
Working women	21	12.4
Type of tobacco		
Pan	41	24.3
Gutka	32	18.9
Naswar	40	23.4
Manpuri	80	47.3

Table 2. The means of various characteristics

Mean age (Years)	30.97±3.71
Mean Parity	3.27±1.30
Mean gestational age (Weeks)	30.01±7.45
Mean birth weight	1.45±0.94

4. DISCUSSION

Secondary analysis of GATS data revealed that 8.6% of the Pakistani population was current

users of smokeless tobacco; among them, 8.0% were daily users and 0.6% were less than daily users. Prevalence of SLT use was higher in males (13.7%) compared to females (3.9%). Smoking has been linked to a poor pregnancy result. Shada, jorda, and gul are the most regularly used smokeless tobaccos in Bangladesh. These are commonly consumed with betel nut, areca nut, and lime [13, 14].

Table 3. Effect of tobacco on mother and fetus

Effect	Number	Percentage
Low birth weight	63	37.31
Stillborn	17	10.1
Abortion	49	29.0
Premature birth	25	14.8
Maternal Anemia	97	57.4

Table 4. Frequency and association of low birth weight according to age, gestational age, parity, paan use, gutka use, naswar use, mainpuri use and duration of smokeless tobacco use

		Yes	No	P-Value
Age Group	≤ 30years (n=92)	33	59	0.750**
	>30 years (n=77)	30	47	
Gestational Age	<37 weeks (n=130)	50	80	0.561**
	≥37 weeks (n=39)	13	26	
Parity	≤3 (n=118)	49	69	0.082**
	>3 (n=51)	14	37	
Occupation	House wife (n=148)	60	88	0.020*
	Working women (n=21)	3	18	
Paan	Yes (n=41)	16	25	0.790**
	No (n=128)	47	81	
Ghutka	Yes (n=32)	15	17	0.212**
	No (n=137)	48	89	
Naswar	Yes (n=40)	15	25	0.973**
	No (n=129)	48	81	
Main puri	Yes (n=80)	30	50	0.955**
	No (n=89)	33	56	
Duration of smokeless tobacco use	≤38 months (n=98)	37	61	0.880**
	>38 months (n=71)	26	45	

Chi square was applied.

P-value ≤0.05 considered as Significant

** Not Significant at 0.05 Levels

Table 5. Still birth according to age, gestational age, parity, paan use, gutka use, naswar use, mainpuri use and duration of smokeless tobacco use (n=169)

		Yes	No	P-Value
Age Group	≤ 30years (n=92)	12	80	0.159**
	>30 years (n=77)	5	72	
Gestational Age	<37 weeks (n=130)	17	113	0.014*
	≥37 weeks (n=39)	0	39	
Parity	≤3 (n=118)	10	108	0.298**
	>3 (n=51)	7	44	
Occupation	House wife (n=148)	16	132	0.698**
	Working women (n=21)	1	20	
Paan	Yes (n=41)	4	37	0.941**
	No (n=128)	13	115	
Ghutka	Yes (n=32)	3	29	0.886**
	No (n=137)	14	123	
Naswar	Yes (n=40)	4	36	0.989**
	No (n=129)	13	116	
Main puri	Yes (n=80)	9	71	0.626**
	No (n=89)	8	81	
Duration of smokeless tobacco use	≤38 months (n=98)	11	87	0.554**
	>38 months (n=71)	6	65	

Tobacco includes a lot of chemicals that are potentially harmful to the human body. Nicotine is the most important substance. Nicotine is broken down into a variety of chemicals, the most notable of which is cotinine. The fetal heart rate rises as well. The blood flow of the uterine and umbilical arteries both decreases at the same time [15].

ST Nicotine may have the same negative effects on pregnancy as smoking. Tobacco use is a major public health concern in Bangladesh, but only a few research have looked at the negative

consequences of tobacco use on pregnancy outcomes. According to a case control research conducted in a Bangladeshi tertiary level hospital, maternal prenatal use of ST roughly five times per day increases the probability of having IUGR newborns by 6.4 times compared to non-tobacco users. [16]. Tobacco use by mothers has a variety of negative impacts on the pregnancy outcome. In our country, almost 39% of women use ST in chewable form. In Bangladesh, using ST with Paan is a socially and culturally acceptable health-damaging practise, particularly among women [17].

Two case control studies conducted locally indicated that moms consumed roughly identical amounts of ST, except that the majority of mothers consumed Jorda and that no one consumed more than one type of ST. The lower sample sizes could explain these disparities. Shada is inexpensive and widely available. As a result, the majority of women are likely to utilise Shada. It's possible that the dual use of Shada and Jorda is due to financial constraints. Poor women preferred Shada to Jorda since they couldn't always afford Jorda.

The risk of spontaneous abortion was 2.3 times higher in mothers who used ST for a long time compared to non-ST users, and there was a strong link between ST usage

and spontaneous abortion (p-value; 0.01) [18].

Another study in India found that women who smoked tobacco had a stillbirth risk of 50 per 1000 total births, compared to 17.1 per 1000 for those who did not [19]. Preterm birth is 3.1 times more likely among ST users than among non-ST users. With a p-value of 0.001, this study discovered a significantly significant link between prolonged ST use and preterm delivery. In India, a prospective cohort study revealed essentially identical results¹⁶. According to a study conducted in Bangladesh, maternal ST usage during pregnancy is linked to preterm delivery and increases the probability of delivering preterm babies by 4.6 times compared to non-ST users [20].

Table 6. Frequency and association of spontaneous abortion according to age, gestational age, parity, paan use, gutka use, naswar use, mainpuri use and duration of smokeless tobacco use (n=169)

		Yes	No	P-Value
Age Group	≤ 30years (n=92)	30	62	0.258**
	>30 years (n=77)	19	58	
Gestational Age	<37 weeks (n=130)	49	81	0.000*
	≥37 weeks (n=39)	0	39	
Parity	≤3 (n=118)	32	86	0.414**
	>3 (n=51)	17	34	
Occupation	House wife (n=148)	37	111	0.002*
	Working women (n=21)	12	9	
Paan	Yes (n=41)	15	26	0.218**
	No (n=128)	34	94	
Ghutka	Yes (n=32)	7	25	0.324**
	No (n=137)	42	95	
Naswar	Yes (n=40)	9	31	0.300**
	No (n=129)	40	89	
Main puri	Yes (n=80)	27	53	0.196**
	No (n=89)	22	67	
Duration of smokeless tobacco use	≤38 months (n=98)	28	70	0.887**
	>38 months (n=71)	21	50	

Table 7. Frequency and association of premature delivery according to age, gestational age, parity, paan use, gutka use, naswar use, mainpuri use and duration of smokeless tobacco use (n=169)

		Yes	No	P-Value
Age Group	≤ 30years (n=92)	13	79	0.791**
	>30 years (n=77)	12	65	
Gestational Age	<37 weeks (n=130)	25	105	0.003*
	≥37 weeks (n=39)	0	39	
Parity	≤3 (n=118)	17	101	0.830**
	>3 (n=51)	8	43	
Occupation	House wife (n=148)	22	126	0.944**
	Working women (n=21)	3	18	
Paan	Yes (n=41)	2	39	0.040*
	No (n=128)	23	105	
Ghutka	Yes (n=32)	7	25	0.266**
	No (n=137)	18	119	
Naswar	Yes (n=40)	8	32	0.288**
	No (n=129)	17	112	
Main puri	Yes (n=80)	12	68	0.943**
	No (n=89)	13	76	
Duration of smokeless tobacco use	≤38 months (n=98)	13	85	0.511**
	>38 months (n=71)	12	59	

Some studies have linked ST use to the delivery of LBW newborns. According to one study, ST user moms had a 4.1 times higher risk of having an LBW infant than non-ST users. The link between extended usage of ST and the birth of an LBW kid is quite substantial (p-value; 0.001). A prospective cohort research conducted in Mumbai, India, revealed a nearly same outcome. In another study conducted in India, maternal Mishri consumption was linked to a 3.2-fold increased risk of having an LBW infant [21].

5. CONCLUSION

This study concludes that mothers who used smokeless tobacco had a higher rate of abortion,

preterm delivery, stillbirth, and delivery of low birth weight newborns.

6. STUDY LIMITATION

As this was a cross-sectional study that's why causes effect relation could not be established.

CONSENT

Each patient gave written informed consent to participate in the trial.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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