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Original Research Article

An obstetric outcome in pregnant women with consumption of tobacco

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ABSTRACT

Background: Tobacco is known to be an established cause of adverse pregnancy outcome. Scientific studies, encompassing various ethnic groups, cultures and countries, have shown that cigarette smoking during pregnancy significantly affects mother, unborn fetus and the newborn baby.
Methods: A hospital based cross sectional study was performed on 933 patients, separated in two groups: tobacco users and tobacco non-users and findings from each group were compared.
Results: Incidence of complications like anemia, PIH and abruption increase with maternal usage of tobacco during pregnancy, chances of preterm delivery and ectopic pregnancy was raised, rate of wound complication was more in tobacco user women. There was no significant difference in mode of delivery.
Conclusions: In the present study may establish association of tobacco consumption with adverse neonatal and obstetrics outcome and may encourage administration to focus on IEC (information, education, communication) to reduce tobacco consumption during pregnancy. Incidence of complications like anemia, PIH, abruption increase with maternal usage of tobacco during pregnancy. Chances of preterm delivery and ectopic pregnancy, was raised usage with of tobacco.

Keywords: Abruption, Ectopic pregnancy, IEC, Preterm delivery, Smokeless tobacco, Tobacco

INTRODUCTION

Tobacco use is one of the most important preventable causes of premature death in the world. More than 6 million people per year die from tobacco use across the globe. Out of them 4 million deaths a year (according to world health organization), corresponding to 10 thousand deaths a day or one every 8 second are due to tobacco use. There is no question that limiting tobacco use is one of the most effective ways to save lives and improve overall well-being. In Gujarat, total tobacco use is 25.1% and smoking is 5.9%, smokeless tobacco is used by 17.4%. 10% women use tobacco in any form in this state, out of which, 7.7 % pregnant women use tobacco in any form. The smoking rate in pregnant women of Gujarat is 0% and smokeless tobacco intake is 7.7%.[1] The use of non-cigarette forms of tobacco is prevalent or gaining popularity in many parts of the world, including many low and middle-income countries (LMICS).[2,3]

Non-cigarette tobacco products are often less expensive than manufactured cigarettes and may be viewed by some as a safer alternative to smoking. In some areas, use of non-cigarette tobacco products is a socially acceptable cultural norm. However, use of non-cigarette tobacco products can result in nicotine addiction, a particular concern for products with high nicotine content. Commonly used non-cigarette tobacco products are smokeless tobacco, cigars and pipes, and water pipes which involve heating or burning the tobacco. Smokeless tobacco use was defined as at least once a day use for a minimum of three times a week of any of the following locally available smokeless tobacco product, e.g. gul, zarada, khaini, gutkha, pan masala.[4]

Tobacco is known to be an established cause of adverse pregnancy outcome. Scientific studies, encompassing various ethnic groups, cultures and countries, have shown that cigarette smoking during pregnancy significantly affects mother, unborn fetus and the newborn baby. These damaging effects have been repeatedly shown to operate independently of other factors that influence the outcome of pregnancy. Smoking is associated with higher rates of abortion, ectopic pregnancy, stillbirth, placenta previa, abruption placenta, and premature rupture of the membranes, preterm birth, and intrauterine growth restriction.[5,6] In human, nicotine increases maternal blood pressure and heart rate. Fetal heart rate is also increased. There is concomitant reduction in the blood flow of uterine artery and umbilical artery.[7,8] During pregnancy among smokers, nicotine decreases blood supply, reducing both oxygen and nutrition supplies to the uterus and placenta, and in smokeless tobacco chewer increased degenerative placental changes, higher incidence of apoptosis in parenchyma cells, higher numbers of chorionic villi with excessive thicker sub trophoblastic basement membrane.[8] Nicotine also impairs placental transfer of amino acids.[9] It has also been suggested that nicotine affects fetal brain Development which may cause fetal hypoxia and growth retardation.[10]

METHODS

A hospital based cross sectional study of >28 weeks of gestation who were consuming tobacco and patient must be antenatally registered at GMERS Sola Civil Hospital between July 2019 and December 2021 were included in this study. During visits the following were done: history taken, examination of mouth, follow-up of birth event, follow up of mother at 14 days.

Statistical analysis

All data was thoroughly analysed and statistical significance of variable between both groups was decided according to "p" value of test of significance. Test of application was qualitative data: chi square test.

Inclusion criteria

All pregnant women admitted in labor room, >28 weeks of gestation at the time of delivery who took minimal 4 ANC visit in sola civil hospital, singleton cephalic delivery. A detailed written informed consent was taken of each patient included in the study.

Exclusion criteria

Antenatal records not available, cases of diabetes mellitus, twin pregnancy, heart disease, other medical illness, <28 weeks of gestation and not given consent for this study.

Ethical approval

Study was approved by institution Ethical committee.

RESULTS

Table 1 shows that Induction of labor from ward was more in tobacco users (1.07%) compared to non-tobacco users (0.3%) which was statistically significant (Chi-square-22.16% p<0.0001). The rate of APH was more in tobacco users (2.14%) compared to non-tobacco users (0.9%) which was statistically significant (Chi-square- 9.19 p<0.002).

Table 1: Comparison of indication of admission in tobacco users versus non tobacco users.

	Tobacco users total: 280	Nontobacco users total: 653	Chi-square	Significance
Prom	62 (22.14%)	104 (15.92%)	0.41	0.5
Labor pain	209 (74.64%)	542 (83%)	0.07	0.78
Induced labor (from ward)	3 (1.07%)	2 (0.3%)	22.16	<0.0001
APH	6 (2.14%)	6 (0.9%)	9.19	<0.002

Table 2: Comparison of gestational age in tobacco users versus non tobacco users (chance of preterm delivery).

Gestational age	Tobacco users total: 280	Nontobacco users total: 653	Chi-square	Significance
<32 week	0	0	0	0
32-34 week	13 (4.64%)	7 (1.071%)	4.41	0.035
34.1-37 week	23 (8.21%)	83 (12.71%)	0.763	0.382
>37 week	244 (87.12%)	563 (86.21%)	0.139	0.709

Table 2 shows that chances of preterm deliveries are almost double at gestational age of 32 to 34 weeks in tobacco users (4.64%) compared to non-tobacco user (1.07%) which was statistically significant (p-0.035).

Table 3 shows that there was no significant difference between vaginal delivery and cesarean section rates of tobacco users and non-tobacco users.

Table 3: Comparison of mode of delivery in tobacco user's versus nontobacco users.

Mode of delivery	Tobacco users total:280	Nontobacco users total: 653	Chi-square	Significance
Normal vaginal delivery				
Episiotomy or tear	72 (25.71%)	195	1.45	0.22
Without pisiotomy	181 (64.6%)	417 (63.85%)	0.0024	0.87
Instrumental delivery	4 (1.41%)	5 (0.76 %)	0.33	0.56
Cesarean section				
Cesarean section emergency	19 (6.71%)	26 (3.98 %)	2.607	0.09
Cesarean section plan	2 (0.71 %)	9 (1.37%)	0.27	0.59
Laparotomy (uterine rupture)	1 (0.35%)	0 (0%)	-	0.66
Manual removal of placenta	2 (0.71%)	1 (0.15%)	0.57	0.44

Table 4: Comparison of antenatal complication in tobacco user's versus non tobacco users.

Mode of delivery	Tobacco users total: 280	Nontobacco users total: 653	Chi-square	Significance
Hypertension (PIH)	24(8.57%)	17 (2.60 %)	15.24	0.0001
Anemia	110 (39.28 %)	63 (9.6 %)	112.06	0.0001
Abruption	55 (19.64%)	15 (2.2%)	82.58	<0.0001
Placenta previa	1 (0.35 %)	5 (0.76 %)	0.07	0.78
Vulvar edema	4 (14.28%)	1 (0.15 %)	3.71	0.0518
Cervical Prolapse	2 (0.71 %)	0 (0 %)	-	0.1648
Varicose Veins	1 (0.35%)	1 (0.15 %)	0.028	0.87
Piles	1 (0.35%)	1 (0.15%)	0.028	0.87
Skin disorder	2 (0.71%)	2 (0.30 %)	0.112	0.53

Table 5: Comparison of intrapartum complications in tobacco user's versus non tobacco users.

Intrapartum complication	Tobacco users total: 280	Nontobacco users total: 653	Chi-square	Significance
Cervical tear	3 (1.071%)	8 (122%)	1.81	0.89
Vaginal tear/laceration	1 (0.35%)	5 (0.76%)	0.006	0.78
Peri-urethral tear	0 (0%)	2 (0.30%)	-	0.7
Retained placenta	2 (0.71%)	1 (0.15%)	0.77	0.44
Uterine inversion	0 (0%)	2 (0.30%)	-	0.7
Shoulder dystocia	0 (0%)	2 (0.30%)	-	0.7

Table 6: Comparison of post-partum complications in tobacco users versus non tobacco users.

Post-partum complication	Tobacco users total: 280	Nontobacco users total: 653	Chi-square	Significance
PPH	4 (14.28%)	7 (1.07%)	0.015	0.9
Postpartum psychosis	0 (0%)	0 (0%)	-	0
Pyrexia	1 (3.57%)	10 (1.53%)	1.41	0.233
Lactational failure	1 (3.57%)	3 (0.45%)	0.12	0.74
Breast abscess	0 (0%)	2 (0.30%)	-	0.78

However among tobacco users 1 laparotomy (0.35%) for rupture uterus was done and 2 (0.71%) patients required manual removal of placenta.

Table 4 shows that the rate of antenatal complication was higher in tobacco users compared to tobacco nonusers. Anemia was most common complication found in tobacco users (39.28%) than non-tobacco users (9.6%) which was statistically significant (Chi-square- 112.06; p-0.0001). Abruption was the 2nd most common complication shown in tobacco users (19.64%) than tobacco non users (2.2%) which was statistically significant (chi square- 82.58; p<0, 0001). Proportion of hypertension was more in tobacco users (8.57%) than tobacco non users (2.60%) which were statistically significant (Chi square- 15.24, p-0.0001).

No significant difference was observed between both groups in the incidence of placenta previa, vulvar edema, cervical prolapsed, varicose veins, piles and skin disorders.

Table 5 shows that there was no statistically significant difference in intra partum complications, between tobacco

users and non-tobacco users. The most commonly observed intrapartum complication was cervical tear, which was 1.071% in tobacco users and 1.22% in non-tobacco users. Retained placenta was seen in 2 women (0.71%) in tobacco users.

Table 6 shows that there was no significant difference in post-partum complications, between tobacco users and tobacco nonusers. However, among tobacco users 4 patients (14.28%) developed post-partum hemorrhage and required blood transfusion. No women among tobacco users developed postpartum psychosis and breast abscess.

DISCUSSION

The present study "obstetric outcome in pregnant women with consumption of tobacco" a hospital based cross sectional study was performed on 933 patients, separated in two groups: tobacco users and tobacco non users and findings from each group were compared.

In the present study chances of preterm deliveries are almost double at gestational age of 32 to 34 weeks in tobacco users (4.64%) compared to non-tobacco users (1.07%) which was statistically significant (p-0.035). In study of Krishna et al showed that the odds ratio of preterm birth was seven times more in tobacco users compared tobacco non-users.[11] In study of Gupta et al chances of preterm delivery at gestational age <37 weeks were 1.4 times higher in tobacco user compared to non-tobacco user (p-0.06).[12] In a study by Pratinidhi et al, preterm birth had no significant association (p>0.05) in tobacco users compared to non-tobacco users.[13] Rizwan et al showed that preterm birth 1.39 (odds ratio 1.39, 95%, CI- 0.001-0.12) times more in tobacco users than non-tobacco users.

Chances of induced delivery was increased in tobacco users (1.07%) compared to non-tobacco users (0.3%) which was statistically significant (Chi-square- 22.16% p<0.0001).

In the present study rate of induction of labor and APH was more in tobacco users compared to non-tobacco user which was statistically significant (p<0.0001 and <0.002 respectively) but it required further study. In a study by Pratinidhi et al, risk of APH was 1.3 times higher in tobacco users (CI-95% RR-1.3).[13] The rate of APH was more in tobacco users (2.14%) compared to non-tobacco users (0.9%) which was statistically significant (Chi-square- 9.19 p<0.002).

Present study indicates proportion of pregnancy induced hypertension is more in tobacco users (8.57%) than tobacco non users (2.60%) which was statistically significant (Chi-square- 15.24, p-0.0001) which was also observed in Pratinidhi et al, who stated that chances of hypertension are more in tobacco users compared to non-users (Chi-square- 3.9; p<0.005).[13] In study of Amasha et al showed that a statistically significant difference was found in association between tobacco users and pregnancy induced hypertension (Chi-square-10.85, p-0.004).[14] In study of Gupta et al no association was found between consumption of tobacco and pregnancy induced hypertension (p-0.9).[15]

In the present study anemia was more in tobacco users (39.28%) than tobacco non users (9.6%) which was statistically significant (Chi-square -112.06; p-0.0001).

In study of Amasha et al. shows that a statistically significant difference was found association between tobacco users and anemia (Chi-suare- 15.27, p- 0.0001s).[14] Study of Gupta et al also found significant association between tobacco and anemia (p-0.001).[15] This may be due adverse effect of tobacco use on iron metabolism and iron absorption.

In the present study abruption was more in tobacco uses (19.64%) than non-tobacco users (2.2%) which was statistically significant (Chi-square -82.58; p<0. 0001). In Pratinidhi et al, relative risk of ante in partum hemorrhage was 1.3 times higher in tobacco users than non-users.[13] This was due to vasoconstrictive effect on nicotine on uterine and umbilical artery, leading to hypoxic placental changes causing abruption.

The present study could not represent the entire country, thus limited data is available considering different areas use different methods of tobacco consumption, a range of diverse tobacco products are available, the contents of which differ widely and consequently their health effects differ too, and different confounding factor also use in account, multi centric study required for further study, amount and duration of tobacco use during pregnancy was not taken into consideration in the present study.

CONCLUSION

In the present study may establish association of tobacco consumption with adverse neonatal and obstetrics outcome and may encourage administration to focus on IEC (information, education, communication) to reduce tobacco consumption during pregnancy, incidence of complications like anemia, PIH, abruption increase with maternal usage of tobacco during pregnancy, chances of preterm delivery and ectopic pregnancy, was raised with usage of tobacco, there was no significant difference in mode of delivery.

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