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# Implementing a Tobacco Cessation Program for Pregnant Women in an Antenatal Care Setting: A Mixed Methods Study

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## Abstract

**Background:** Tobacco use during pregnancy has deleterious effects on the woman and child. Many pregnant women make quit attempts but few are successful. Antenatal Care (ANC) services create an opportunity to identify tobacco users and provide cessation services. The aim of the study was to assess the feasibility of implementing LifeFirst tobacco cessation services for pregnant women attending ANC clinic. **Methods:** We used mixed methods study design. All pregnant women attending ANC services during one year were screened verbally for tobacco use. Current tobacco users (last 30 days) registered voluntarily for LifeFirst and a detailed first session was conducted. Telephonic follow-up sessions were conducted over six months. An in-depth interview was conducted with the counselor to identify the influencing factors. **Results:** Of the 1431 pregnant women screened, 41 were current tobacco users (40 used smokeless) and all enrolled for the service. 56% of them were highly dependent (Fagerstrom score) and 35(85%) had never made a quit attempt. At the end of the intervention, 48% were lost to follow-up mostly due to change in contact phone numbers. All the remaining women self-reported that they had stopped using tobacco. ANC clinic setting and a female counsellor were considered as facilitators. Loss to follow-up, non-implementation of guidelines to screen and offer brief advice and the resultant late tobacco use screening acted as barriers. Social myths added to these complications. **Conclusion:** Integration of tobacco cessation with ANC services is feasible. Creating awareness about ill-effects of tobacco during pregnancy and providing cessation support is required. Integration through trainings will provide additional benefit.

**Keywords:** Antenatal care, Smokeless, Cessation, Mishiri, Pregnant Women, Mixed Methods.

## INTRODUCTION

Tobacco use is considered to be an important threat to maternal and child health [1]. According to Global Adult Tobacco Survey-2, 14% adult women and 7.5% of pregnant women use some form of tobacco in India [2]. Smokeless tobacco is the most prevalent form of use among pregnant women [2, 3]. The prevalence of smoking during pregnancy is low in the low- and middle- income countries compared to the high- income countries, however, it is increasing in these countries [4, 5].

Smoking during pregnancy is associated with increased risks for ectopic pregnancy, premature rupture of membranes, miscarriage, stillbirth, preterm birth, low birth weight, congenital anomalies. Use of smokeless tobacco also increases the risk of having several adverse outcomes such as stillbirth, preterm birth, and low birth weight [6]. Tobacco use during pregnancy has an impact on the mother and the fetus at all stages of prenatal development, at birth, in infancy and childhood, in adolescence, and throughout adult life [7]. Studies conducted in Delhi and Mumbai showed that those who used smokeless tobacco during pregnancy had newborns with lower birth weight [8, 9] and their gestation period was shorter [9].

Pregnancy is considered to be a teachable moment [10]. Pregnant women make attempts to quit tobacco use during this period as they are highly motivated because of their child's health. However, very few quit attempts are successful [7]. On the contrary, some women initiate tobacco use during pregnancy because it is believed to reduce distress during pregnancy [11]. Antenatal care (ANC) services bring pregnant women in constant touch with the healthcare providers. This builds a platform to identify tobacco users and provide cessation services [6].

Therefore, tobacco cessation interventions should be designed to provide assistance to the pregnant women at the beginning of their pregnancy; not only to avoid pregnancy related complications but also to protect future generations [7, 12]. WHO has recommended to routinely offer advice and psychosocial interventions (behavioral change counseling) for tobacco cessation to all pregnant women who are either

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current tobacco users or recent tobacco quitters [6, 13]. ANC services create an opportunity to identify tobacco users and provide cessation services. However, there is a dearth of such interventions in India for this vulnerable population.

LifeFirst is a tobacco dependence treatment program initiated by Narotam Sekhsaria Foundation in collaboration with Salaam Bombay Foundation that provides tobacco cessation counseling services to all people from all strata of the society in different settings. LifeFirst undertook an operational research by implementing a tobacco cessation intervention for pregnant women attending the ANC Clinic in an urban municipal hospital with an objective to:

1. Describe the tobacco use patterns and cessation counseling outcomes among the pregnant women.
2. Assess the feasibility of implementing LifeFirst tobacco cessation services for pregnant women attending ANC clinic.
3. Identify enabling factors and challenges experienced by the service provider to implement LifeFirst tobacco cessation services among pregnant women.

## METHODS

We used a mixed method design for the research. The Quantitative component consisted of routinely collected programmatic data and the qualitative component included an in-depth interview of the LifeFirst counselor providing cessation service to the pregnant women in the ANC clinic.

LifeFirst implemented the tobacco cessation program in an Urban municipal hospital's ANC clinic from December 2017 to May 2019. The Urban municipal hospital is located in Navi Mumbai, Maharashtra and serves population belonging to lower middle-income groups. All the pregnant women attending the ANC clinic during the period December 2017 to November 2018 were included for the program. One female LifeFirst counselor was assigned to implement the program and she visited the ANC clinic three times in a week during the OPD (Outpatient Department) hours.

All the pregnant women were verbally screened for tobacco use after obtaining verbal consent. After screening, the women were divided into three categories:

1. Current tobacco users – pregnant women who had consumed any form of tobacco in the past 30 days.
2. Past tobacco users – pregnant women who had consumed any form of tobacco more than 30 days ago.
3. Never users – pregnant women who had never used any tobacco product.

Different treatment and follow up protocols were followed for each category:

1. The Current tobacco users were motivated to voluntarily register for the LifeFirst program. The first detailed counseling session was conducted face-to-face with the registered pregnant women using techniques of behavior modification and motivational interviewing after obtaining written consent. The registered women were followed up for six months with an interval of one month between two follow-up sessions. The follow up sessions were conducted over telephone at a convenient time.
2. The identified past tobacco users were also counselled and followed up for six months over telephone to prevent relapse after obtaining their verbal consent.

3. Ten percent of never-users were followed up at three months and six months from their screening to assess if they initiated any tobacco use during pregnancy.

The tobacco use status was recorded at each follow up. Counseling intake sheets and follow up sheets were used to collect data. This was entered into Microsoft Excel and maintained as a database.

To identify the challenges during the implementation, an in-depth interview was conducted with LifeFirst counselor (n=1) who was responsible for providing brief advice to all pregnant women, identifying tobacco users and providing tobacco cessation counseling within the setting. Verbal consent was obtained for in-depth interview which was audio recorded. Preliminary codes and themes were identified using an inductive approach.

Ethical approvals were received from the institutional Joint Ethics Committee of Narotam Sekhsaria Foundation and Salaam Bombay Foundation

## RESULTS

### Quantitative

Among the 1431 pregnant women who visited the ANC clinic during the period December 2017 to November 2018, 41 (3%) reported current tobacco use and three of them reported past tobacco use.

All of the current tobacco users were willing to quit tobacco use and registered themselves into LifeFirst program.

The mean age and education of the self-reported tobacco users was significantly different from the pregnant women not using any form of tobacco while the occupation was not significantly different with most of the women being homemakers in both groups. The details are given in Table 1.

**Table 1:** Sociodemographic profile of the pregnant women attending ANC clinic in Navi Mumbai Municipal General Hospital from January-December 2018.

	NON-USERS		USERS		p value
	Mean	SD	Mean	SD	
<b>Age</b>	24.6	3.9	26.9	4.9	<0.005
<b>Education</b>	No.	%	No.	%	
No formal schooling	48	3%	8	20%	<0.001
Less than primary	54	4%	3	7%	
Primary	390	28%	13	32%	
Secondary	505	36%	12	29%	
Higher secondary	198	14%	2	5%	
Graduate	169	12%	3	7%	
PG	26	2%	0	0%	
<b>Occupation</b>					
Homemaker	1327	95%	38	93%	>0.5
Working	63	5%	3	7%	
<b>Total</b>	1390		41		

Among the 41 women who reported tobacco use, all except one were smokeless tobacco users, the commonest product used (49%) being *mishri / masher*, a finely powdered roasted tobacco used by application to gums [14]. The only smoker in the group reported using bidis. The mean use of initiation of tobacco was about 20 years (range 16 to 27 years) while the mean duration of use was 9 years (range 3 months to 19 years). Two of them (5%) had initiated tobacco use during pregnancy. All except one used their tobacco products on a

daily basis while one was an occasional user. Consumption of alcohol was not reported by anyone.

More than half (56%) of the tobacco users had a high nicotine dependence on the basis of their Fagerstrom Test for Nicotine Dependence (FTND) score [15]. The lone bidi smoker reported low nicotine dependence. Majority (85%) of them had not made any quit attempt in the past. Among those who had made attempts to quit, only three reported to having quit for more than 24 hours in the past 12 months. The tobacco use details of the registered pregnant women are given in Table 2.

**Table 2:** Tobacco use profile of pregnant women registered for LifeFirst tobacco cessation program at ANC clinic in Navi Mumbai Municipal General Hospital from January to December 2018.

	Mean	SD
Mean age of initiation	19.9	2.8
Mean years of use	8.9	8.2
	No.	%
<b>Type of tobacco</b>		
Smoking	1	2%
Smokeless	40	98%
<b>Products</b>		
Smoking		
Bidi	1	2%
Smokeless		
Mishri	20	49%
Tobacco lime mixture	10	24%
Gutkha	5	12%
Gul	5	12%
<b>Past quit attempts</b>		
No quit attempts	35	85%
1 quit attempt	2	5%
2-3 quit attempts	3	7%
4 or more quit attempts	1	2%
<b>FTND</b>		
Low	2	5%
Moderate	16	39%
High	23	56%

During the six-month implementation of the program, eight (20%) could not be contacted even once as the phone numbers provided by them were incorrect. Among the remaining, 16 (48%) could not be contacted at the sixth-month follow-up. All the remaining 17 (52%) reported not using any tobacco product. Almost half (47%) of them had stopped their tobacco use immediately after the first counseling session while about 70% of them stopped by the third month after enrolment.

The three past tobacco users were followed up to prevent relapse and they remained abstinent upto the end of follow-up at six months from screening. Among the 139 (10%) non-users who were followed up for six months, none of them reported initiation of tobacco use.

### Qualitative

To understand the enablers and challenges while implementing the program, an in-depth interview was conducted with the counselor who was implementing the program at the ANC clinic. Based on the analysis of the qualitative data, the ANC setup, female counselor and

acceptance of the cessation services were considered as enablers. Screening of tobacco users, loss to follow-up, myths associated with tobacco were some of the other challenges perceived by the counselor.

### Enablers

- ANC clinic:** The counselor considered the ANC setting itself as an enabler to implement the program. The counselor reported that some of the processes followed at the ANC clinic supported her in conducting counseling and reaching greater number of pregnant women

#### 1.1 Physical set up

The counselor informed that the spouses/relatives of the pregnant women were not allowed to be with the women during the waiting period at the clinic. In addition to this, the counsellor was allotted a separate room within the ANC area to conduct counseling. This allowed the counselor to screen and provide brief advice to all pregnant women, making them comfortable to freely share about their tobacco use and seek cessation service.

*"Firstly, we were provided with a room, where we could sit with the patient and counsel them... because of that I could have a space for privacy, patients could open up. This setup was favorable if we look at it from the purpose of counselling".*

#### 1.2 Opportunistic setting

As the ANC visits are mandatory, pregnant women are instructed by the doctors/nurses to visit the clinic regularly at scheduled intervals.

*"We had access to a large number of pregnant women. If we had to work at the primary health centers, we would have not found many pregnant women there."*

#### 1.3 Supportive staff at the ANC clinic

The counselor felt that the staff at the clinic supported her in smooth implementation of the program. She reported that there was no resistance from the staff to offer the cessation services.

*"They (hospital staff) never told me that this is unnecessary.... they would guide patients to us..."*

### 2. Female counselor

The counselor felt that the cessation service executed by a female counselor made pregnant women feel more at ease.

*"Because it was a female counselor, they (pregnant women) would open up more ...sharing all their doubts. All that they wanted to share openly or ask something that was personal was easier with a female counselor".*

### 3. Acceptance of tobacco cessation services

The counselor reported that none of the pregnant women who were identified as tobacco users refused the cessation service. It was easy to enroll them as they were motivated to quit the use of tobacco for the health of their unborn child and to avoid any complications during pregnancy.

### Challenges

#### 1. Screening/Identification of tobacco users

The counselor felt that timely identification of current tobacco users in this setting was a challenge. This was due to two reasons – insufficient human resource and late referrals of pregnant women to the ANC clinic.

## 1.1 Human resource

According to the counselor, it was difficult for one counselor to manage a large number of pregnant women during the ANC OPD hours.

*“The ANC OPD was crowded, one counselor is not enough to cover so many people”.*

## 1.2 Delayed referral of pregnant women to ANC Clinic

The counselor reported that there were pregnant women who attended the ANC clinic for the first time during their last semester and were consuming tobacco. This resulted in delay in providing the cessation support.

*“One or two patients visited the clinic in their last trimester. It was their 7<sup>th</sup> or 8<sup>th</sup> month of pregnancy and they were using tobacco products. They had visited towards the last stage, so till then they continued the use of tobacco”.*

## 2. Loss to follow-up

The counselor mentioned that many telephone numbers were invalid or not reachable and it was difficult to contact them for telephonic follow-up sessions. She said that some shared telephone numbers of their spouse who were not around the pregnant women when called to follow-up. Also, there were few who instructed her not to call on the alternative telephone number as they had not revealed their tobacco use status to their spouses.

*“Some women said that – you don’t call on the alternative telephone number... that belongs to my husband, he does not know that I consume tobacco”*

## 3. Compliance to tobacco cessation guidelines for pregnant women by the ANC staff

The counselor informed that none of the pregnant women were asked about their tobacco use before. She felt that if tobacco users were screened and provided with a brief advice by the ANC staff beforehand, she could have given more time for counseling that could motivate the user to quit.

*“Some pregnant women who had visited the clinic for their previous pregnancy were surprised. They said that previously nobody enquired about tobacco use. Have they started doing this now?”*

*“If at the ANC Clinic someone supported in identifying pregnant women who are tobacco users, then our work would be easy. The time that we should be allotting for the tobacco user, ideally for counselling would be more”*

## 4. Myths

The counselor mentioned that few women initiated tobacco use during pregnancy and continued its use due to certain myths. This made it difficult for her to counsel and motivate them to quit.

*“...there is toothache, vomiting, anxiety of what will happen ... its pregnancy so the stress levels go high, some use tobacco for getting comfort. Just like there are social myths - their neighbors say – chew some (tobacco), nothing happens”.*

*“.. (some pregnant women say) I have used tobacco in my first pregnancy also(!) ... they have used tobacco in their first pregnancy ... they feel it’s nothing”*

## 5. Multiple activities in the ANC clinic

Other organizations/NGOs who collaborated with ANC clinic posed challenges in terms of accommodating their activities simultaneously for pregnant women within the same place at the same time.

## DISCUSSION

The study shows that it was feasible to provide tobacco cessation services to the pregnant women attending the ANC clinic. The study also highlights the enabling factors and challenges faced by the service provider while implementing the intervention. During the one-year intervention, 1431 pregnant women were screened for tobacco use and 41(3%) were identified as current users. All the tobacco users consumed smokeless tobacco except one. GATS-2 also reported that majority of the pregnant women consumed smokeless tobacco [2]. Studies conducted in Maharashtra show that most of the women from Maharashtra use Mishri/Masheri [16–18]. Complementing this, our study also shows that Mishri is the most common tobacco product consumed by the pregnant women.

During this intervention, only 3% pregnant women were identified as current tobacco users which is lower than the national data. GATS-2 and NFHS-4 data show that 5%-8% pregnant women use tobacco especially smokeless during pregnancy [2, 19]. However, studies conducted among pregnant women in Mumbai and Central India reported higher prevalence (13% in both studies) of tobacco use among pregnant women [16, 20].

Nevertheless, the findings suggest that there is a need for tobacco cessation services for pregnant women. All the identified tobacco users registered for counseling services and wanted to quit tobacco use for the health of their child and to avoid complications of pregnancy. Furthermore, 85% of the registered pregnant women had never made quit attempts but were willing to quit tobacco after being sensitized about ill effects of tobacco by the counselor. According to a recent white paper released by the Indian Council of Medical Research (ICMR), 71.6% women smokeless tobacco users made a quit attempt without any assistance [21]. This clearly indicates the great need for tobacco cessation services and lack of awareness regarding the available cessation services among women.

Sensitizing pregnant women about harmful effects of tobacco and available cessation services and advising the tobacco users to quit is imperative. ANC clinic provides an opportunity to carry out these activities and acts as a facilitator in implementing tobacco cessation program for pregnant women. World Health Organization as well as the Ministry of Family & Health Welfare (MoHFW), Government of India guidelines on antenatal care recommend that counseling should be provided to pregnant women who use tobacco [13, 22].

In our study, more than half of the registered women had high FTND scores and thus providing cessation support becomes crucial. In such a vulnerable population, where prescribing Nicotine Replacement Therapy is a challenge, psychosocial interventions become all the more important. A Cochrane review conducted in 2017 reports that psychosocial intervention like counseling is effective for cessation among pregnant women with reduced adverse birth outcomes [23].

However, it is important to design gender sensitive psychosocial interventions and to consider the social customs and beliefs associated with tobacco use [21]. Furthermore, the study shows that cessation services offered by a female counselor acted as a facilitator. The study also helps to gain some insights on the myths or social norms among pregnant women which leads to initiation or continued use of tobacco among pregnant women. There is scant literature on such beliefs and customs related to tobacco use during pregnancy.

The study brings forth another practical challenge while implementing such interventions – high rate of loss to follow-up. Despite the fact that all the identified tobacco users voluntarily registered for counseling service, at the end of program only 52% were available for the last follow-up. In contrast to this, a similar study conducted among pregnant women of Western Alaska reported high follow-up rate [24]. In both the studies, a female counselor conducted telephonic follow ups at regular intervals. The difference can be attributed to specific factors

like incorrect telephone numbers, most of them had shared their spouse's number, gone to their maternal house for delivery etc., as mentioned by the counsellor in her interview.

Absence of early tobacco use screening was identified as one of the barriers in implementing the program. The MoHFW guidelines for antenatal care suggests that tobacco history of each pregnant woman should be taken [22]. However, it was not practiced at this setting and hence many pregnant women received the support at a later stage of their pregnancy. Such tobacco cessation interventions can only be sustained and become successful if they are integrated into current practices of antenatal care services. It is therefore, necessary to build capacity and train the medical and paramedical staff of the antenatal clinics at least to identify tobacco users, provide brief advice and refer to a suitable cessation service. Sensitization of all healthcare providers towards tobacco cessation thus becomes an important aspect of all care settings.

### Strengths

The strength of this study is that it is the first study, to the best of our knowledge, conducted in India to assess a tobacco cessation program specifically for pregnant women. The mixed method design adds more strength to the study as it helps to explore other nuances of implementing such an intervention. Also, all the women attending the ANC clinic during the period of one year were surveyed and screened for tobacco use. None of them were excluded from the study.

### Limitations

First, the tobacco use status is self-reported and has not been validated biochemically. Secondly, we were not able to gauge the pregnant women's perceptions regarding the program. This could have added more depth to understand the program implementation. Lastly, though all the women attending the ANC clinic were included in the study, only a small proportion of them were tobacco users making the sample size of the women actually receiving the intervention considerably small.

### CONCLUSION

Awareness about tobacco, especially smokeless tobacco and adverse health outcomes of tobacco use is important and should be provided early in the pregnancy to motivate pregnant tobacco users to quit their habit. Comprehensive and robust tobacco cessation interventions should be designed specifically for the ANC clinic setting and promoted so that a greater number of pregnant women can be offered cessation support.

### Conflicts of Interest

None declared

### Authors' Contribution

Concept and design of study - HG

Acquisition of data - MD

Data analysis and interpretation- HG, GM

Drafting the article – GM, HG

Final approval of the version to be published.- HG,GM, MD

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