1. Background:

The level of tobacco consumption is high and increasing in the developing world. Among the smokers, the majority are from developing world. Tobacco is responsible for more deaths than any other risk factors than high blood pressure (WHO, 2004). There is a set of negative impacts of tobacco consumption on pregnancy as found in studies across countries. There are confirmed findings in various studies that the low birth weight of baby is linked to tobacco consumption/ smoking during pregnancy (Cowperthwaite, B. et al., 2007; S.E.Vieiwerth et al., 2007, Sadja G.C.1979; Secker, RH et al., 20033). In fact, nicotine reduces the blood flow to the fetus and that resulted the slower growth of the child during pregnancy.

Alike other South Asian countries, Bangladeshi women used to consume tobacco items with the betel leaf. But a few also smokes bidi or cigarette. Tobacco items consumed by women with betel leaf are as harmful as smoking. The paper aims to focus on the marginal social groups (women) to whom priority based health intervention may be suggested for the cessation of tobacco consumption to reduce hazards during pregnancy and childbirth. In addition, it is also attempted to identify the risk factors and burden of maternal health due to tobacco consumption.

2. Methods and Materials

The survey was conducted in Dhaka City in Bangladesh in 2005. Households were the basic sample units in this study. To get the sample households from the study area, Integrated Multipurpose Sample (IMPS) design was used. 385 women were interviewed from direct interviewing method on illness relating to pregnancy and delivery on the one hand, and, on the other, tobacco consumption habit.

In order to find the differentials and the burden of tobacco, the bivariate distributions with Chi-square tests have been used to see the statistical differences among the factors and these were selected as covariates in logistic regression analyses. To find the significant risk factors of tobacco consumption, multivariate logistic regression has been employed. To get the effect of tobacco on mean duration of diseases and time spent in bed the **Kaplan-Meier survival method** (Product-Limit method) has been employed.

3. Results

a. Pattern of Tobacco Consumption during Pregnancy

The result shows ten percent women consumed tobacco during pregnancy and delivery. There is a significant difference in tobacco consumption of women between slum and non-slum households. Twenty percent women of the sample consumed tobacco from slum households compared to eight percent of the same from the non-slum settlements. There is a significant increase in tobacco use among older women i.e. women with age more than thirty-four years. About two-third slum women, having age 35 years+, had this habit compared to 20 percent of the from the non-slum areas. Women with no formal education had significantly higher prevalence of tobacco consumption than the women having formal education in both areas.

b. Burden of Tobacco Consumption during Pregnancy and Delivery

The burden of tobacco consumption habit during pregnancy has been shown in Table-2. The result shows that the incidence of complicated pregnancy history (earlier pregnancy has ended with miscarriage/abortion, still birth etc.) was higher for the women

who had tobacco chewing habit. Likewise, the pre-existing medical condition (hypertension, diabetes, thyroid problem etc.) was proportionally higher for the women, who were tobacco habituated compared to the women who had no tobacco consumption habit during index pregnancy. Some of the risky obstetric complications i.e. complication during pregnancy, delivery and post-partum period were more prevalent among the women with the habit of tobacco consumption. Hemorrhage during pregnancy or delivery is one of the high-risk complications and the case-fatality ratio is also very high for this symptom.

The multivariate logistic regression shows that type of household (slum, non-slum), age, parity, preexisting health status, utilization of care during pregnancy, and hemorrhage during childbirth were the significant determinants of tobacco consumption. Women from slum households were more likely (OR= 1.7) to consume tobacco items during pregnancy than the women from the non-slum households. Likewise, older women with age more than 34 years had significantly higher probability to consume tobacco items than that of women with age less than 25 years. Women with more than one living children had significantly higher chance of taking tobacco than the single parity women. Women with preexisting medical condition (i.e. have symptoms of other risky diseases like hypertension, diabetes, thyroid problems etc.) had higher probability to take tobacco than the women with absence of these symptoms. Utilisation of care during and before pregnancy was a significant determinant. Women who had received preconception and delivery care earlier, had significantly lower chance of consuming tobacco (OR=0.5) than the women who had received one antenatal care. Women, who consumed tobacco, had significantly higher chance (OR=3.1) of suffering from hemorrhage during childbirth compared to women who had not consumed tobacco during pregnancy for model-I. Severity of complication is higher for the tobacco consumed women (Fig) during pregnancy and delivery for both slum and non-slum settlement.

Discussion and Conclusion

The present study in the Dhaka city is to identify the priority groups of females who are needed to be intervened for the health education for the cessation of tobacco consumption. In addition, it also examines the health hazards of pregnant women and their severity due to tobacco use.

The demographics of the sample show that the proportion of tobacco use was higher for the older women, in particular for the ages 35 years and above. In fact, tobacco items (*zarda, ala-pata*) are mostly consumed by women with the betel leaf and nut in Bangladesh and usually older women have this habit. This result is unlikely in the developed nations where the smoking habit during pregnancy is higher among the younger women (Cowperthwaite, B. et al., 2007).

The prevalence of tobacco habit is higher for the women from the slum areas. The women in the slum settlements are socially backward with less awareness. The unawareness leads them to consume more tobacco during pregnancy. Utilization of care before and during pregnancy has an immense impact on risky behaviour of mothers. In the process of utilization of health care services, women are advised many does and don’ts, which create more awareness among pregnant women. Women who utilized both preconception and antenatal care, had significantly lower chance to consume tobacco. So, the promotion of prenatal care would be a pragmatic way for reducing of the prevalence of tobacco. The bivariate and multivariate analysis show that hemorrhage is the

significant disease for tobacco consuming mothers. The incidences of premature delivery, retained placenta, post-partum morbidity including depression are higher for these women also. Several studies suggest that the premature delivery is higher for the smoking women (Raatikainen, K. et al., 2007). The data shows that multiple complications (severity) during pregnancy and delivery were also higher for tobacco consuming mothers. The duration of pregnancy-related complications and delivery-related complications was significantly longer for these women.

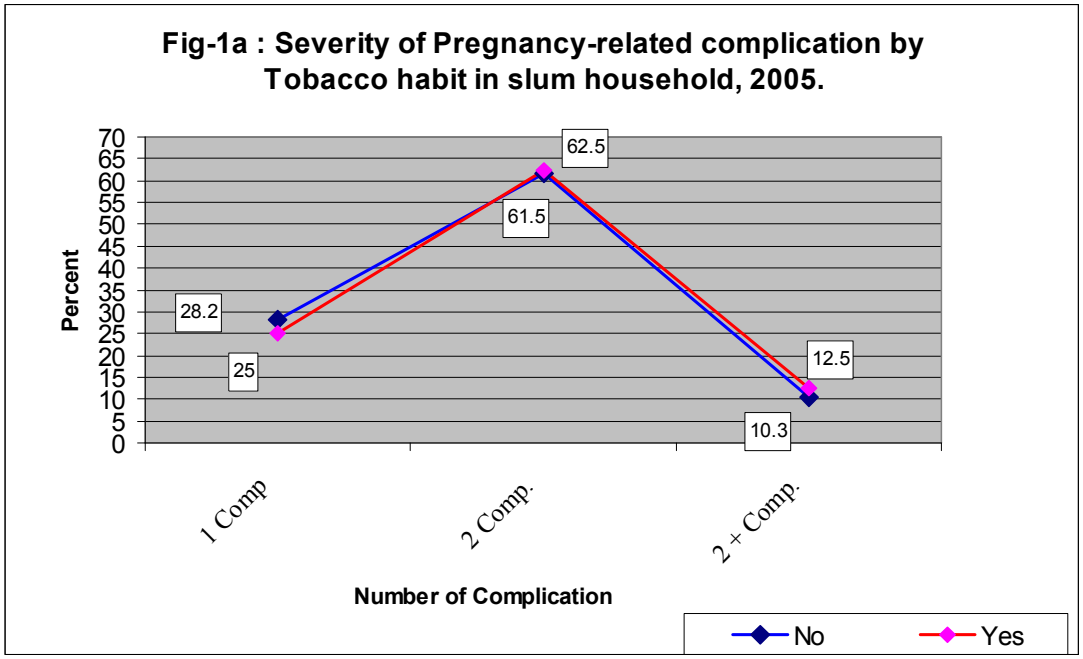
In epilogue, it can be concluded that the tobacco consumption during pregnancy in Dhaka city is higher for the socially backward women i.e. women from slum areas and women with no education. Utilisation of care before and during pregnancy, through preconception and antenatal care, have reduced the incidence of tobacco consumption significantly among pregnant women. The risky maternal morbidity like hemorrhage during childbirth is significantly higher for women who consume tobacco. The severity in terms of number of complications and duration of sufferings is higher for these women. The results suggest that the priority-based health education programme, through preconception care, along with antenatal care, for slum women may lower the use of tobacco items during pregnancy in Bangladesh. That would reduce the risk or health hazards (like hemorrhage, retained placenta) of maternal health during pregnancy and childbirth in the study areas.

Major Tables and Figures

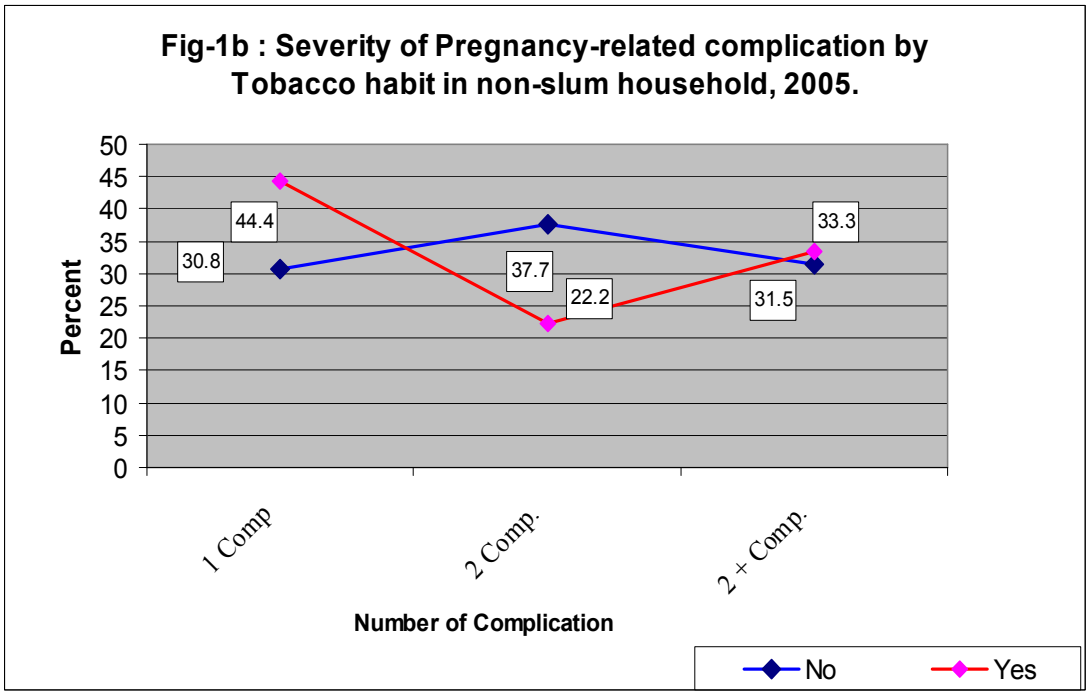
Table-2: Women who Consumed Tobacco (any form) during Childbirth by type of Household in Dhaka City, 2005. (In Percent)			
Characteristics	Type of Household		
	Slum	Non-Slum	Dhaka City
Currently Pregnant			
Yes	30.0	12.9	17.1
No	19.7	7.6	10.3
P-value (chi-square)	**0.45**	**0.31**	**0.00**
Age of Women			
15-24 Years	9.1	3.6	5.1
25 -34 Years	19.4	9.4	11.0
35 Years and more	61.5	19.2	33.3
P-value (chi-square)	**0.00**	**0.02**	**0.00**
Educational Attainment			
No Education	38.7	14.3	**25.8**
Less than H.S.C	10.7	7.6	**8.2**
Graduate and above	0.0	3.8	**3.7**
P-value (chi-square)	**0.0**	**0.29**	**0.00**
Occupation			
Non-working	18.3	8.3	**10.6**
Working in Garment's Factory	33.3	14.3	**20.0**
Others	66.7	0.0	**11.8**
P-value (chi-square)	**0.10**	**0.44**	**0.64**
Standard of Living			
Low	18.4	7.1	12.5
Medium	22.7	9.9	13.8
High	16.7	7.1	7.5
P-value (chi-square)	**0.87**	**0.71**	**0.19**
Parity			
1	6.1	4.3	4.7
2-3	35.5	11.5	15.9
4 or more	50.0	11.8	24.0
P-value (chi-square)	**0.00**	**0.07**	**0.00**
Utilization of Care during Pregnancy			
Only ANC	17.6	11.6	12.7
Preconception and ANC	10.0	2.4	3.9
No Care	37.5	16.0	26.5
P-value (chi-square)	**0.04**	**0.00**	**0.00**
Decision Making Autonomy			
No Decision	25.0	10.5	11.5
Take Decision in household	20.2	7.5	10.8
P-value (chi-square)	**0.81**	**0.45**	**0.88**
Total	**20.5**	**8.1**	**10.9**
Source: Reproductive Morbidity Survey, 2005			

Table-3: Burden of Tobacco Consumption among Women who consumed tobacco during Childbirth in Dhaka City, 2005. (In Percent)			
Characteristics	Type of Household		
	Slum	Non-Slum	Dhaka City
History of Complicated Pregnancy			
Yes	30.0	11.3	14.1
No	17.6	7.1	9.1
P-value (chi-square)	**-**	**-**	**-**
Preexisting Medical Condition			
Yes	44.4	17.4	18.4
No	17.7	6.4	8.8
P-value (chi-square)	**0.15**	**0.06**	**-**
Hemorrhage During Childbirth			
Yes	33.3	25.0	26.9
No	17.8	6.1	8.8
P-value (chi-square)	-	0.00	**-**
Premature Delivery			
Yes	0.0	17.4	14.8
No	20.0	6.6	9.8
P-value (chi-square)	-	**0.06**	**-**
Retained Placenta			
Yes	50.0	16.7	30.0
No	17.3	7.4	9.6
P-value (chi-square)	**0.10**	**-**	**-**
Postpartum Morbidity			
Yes	31.8	8.2	12.6
No	14.3	7.2	9.0
P-value (chi-square)	**0.07**	**-**	**-**
Postpartum Blues (Depression)			
Yes	23.1	6.9	11.9
No	18.5	7.7	10.0
P-value (chi-square)	**-**	**-**	**-**
Total	**20.5**	**8.1**	**10.9**
Source: Reproductive Morbidity Survey, 2005			

Table-4: Multivariate Logistic Regression of Tobacco Consumption during Childbirth at Dhaka City, 2005.			
Characteristic	Odd Ratios		
	Total HH		Non-Slum HH
	Model I	Model II	
Whether Slum Household			
No (reference)			
Yes	1.7*	2.7	-
Age			
15-24 Years (Reference)			
25 -34 Years	1.3	2.1	2.5
35 Years and more	1.5	0.5	0.3
Educational Attainment			
No Education (reference)			
Educated	0.7	0.2**	0.3*
Occupational Status			
Non working (reference)			
Working	1.4	0.0	0.0
Standard of Living			
Low (reference)			
Medium	0.9	1.6	297.7
High	0.7	1.2	116.1
Parity			
One (reference)			
More than one	2.1**	1.2	1.9
Have Preexisting Medical Condition			
No (reference)			
Yes	1.8**	3.8**	4.2**
Received Care			
Only ANC (Reference)			
Preconception and ANC	0.5**	-	0.3
Knowledge of Danger sign of Delivery			
Yes (Reference)			
No	-	3.2**	6.0**
Hemorrhage during Childbirth			
No (reference)			
Yes	3.1**	5.0**	11.6**
- 2 Log likelihood	129.2**	43.4**	25.3**
Nagelkerke R^2	.28	0.51	0.60
** p<0.05, * p<0.10 .	Source: Field survey, 2005		



Source: Field survey, 2005



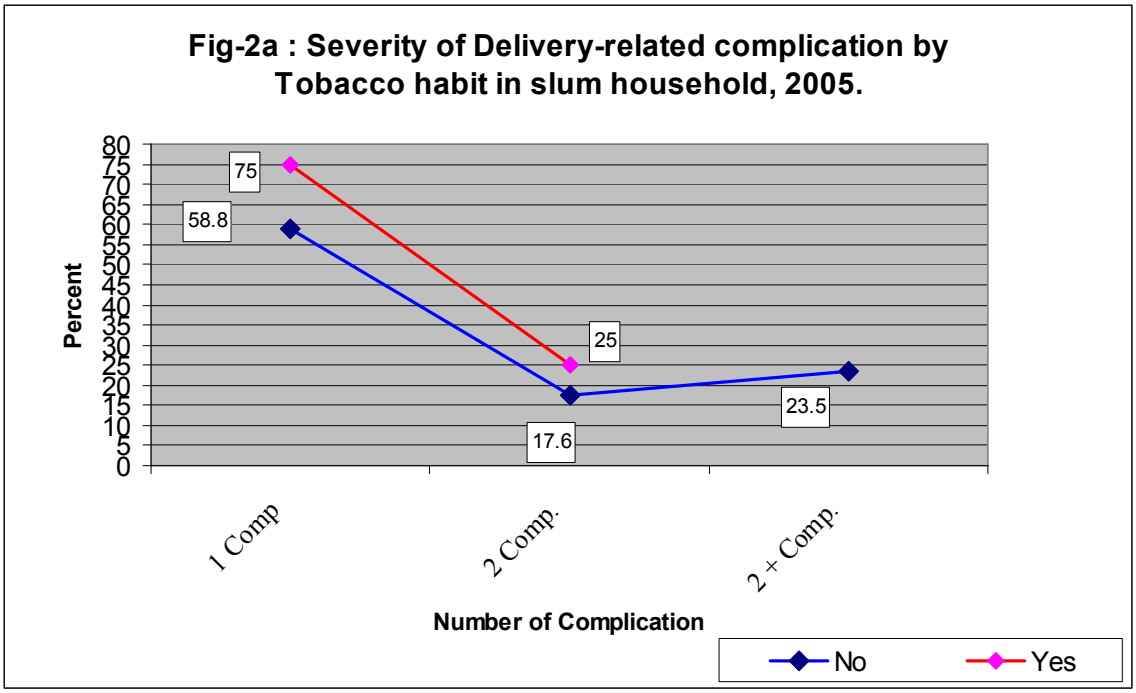


Fig-2a : Severity of Delivery-related complication by Tobacco habit in slum household, 2005.
Percent
75
58.8
25
17.6
23.5
1 Comp
2 Comp.
2 + Comp.
Number of Complication
No
Yes

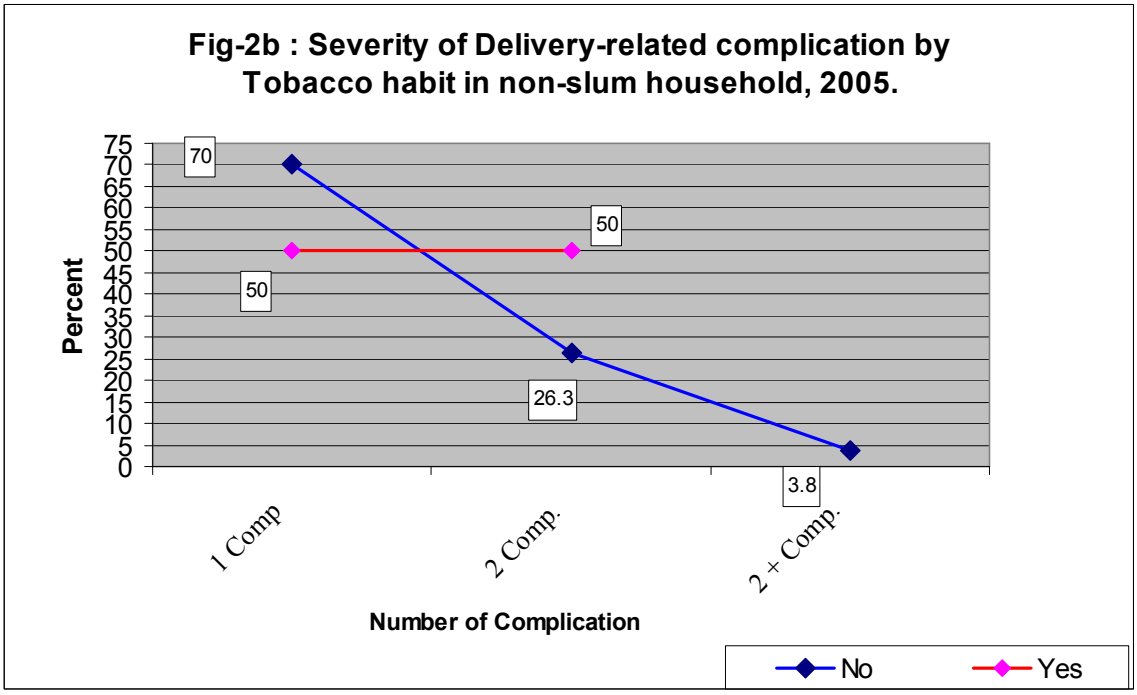


Fig-2b : Severity of Delivery-related complication by Tobacco habit in non-slum household, 2005.
Percent
70
50
50
26.3
3.8
1 Comp
2 Comp.
2 + Comp.
Number of Complication
No
Yes