Common Factors and Health Seeking Behavior Associated with Pregnancy Complications in the Selected Areas of Dhaka City

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Declaration

This dissertation is written by me based on the results of my work and includes nothing which is the outcome of work done in collaboration except where specifically indicated in the text. No parts of this dissertation have been submitted for any other qualification nor have I used this dissertation in any other form at any other institution.

I warrant that this authorization does not, to the best of my belief, infringe on the rights of any

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Abstract

Introduction: Pregnancy complications or maternal morbidity is defined as any condition that is attributed to or aggravated by pregnancy and childbirth that hurts the woman's well-being and/or functioning. It is a public health concern and a complex entity. Pregnancy complications are life-threatening particularly in developing countries, accounting for three-fourths of maternal deaths. Various types of determinants contribute to the likelihood of adverse pregnancy outcomes.

Objectives: This study aims to investigate the associations of common factors and also health-seeking behavior of women with pregnancy complications or maternal morbidities based on diagnosis in the selected areas of Dhaka City.

Methods: A descriptive cross-sectional study was conducted among 301 pregnant women living in urban, suburban, and rural regions from February to March 2024. Data was collected through face-to-face interviews. Chi-square association and binary logistic regression analysis were used to determine the associated factors with diagnosed pregnancy complications.

Results: The respondents were women aged between 18-30 years old which was the maximum (80.4%). 69.4% of women were in the postpartum stage and had had their first pregnancy at less than 20 years old. 48.8% of women had at least one complication during their previous pregnancies. Miscarriage or Preeclampsia (8%), Preterm labor or Premature birth (.3%), Bleeding (.7%), Hypertensive disorder (.7%), Gestational diabetes (2.3%), Anemia (2.3%), Infection (4.3%), Severe swelling (1%), Thyroid (.3%), Multiple or other (1%) were found. Sub-urban residency (p-value=<0.001; OR=2.72; 95% CI: - 1.579,4.689), complications at first pregnancy (P-value=.001; OR=.361; 95% CI: - .200, .651), 4 times antenatal visits (p-value=.026; OR=1.706;

95% CI: - 1.067, 2.727) were identified as factors of pregnancy complications. Again, age at first pregnancy (p-value=.018; OR=1.817; 95% CI: -.951, 3.680) was identified as a determinant of anemia among women. Again, 51.2% of women had no complications based on diagnosis at healthcare facilities in their recent pregnancies. The prevalence of other complications was 3% Preeclampsia, 3% Hypertension, 3.3% Gestational Diabetes, 3.7% Vitamin, .7% Bleeding, 16.3% Anemia, 1.7% Thyroid, 6.3% Infection, 10.6% others, .3% multiple issues. In addition, a significant proportion of rural women (47.31%) prefer to deliver at home without being attended by skilled health personnel more than urban women (19.61%). Again, most urban women (80.49%) went for antenatal visits follow-up compared to rural (46.24%).

Conclusion: Women with morbidities or obstetric complications during their first pregnancy, lack of antenatal visits, and living in suburban areas have a higher risk of maternal morbidities or complications. Again, pregnancy before 20 years of age has also a higher risk of experiencing anemia.

Chapter 1
Introduction

1.1.Background of this Study

In Bangladesh, the highest prevalence of morbidities is linked to high rates of maternal mortality and infant mortality indicating a challenge for the country. Eclampsia, hemorrhage, urinary problems, anemia, abdominal pain, and body swelling are very common. Pregnancy anemia leads to low-birth-weight infants. One factor is identified that 63% of women during pregnancy don't seek antenatal care. (Rahman et al., 2024). Again, around 7,660 maternal deaths occur each year here from any pregnancy-related cause that is preventable. 71% of deliveries take place at home and only 4% of which are done by skilled professionals. Urban-rural disparities also contribute to adverse pregnancy conditions which is unacceptable. Rural pregnant mothers remain impoverished and the maternal death rate is high among them. (BD DHS, 2014). Multiple health complications contribute to 41.5% of high-risk pregnancies. Childbearing age is a determinant linked to multiple pregnancy complications. Proper antenatal care and participation of women can reduce the occurrence of high-risk pregnancies alternating the health-seeking behavior of women and their participation in decision-making that needs more attention. This can avoid prevailing adverse health outcomes for pregnant mothers. (Abedin et al., 2020). Preterm labor, placental abruptions, preeclampsia, and gestational diabetes complications are resolved during delivery or after delivery. But these complications seem to appear recurrently in later pregnancies of the women making them vulnerable to such adverse maternal conditions. These can also have an impact on cardiovascular health later in life. These conditions have lifetime long-term effects on the health of the affected persons (Neiger R. et al., 2017).

Higher rates of adverse pregnancy outcomes were among rural women due to interplay between multiple factors. The absence of high-quality care is one of those. Cardiovascular condition of individuals also has rural-urban disparities. This may play a role in hypertensive disorders among pregnant mothers. Prenatal care was mostly received within 5 months of getting pregnant. Maternal ICU admission and mortality rates were higher among rural areas than urban areas disproportionately in the United States from the year of 2016 and 2019. (Harrington et al., 2023). A nine percent greater probability of maternal morbidities and severe consequences has been found among rural regions women. (Kozhimannil et al., 2019)

114,927 pregnancies out of 735,000 reported morbidities or complications in antenatal or postnatal periods and 32.7% reported one major morbidity and South Asia shared almost double compared to sub-Saharan Africa. Hemorrhage (2.2%), eclampsia (1.4%), gestational hypertension (7.4%), prolonged or obstructed labor (11.1%), antepartum infection (9.1%) all these morbidities have been identified in case of pregnancies. (Aftab et al., 2021)

1.2.Justification of this Study

Around .6 million women may experience maternal morbidities or complications during their pregnancy period out of 3 million expected mothers each year. Due to suffering from maternal or obstetric complications, about 28,000 maternal deaths occur each year in our developing country. The underlying reasons are often preventable which needs more and more insights into it. In rural parts, women still are lagging in case of accessing to healthcare services they need for their safe motherhood. They often have less education regarding pregnancy danger signs or various morbidity which can cause a severe loss of their lives too. On the contrary, urban women also struggle for a

good living, and in the polluted environment, they often get diagnosed with multiple issues. Antenatal and postnatal checkups are essential to identify any maternal complications earlier.

1.3. Objectives of the study

1.3.1. General Objectives

This study aims to investigate the associations of common factors and also the health-seeking behavior of women with pregnancy complications or maternal morbidities based on diagnosis in the selected areas of Dhaka City.

1.3.2. Specific Objectives

- To estimate the prevalence of existing pregnancy complications or maternal morbidities among women.
- To emphasize socio-demographic characteristics.
- To explore factors associated with pregnancy complications among women.
- To assess the health-seeking behavior of women.
- To address urban-rural disparities in the case of associating factors and health-seeking behavior.

Chapter 2
Literature Review

(Hossain et al. 2023) used secondary data for the study of determinants of maternal morbidity among urban women of Bangladesh. Poisson, negative binomial, and mixed Poisson models were used. They also used Pearson's Chi-square association for statistical analysis. 13.5% of urban women were found to have two complications minimum. Unwanted pregnancy, poor/middle-income status, Rangpur and Sylhet as living areas were found as risk factors for developing complications during pregnancy. The limitation of this study was the lack of assessing health-seeking behavior.

(Islam, 2023) studied morbidity prevalence and its determinants during the pregnancy period. This study included multiple regression as well as descriptive and inferential techniques of statistics. They also conducted a negative binomial analysis to find out the determinants of maternal morbidity. Research findings include at least one pregnancy morbidity experienced by 13% of women and at least two morbidities by 14% of women in their last pregnancy reportedly. Unwanted pregnancy, division, urban residents, and multiparity were found as factors associated with pregnancy-related adverse outcomes. Among them, the prevalence of convulsions, increased blood pressure, and eclampsia was reported at 1.2%, 4.8%, and 7.4% respectively. The limitation of this study was the lack of assessing health-seeking behavior.

(Howland et al., 2012) studied independent risk factors of severe maternal morbidity (SMM) using mixed-effects logistic regression models. Race/ethnicity was consistent and a significant association has been found of race with SMM. The limitation was the lack of assessment of the modifying effect of socioeconomic factors.

(Negash A et al., 2023) studied maternal near miss (MNM) and the factors contributing to it. Some of the study outcomes were antenatal care access, cesarean delivery, anemia, and chronic medical disorder status. Limitations of this systemic review and meta-analysis were lack of association with rural-urban disparities or health-seeking behavior among the sample.

(Laari JL et al., 2022) showed a high prevalence of Urinary Tract Infection (UTI) and 15-25 years of age and also first three months of pregnancy period (1st trimester) were found as risk factors of UTI. The limitation of this was the lack of estimation of socioeconomic effects on UTI incidents.

(Islam MH et al., 2023) studied antenatal seeking behavior and supplement intake percentage of women during pregnancies. Unintended pregnancies caused fewer antennal visits within the first three months of gestation. Multivariate logistic regression was associated with this. Limitations were the lack of estimation of urban-rural disparities among the respondents.

(Laelago T et al., 2020) studied predictors of preterm birth. Multiple morbidity such as antepartum hemorrhage, hypertension, and history of stillbirth, anemia, UTI, and malaria were predictors of those incidents of preterm birth. Socio-demographic or economic factors were not estimated and this was the limitation.

(Woldeyes WS et al., 2018) studied severe maternal outcome (SMO) and severe maternal morbidity (SMM) and. 27% uterine rupture, 24% hypertension, 24% obstetric hemorrhage as well, and 28% was highest which was of eclampsia. Age of maternity, living area, literacy level, and occupation- were found linked to SMO. Based on binary multivariate logistic regression, delayed intervention, complications during the intrapartum period, delivery mode, and hospitalization duration were found associated.

Antenatal care visits and cesarean section delivery were found essential to prevent the severity of unexpected outcomes during pregnancy. The limitation of this study was found lack of findings regarding rural-urban disparities or the health-seeking behavior of the women.

(Chou D et al., 2016) defined a 121 conditioned maternal morbidity matrix including three dimensions. 58 symptoms, 29 signs, 44 investigations, and 35 management strategies were listed as identification criteria. Identification of medical conditions, functional, and negative impact on women were aims of identification criteria. The limitation of the study is socio-demographic effects or health-seeking behavior on the occurrence of adverse health conditions during pregnancy.

(Leitao S et al., 2021) applied the iceberg model to illustrate the incidents of morbidity during pregnancies. They identified it as the leading cause of maternal morbidity hemorrhage or hypertension. The study also emphasized timely intervention. The limitation was the absence of statistical analysis to estimate the effects of multiple factors on the incidence of morbidities. (Jiang Y et al., 2023) studied Docosahexaenoic acid (DHA) supplement intake and prediction of occurrence of complications during pregnancy. The study's limitation was the findings were controversial except for preterm birth and gestational diabetes.

(Correa-de-Araujo R et al., 2021) investigated advanced maternal age and its influence on the likelihood of maternal complications such as gestational diabetes, preeclampsia, ectopic pregnancy, and also cesarean delivery. This study also showed the negative side of late pregnancy. The limitation of this study was the gaps in the investigation of the health-seeking behavior of women.

(Yeshialem E et al., 2017) conducted a case-control study on determinants of adverse pregnancy outcomes among a sample from deliveries in Jimma Hospital. Logistic regression analysis was used in this study. The research outcome was less ANC attendance, and poor Anemia status may predispose to pregnancy complications incidents. The gap in this research was the lack of examining the socio-economic factors that can have effects on the ANC attendance tendency of women.

(Abadiga M et al., 2022) studied determinants that can predispose pregnant women to adverse birth outcomes in Ethiopia. The findings included the age of the mother, antepartum hemorrhage, and history of abortion, gestational age, anemia, and maternal undernutrition. The research limitation was no health-seeking behavior assessment of the women under study.

(Roble AK et al., 2023) conducted a hospital-based case-control study. They used Multivariable regression analysis to find out the association between factors. The research findings include rural areas, absence of ANC follow-up, hypertension, anemic mothers, or khat chewing as associated factors that may predispose to adverse pregnancy outcomes. Research limitations were lack of estimation of socio-economic and women literacy status with complications at birth women face usually.

We have observed that few researchers have no estimation of socioeconomic effects on pregnancy complications. Several papers have not assessed the health-seeking behavior of women toward protecting their reproductive health. However, various researchers have not addressed existing rural-urban disparities. Finally, a few papers have not estimated the individual factors that closely contribute too many types of pregnancy complications such as socioeconomic status, literacy status or marital status of women, hypertension, obesity, anemia, antenatal care access, family support, beliefs, etc.

Somehow, the lack of overall assessment of the root causes of all the factors that lead to avoidable adverse pregnancy outcomes is the gaps in the research-based studies. Therefore, I want to conduct my study on pregnant women living in certain areas of Dhaka City to mitigate the gaps.

Chapter 3
Methodology

3.1 Study Design

The type of this study design was cross-sectional.

3.2 Study area

This cross-sectional study was carried out in 3 different healthcare facilities from urban and rural areas.

1. Dhamrai Upazilla Health Complex
2. Savar Upazila Health Complex
3. Tilpapara Matrisadan

3.3 Study Population

The study population was women undergoing pregnancy or postpartum period.

3.4 Inclusion and Exclusion Criteria

Men and women who were not in either pregnancy or postpartum period were excluded from the study.

3.5 Study period

The data collection was carried out from February 2023 to March 2023

3.6 Sample size determination

The sample size was calculated using the formula,

$$n = \frac{Z^2 pq}{d^2}$$

Where, Z= 1.96 at a 95% confidence level

p=prevalence of proper practice, q=1-p

d=absolute allowable error.

Since there was no similar study, hence p=0.5.

q=1-0.5=0.5 d =5%=0.0565

n= (1.96)2*0.5*0.5/ (0.0565)2

~301

301 data were collected for this research study.

3.7 Data Collection Procedure

A face-to-face interview was followed to collect data. Respondent women who had consent were asked technically so that they provided appropriate responses to relatable questions. Any kind of identifiable information was avoided for privacy concerns.

3.8 Data collection tools

A structured questionnaire with close-ended questions was used as a research instrument. That consisted of three sections: sociodemographic, pregnancy-related condition, and health-seeking behavior and lifestyle.

Sociodemographic variables include the age of the pregnancy, profession, family income, living area, literacy level, and delivery place. Pregnancy-related conditions include pregnancy stage, number of children, age of 1st pregnancy, complications or morbidities of 1st pregnancy, symptoms during the pregnancy period, medical tests or help from the healthcare facility, hospital admission, current or last pregnancy complications or morbidity, medication, supplements (Iron, Vitamin, Folate) intake,

delivery process. Health-seeking behavior or lifestyle part includes postnatal visits, smoking habits, alcohol consumption, antenatal visits, reasons, and sleeping hours. Symptom severity score was 1=normal, 2=moderate, 3=severe.

3.9 Statistical Analysis

Descriptive statistics (frequency & percentage) were used to summarize socio-demographic variables. A chi-square test was done to identify the association between diagnosed pregnancy morbidity or complications and other variables. Due to the binary feature of the outcome variable, binary logistic regression with an odds ratio and a 95% confidence interval was conducted. A p-value <.05 was considered as statistical significance. SPSS version 23 was used for analysis purposes.

Chapter 4
Results and Discussion

4.1. Sociodemographic Characteristics of Respondents

Table 4.1 shows socio-demographic results. Among the pregnant or postpartum women, 13% were 12-17 years old, 80.4% were 18-30 years old, and 6.6% 31-35 years were their pregnant age. Of them, 94.5% of women were housewives, and most of them (94.7%) had a monthly income of 10000-30000. Again, 55.5% of women were living in sub-urban areas and 6% of women had no education. We found also all the women both pregnant and postpartum period were non-smokers and only 3.3% of women did physical exercise during their pregnancy period.

Table 4.1. Sociodemographic Characteristics of Respondents

Variable	Categories	Frequency	Percentage (%)
Pregnancy Age(years)	12-17	39	13
	18-30	242	80.4
	31-35	20	6.6
Profession	Housewife	285	94.7
	Service Holder	16	5.3
Income	10000-30000	278	92.4
	31000-60000	21	7
	More than 60000	2	.7
Living Area during Pregnancy	Urban	41	13.6
	Semi-urban	167	55.5
	Rural	93	30.9
Literacy Status	No Education	18	6
	Primary, SSC	197	65.4
	HSC, Undergraduate	62	20.6
	Graduate, Postgraduate	24	8
Smoking Status	Yes	0	0
	No	301	100
Physical Exercise	Yes	10	3.3
	No	291	96.7

4.2. Pregnancy-Related Condition of the respondent mother during their pregnancy

Pregnancy-related condition results are presented in Table 4.2, only 1.7% of women experienced miscarriage, and 6%, 10.3, 12.6%, and 69.4% respectively women were in the first trimester, second-trimester, and third-trimester stage and also postpartum period. Here, 69.4% had their first pregnancy at less than 20 years old. Most of the women (52.2%) had 1-2 children and 3% of women had 5 or more children even interestingly. Most women (79.1%) had no complications during their pregnancy period. 48.8% of women had complications during their 1st pregnancies. Women having 1 or more children had faced first-pregnancy complications such as miscarriage or preeclampsia (8%), preterm labor or premature birth (.3%), Bleeding (.7%), Hypertensive disorder (.7%), Gestational Diabetes (2.3%), Anemia (2.3%), Infection (4.3%), Severe swelling (1%), Thyroid (.3%) and multiple or others (1%). 73.1% of women had normal symptoms and 86% got access to essential healthcare services for pregnant mothers. Only 8% of women were admitted to the hospital. Now, 20.9% of women have been diagnosed with at least one complication during their last or recent pregnancy. Prevalent Complications such as Preeclampsia (3%), Hypertension (3%), Gestational Diabetes (3.3%), Vitamin Deficiency (3.7%), Bleeding (.7%), Anemia (16.3%), Thyroid (.3%), Infection (1.7%), and others (6.3%) and multiple issues (10.6%) had been diagnosed based on medical test reports.

38.2% of women had gone through medication and 75.4% and 6% of women took iron, vitamin, and calcium supplements. 56.8% of women had given their delivery at affordable private clinics and including them, most of the women (59.5%) had cesarean delivery. More than half of the women (54.5%) had less than 8 hours of sleeping patterns.

Table 4.2. Pregnancy-related Condition of the respondent mother during their pregnancy

Variable	Categories	Frequency	Percentage (%)
Pregnancy Stage	Miscarriage	5	1.7
	First Trimester	18	6
	Second Trimester	31	10.3
	Third Trimester	38	12.6
	Postpartum	209	69.4
Age at first pregnancy	Less than 20	209	69.4
	20-30	92	30.6
Children Number	None	83	27.6
	1-2	157	52.2
	3-5	52	17.3
	6 or more	9	3
Complications at first pregnancy status	Yes	147	48.8
	No	154	51.2
Complications at first pregnancy	None	238	79.1
	Miscarriage, Preeclampsia	24	8
	Preterm labor, Premature birth	1	.3
	Bleeding	2	.7
	Hypertensive Disorder	2	.7
	Gestational Diabetes	7	2.3
	Anemia	7	2.3
	Infection	13	4.3
	Severe swelling	3	1
	Thyroid	1	.3
	Multiple or other	3	1
Symptoms	Normal	220	73.1
	Moderate	75	24.9
	Severe	6	2
Healthcare service access	Yes	259	86
	No	42	14
Admission at hospital	Yes	24	8
	No	277	92
Pregnancy complications status	Yes	63	20.9
	No	238	79.1
Pregnancy Complications or morbidity	None	154	51.2
	Preeclampsia	9	3
	Hypertension	9	3
	Gestational Diabetes	10	3.3

Variable	Categories	Frequency	Percentage (%)
	Vitamin Deficiency	11	3.7
	Bleeding	2	.7
	Anemia	49	16.3
	Thyroid	5	1.7
	Infection	19	6.3
	And others	32	10.6
	Multiple issues	1	.3
Anemic Status	Yes	49	16.3
	No	252	83.7
Medication	Yes	115	38.2
	No	186	61.8
Supplements	None	55	18.3
	Iron, Vitamin	227	75.4
	Calcium	19	6.3
Delivery Place	Home	49	16.3
	Public	81	26.9
	Private	171	56.8
Delivery Process	Normal	122	40.5
	Cesarean	179	59.5
Sleeping Hours	Less than 8 hours	164	54.5
	8-10 hours	123	40.9
	More than 10 hours	14	4.7

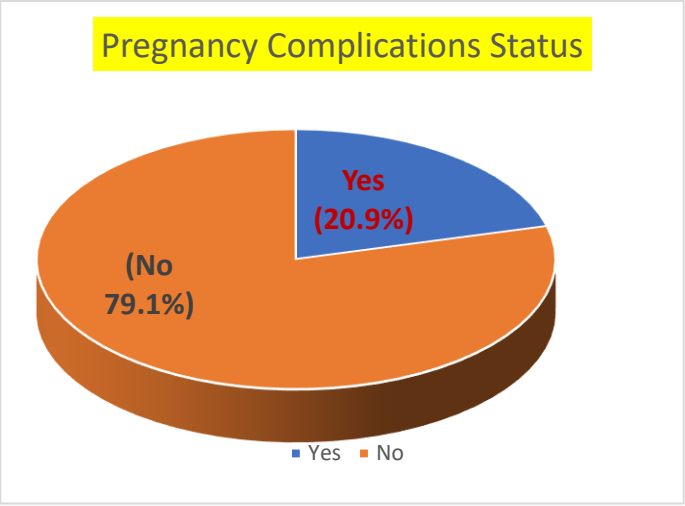

Figure 1. Distribution of Respondents' Pregnancy Complications

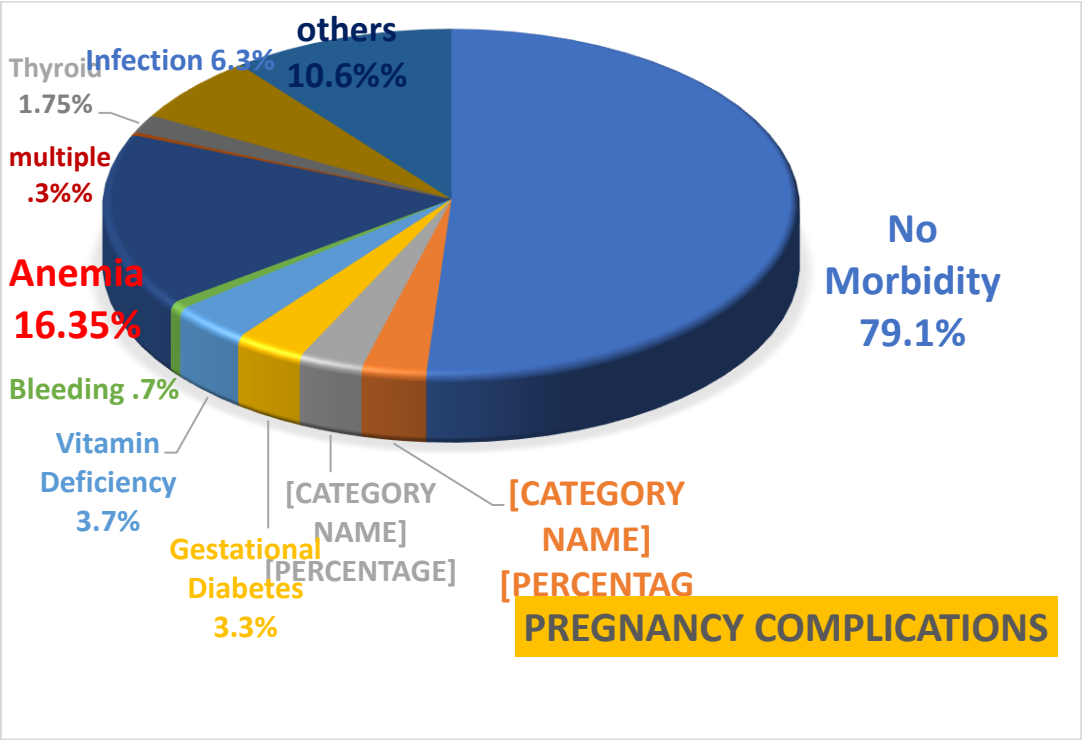

Figure 2. Distribution of prevalence of respondents diagnosed pregnancy complications

4.3. Health-Seeking Behavior of pregnant women during their pregnancy and postnatal period.

In Table 4.3, the health-seeking behavior patterns of pregnant women are represented. More than half of the women 53.5% women had gone for antenatal checkups and the same also for postnatal checkups. And 52.5 % of people didn't mention the reason behind their not going for prenatal checkups.

Table 4.3. Health-Seeking Behavior of pregnant women during their pregnancy and postnatal period.

Variable	Category	Frequency	Percentage (%)
Postnatal Checkup	No	88	29.2
	Before 6 weeks	161	53.5
	After 6 weeks	52	17.3
Antenatal Checkup	No visit	12	4
	4 visits during pregnancy	161	53.5
	Less than 4 visits	128	42.5
Reason	None	158	52.5

	Financial or other	77	25.6
	No Knowledge	66	21.9

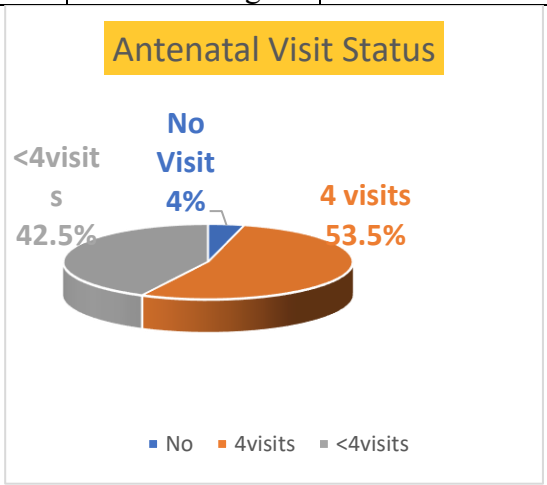

Figure 3. Distribution of Antenatal Visits to healthcare facility

4.4. Associations of Socio-demographic Variable and Pregnancy-related Conditions with Diagnosed Pregnancy Complications Status and pregnancy-related conditions

Associations of sociodemographic variables and pregnancy-related conditions with diagnosed pregnancy complications status are represented in Table 4.4 and Table 4.5. Most of the women who had been diagnosed with any of the pregnancy or obstetric complications (81.63%) belong to the 18-30 age group and housewives about 91.84%. Again, 90.48% of women's family income is 10000-30000, and among them, 64.63% of women live in the suburban area. Besides, 61.9% of women had passed only primary or SSC. From the p-values at the right side of the table, it is found that pregnancy age, income, or literacy status has no statistically significant association with pregnancy complications status. On the contrary, profession and living area have statistically significant associations with pregnancy complications status.

Table 4.4. Association of Socio-demographic Variables with Diagnosed Pregnancy Complications

Variable	Category	Diagnosed Pregnancy Complications Status		
		NO	Yes	P-value
Pregnancy Age	12-17	23(14.94%)	16(10.89%)	.519
	18-30	122(79.22%)	120(81.63%)	
	31-45	9(5.85%)	11(7.48%)	
Profession	House-wife	150(97.4%)	135(91.84%)	.031
	Service Holder	4(2.6%)	12(8.16%)	
Income	10000-30000	145(94.16%)	133(90.48%)	.462
	30000-60000	8(5.2%)	13(8.84%0	
	>60000	1(.65%)	1(.68%)	
Living Area	Urban	21(13.64%)	20(13.6%)	.002
	Semi-urban	72(46.75%)	95(64.63%)	
	Rural	61(39.61%)	32(21.77%)	
Literacy Status	No education	6(3.9%)	12(8.16%)	.333
	Primary, SSC	106(68.83%)	91(61.9%)	
	HSC, Undergraduate	29(18.83%)	33(22.45%)	
	Graduate, Master's	13(8.44%)	11(7.48%)	

4.5. Association with pregnancy-related conditions with Diagnosed Pregnancy Complications

From Table 4.5, 71.32% of women were in the postpartum period that had been diagnosed with any pregnancy complications according to medical test reports. And it was 1.47%, .74%, 11.75%, and 14.7% in the case of women who had gone through miscarriage, the rest of the first trimester, second trimester, or third trimester

respectively. The pregnancy stage has no statistically significant associations with complications found from the p-value. Reportedly, 29.25% of women with previous pregnancy complications had been diagnosed with different or the same complications during their next pregnancy which has also statistically significant associations between the two variables according to p-value. More than half of the women (55.78% & 59.86%) having 1 or 2 children or 4 times prenatal checkups during their pregnancy times had been diagnosed with complications but had no statistically significant association with the number of children. Similarly, Health-seeking status or symptoms also don't have statistically significant associations with pregnancy complications.

Table 4.5. Association with pregnancy-related conditions with Diagnosed Pregnancy Complications

Variable	Category	Diagnosed Pregnancy Complications		
		NO	Yes	P-value
Pregnancy Stage	Miscarriage	3(1.95%)	2(1.47%)	.516
	First Trimester	6(3.9%)	12(.74%)	
	Second Trimester	15(9.74%)	16(11.75%)	
	Third Trimester	18(11.69%)	20(14.7%)	
	Postpartum Period	112(72.73%)	97(71.32%)	
Complications Status at first pregnancy	No	134(87.01%)	104(70.75%)	.001
	Yes	20(12.99%)	43(29.25%)	
Number of Children	None	47(30.52%)	36(24.4%)	.616
	1-2	75(48.7%)	82(55.78%)	
	3 or 5	27(17.53%)	25(17%)	
	6 or more	5(3.25%)	4(2.72%)	
Health Seeking Status	No	127(82.47%)	132(89.8%)	.067
	Yes	27(17.53%)	15(10.2%)	
Prenatal Checkups	None	6(3.9%)	6(4.08%)	.081
	4times	73(47.4%)	88(59.86%)	
	Only after complications	75(48.7%)	53(36.06%)	
Symptoms	Normal	121(78.57%)	99(67.35%)	.080

	Moderate	30(19.48%)	45(30.61%)	
	Severe	3(1.95%)	3(2.04%)	

4.6. Association of Mode of Delivery and delivery place with living area during pregnancy

Now, the delivery place and living area have also a statistically significant association as we found from the p-value as in as previously. Most of the women in urban areas (82.93%) had given birth to or preferred private healthcare facilities that are still chose home delivery (19.36%) which is very low like 2.44% in the case of urban women.

Table 4.6. Association of Mode of Delivery and delivery place with living area during pregnancy or delivery

Variable	Category	Area			P-value
		Urban	Sub-urban	Rural	
Mode of delivery	Normal	10(19.60%)	68(40.72%)	44(47.31%)	.045
	Cesarean	31(60.79%)	99(59.28%)	49(52.69%)	
Delivery place	Home	1(2.44%)	30(17.97%)	18(19.36%)	.006
	Public	6(14.64%)	51(30.54%)	24(25.8%)	
	Private	34(82.93%)	86(51.5%)	51(54.84%)	

4.7. Association of Postnatal checkup and prenatal checkup with living area during pregnancy

Most of the women in urban areas had gone for postnatal checkups (80.48%) and prenatal checkups (80.49%) than sub-urban women (47.9% & 50.9%) or rural women (51.61% & 46.24%). Many rural women (52.69%) went for prenatal checkups only after complications. A significant proportion of sub-urban area women around 40.72% and 6.59% even didn't go for postnatal checkups or any antenatal checkups. It was

19.36% and 1.08% for women living in rural areas. Postnatal and antenatal checkups have statistically significant associations with living areas during pregnancy ($p<0.05$).

Table 4.7. Association of Postnatal checkup and antenatal checkup with living area during Pregnancy

Variable	Category	Area			P-Value
		Urban	Sub-urban	Rural	
Postnatal Checkup	No	2(4.88%)	68(40.72%)	18(19.36%)	.000
	Before 6weeks	33(80.48%)	80(47.9%)	48(51.61%)	
	After 6weeks	6(14.64%)	19(11.38%)	27(29.03%)	
antenatal Checkup	No	0(0%)	11(6.59%)	1(1.08%)	.000
	4times	33(80.49%)	85(50.9%)	43(46.24%)	
	Only after complications	8(19.51%)	71(42.52%)	49(52.69%)	

4.8. Association of various factors with Anemia

83.67% of women who got pregnant at less than 20 years of age and the age of first pregnancy have come out statistically significant with an anemic state of. On the contrary, supplement intake or number of children were not statistically significant with the anemic condition of women.

Table 4.8 Association of Various Factors with Anemia

Variable	Category	Anemia Status		P-value
		No	Yes	
Age of 1st Pregnancy	Less than 20	168(66.6%)	41(83.67%)	.018
	20-30	84(33.33%)	8(16.33%)	
Supplements Status	no	44(17.46%)	11(22.45%)	.408
	yes	208(82.54%)	38(77.55%)	
Children Number	None	73(28.97%)	10(20.41%)	.524
	1-2	131(51.99%)	26(53.06%)	
	3-5	41(16.27%)	11(22.45%)	
	6 or more	7(2.78%)	2(4.08%)	

4.9. Binary Logistic Regression Analysis on Diagnosed Pregnancy Complications

Table 4.8 represents binary logistic regression analysis on diagnosed pregnancy complications. The odds ratio of developing complications among housewives was .254 indicating housewives are .25 times less likely (p-value =0.04; OR=0.254; 95% CI: -0.094,.952) to have complications compared to service holders. Urban women 1.29 times and sub-urban women 2.721 times are more likely vulnerable to have pregnancy complications compared to rural women respectively (p-value =0.58; OR=1.284; 95% CI: 0.529,3.116), (p-value =<0.001; OR=2.72; 95% CI: - 1.579,4.689).

Moreover, women with no previous pregnancy complications are .361 times more likely to have complications compared to those who had previous complications (P-value=.001; OR=.361; 95% CI: - .200, .651). Women during pregnancy who had done medical tests for diagnosis, had higher odds of having complications (p-value=.07; OR=1.817; 95% CI: - .951, 3.680) compared to women who hadn't. Again, women who had taken iron, vitamin 12, or folate during pregnancy had a lower odds ratio (p-value=.076; OR=.404; 95% CI: -.148, 1.101) compared to women who had calcium intake. Furthermore, women who had come for at least scheduled 4 times prenatal checkups were at higher risk of having complications (p-value=.026; OR=1.706; 95% CI: -1.607, 2.727) than women who had come to seek healthcare service only after any sickness due to multiple reasons. Among them, those who had come for medical tests or checkups at least scheduled 4times had higher odds of having complications than those who didn't go for checkups during pregnancy periods (p-value=.041; OR=1.838; 95% CI: -1.024, 3.297).

Table 4.9 Binary logistic regression of factors that influence Pregnancy Complications

Variables	P-value	OR	95% CI
Pregnancy Age (.522)			
12-17	.310	.569	.192, 1.689
18-30	.642	.805	.322, 2.012
31-49	reference	-	-
Profession			
Housewife	.041	.254	0.094-.952
Service holder	reference	-	-
Family Income (.469)			
10000-30000	.951	.917	.057, 14.811
30000-60000	.744	1.625	.089, 29.781
>60000	reference	-	-
Living Area			
Urban	.580	1.284	.529-3.116
Sub-urban	<.001	2.721	1.579-4.689
Rural	Reference	-	-
Literacy Status (.347)			
No Education	.183	2.364	.666, 8.391
Primary, SSC	.973	1.015	.433, 2.375
HSC, Undergraduate	.539	1.345	.523, 3.461
Graduate, Postgraduate	reference	-	-
Health Seeking Status			
Yes	.070	1.817	.951-3.680
No	Reference	-	-
Number of Children (.617)			
No children	.951	.957	.240, 3.823
1-2	.651	1.367	.354, 5.280
3-5	.840	1.157	.279, 4.802
5 or more	reference	-	-
Age at first pregnancy			

Less than 20	.816	1.060	.649, 1.732
More than 20	reference	-	-
Complications at first pregnancy			
No	.001	.361	.200-.651
Yes	Reference	-	-
Symptoms (.083)			
Normal	.808	.818	.162, 4.143
Moderate	.633	1.500	.284, 7.934
Severe	reference	-	-
Health Seeking Status			
Yes	.070	1.817	.951-3.680
No	Reference	-	-
Medication			
Yes	<.001	4.626	2.794, 7.658
No	reference	-	
Supplements			
None	.190	.479	.159, 1.441
Iron, Vitamin	.076	.404	.148, 1.101
Calcium	reference	-	-
Prenatal Checkups			
None	.556	1.415	.433-4.628
4times during pregnancy	.026	1.706	1.067-2.727
Only after complications	Reference	-	-
Reasons			
None	.041	1.838	1.024-3.297
Financial, transportation, or others	.465	1.282	.658-2.498
No knowledge	reference	-	-

4.10 Binary Logistic Regression of factors associated with Anaemia during pregnancy

Table 4.10 represents the Binary Logistic Regression of associated factors with Anemia during pregnancy. Women getting pregnant at Age<20 years are 1.817 times more susceptible to anemia compared to age> 20 years (p-value=.021; OR=1.817; 95% CI: -.951, 3.680). Supplements (Iron, Vitamin, Folate) Status is not significantly associated with the Anemic status of women during pregnancy (p-value=.410; OR=1.368; 95% CI: -.649, 2.885).

Table 4.10 Binary Logistic Regression of factors associated with Anaemia during pregnancy

Age at first pregnancy			
Less than 20	.021	1.817	.951-3.680
More than 20	Reference	-	-
Supplements status			
No	.410	1.368	.649, 2.885
Yes	Reference	-	-

4.11. Discussion

This study aimed to investigate the common factors as well as health-seeking behavior of women during their pregnancy on diagnosis of serious maternal morbidity or complications. In our assessment, we found that profession, living area, or maternal morbidity or complications addressed at their first pregnancy were associated with developing morbidity or complications in their latest pregnancies.

Anemia prevalence is the highest in the case of a pregnant mother and this is around 36.8% and also 48.8% in the third trimester (Mohammadmahdi et al., 2022). In our study, our findings indicate that maternal complications or morbidity prevalence were 20.9% based on diagnosis medical test reports of the women during their pregnancy. Among them, anemia was the highest (16.3%).

The risk of maternal adverse conditions might be determined by preeclampsia (1.1%-1.8%), and preterm delivery (2.7%-14.7%) in the first pregnancy (Lykke et al., 2009). In our study, women with the absence of any morbidity or complications at first pregnancies were 36.1% less likely to have complications in later pregnancies (P-value=.001; OR=.361; 95% CI: - .200, .651).

Rural women (51.3%) are less likely to experience maternal adverse conditions (Vitri et al., 2018). In our study, we addressed that rural women are less vulnerable to developing maternal morbidity or complications. Because sub-urban women are 27.21% times more likely to experience any maternal or obstetric issues (p-value=<0.001; OR=2.72; 95% CI: - 1.579, 4.689). The association between sub-urban area living and maternal or obstetric issues has been found statistically significant. On the contrary, pregnancy age is not statistically significant with maternal morbidities. Housewife women are 26% less likely to have maternal issues compared to working

women (p-value =0.04; OR=0.254; 95% CI: - 0.094, .952) Living areas have been found statistically significant association with maternal morbidity or complications based on their diagnosis reports.

Having the first delivery before 20 years of age can lead to mild or moderate anemia (Mithun et al., 2022). A similar result has been found in our study, age at first pregnancy has a statistically significant association with developing anaemia. First pregnancy at less than 20 years has 18.17% higher odds ratio of having anemia compared to at more than 20 years (p-value=.018; OR=1.817; 95% CI: -.951, 3.680). The iron status of pregnant women can be improved by using supplements and this can prevent postpartum iron deficiency. (Marth et al., 2023). But Supplements (Iron, vitamin, and Folate) intake status has not been found statistically significant with anemia.

In addition, women living in rural regions of Bangladesh reported less interest in receiving services from trained healthcare providers than urban women (Rafiqul et al., 2007). Our study revealed that addressed that health-seeking behavior (p-value<.001) delivery place (p-value=.006<.05) or mode (p-value=.045<.05) are strongly statistically associated with living areas. It's only 2.44% of urban women prefer to deliver at home but some rural women (19.36%) still go for that. So, Rural–urban wants to give birth through a normal delivery process without trained professional observation. However, most of the urban women (82.93%) had undergone cesarean delivery whereas rural women were 54.84% proportionately.

Lack of ANC follow-up is one of the associated factors with adverse health conditions during pregnancy (Roble AK et al., 2023). Our study findings show that Antenatal care (ANC) 4 visit is statistically found with pregnancy complications (p-value=.026; OR=1.706; 95% CI: - 1.067, 2.727) but only 53.5% of women followed ANC visits to

professional healthcare providers which is very less. Most of the urban women (80.4%) had at least 4 times visits but 46.24% of rural women hadn't. The financial reasons or poor knowledge were responsible for that. Here we found, existing urban-rural disparities among the participants.

Chapter 5
Conclusion and Recommendations

5.1. Conclusion

Pregnancy complications are greater obstacles to safe motherhood. Identification of modifiable factors is crucial to reduce the risk of adverse health conditions during the maternal period of any woman. This may help prevent the consequences of high-risk pregnancies and promote healthy pregnancy. The findings of this study include that around 48.8% of women experienced at least one serious morbidity or health-related adverse condition during their pregnancy or obstetric period. Living area, morbidity, or complications at first pregnancy were significantly associated with the maternal health problem studied. Age at pregnancy was associated with anemic conditions in women. Only 53.5% of women went for 4 antenatal visits. Antenatal attendance needs more attention to make health-seeking behavior appropriate for early detection of any preventable complication or problems of maternal health and ensure well-being. Rura-urban inequalities have been found as existing challenges in the case of antenatal visits follow-up, mode of delivery, or place of delivery without or with professional supervision. We should have more insights into interventions that may help eradicate health inequalities and urban-rural disparities.

5.2. Recommendations

A more governmental healthcare facility in suburban or rural areas, reproductive health education program, and health policy for ensuring health equality, and decision-making of women themself are recommended.

5.3. Limitations of this study

The sample size was small and due to the short period, data was collected from only three different places in Dhaka City.

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Appendix

Title: Common Factors and Health Seeking Behaviour Associated with Pregnancy Complications in The Selected Areas of Dhaka City

Questionnaire

Assalamulalaikum, I am Tasmiya Tabassum, a student in 4th year final, studying at the Department of Public Health and Informatics of Jahangirnagar University, Savar. As a part of my academic discipline, I am doing this survey for my 4th year. This research survey is entitled "Common factors and health-seeking behavior associated with complications in the selected area of Dhaka City." So, I am badly in need of your assistance to complete my research questionnaire and I will be grateful for your attention and valuable time.

Thank you.

Do you have consent with a view to participate in this survey?

- Yes
- No

1. ID No.
2. What is your age of pregnancy?
   - 12-17
   - 18-30
   - 31-49

3. What is your profession?
   - Housewife
   - Service holder

4. What is your family income?
   - 10,000-30,000
   - 31000-60000
   - More than 60000

5. Where do you /did you live during pregnancy?
   - Urban
   - Semi-urban
   - Rural

6. What type of healthcare facility you have close to your home?
   - Upazila Health Complex

- Clinic
- General Hospital

7. What is your literacy level?
   - Primary
   - SSC
   - HSC
   - Undergraduate
   - Graduate
   - Master's
8. Which stage are you passing of your pregnancy period?
   - First trimester
   - Second trimester
   - Third trimester
   - Postpartum period
9. How many children do you have?
   - 1-2
   - 3 -5
   - More
10. What was your age at first pregnancy?
    - Less than 20
    - 20-30
    - More than 30
11. Did you experience any of the problems in your previous pregnancy below?
    - Miscarriage
    - Preterm labor
    - Premature birth
    - Haemorrhage
    - Eclampsia
    - Hypertensive disorder
    - Gestational Diabetes
    - Infection
    - Severe swelling
    - Depression & Anxiety
12. Have you experienced certain types of signs or symptoms throughout your pregnancy period?
    - vaginal bleeding
    - convulsions/fits
    - severe headaches with blurred vision
    - swelling of hands or feet

- severe abdominal pain
- fast or difficult breathing
- fever and too weak to get out of bed
- Nausea
- Headache
- Dizziness
- Excessive thirst
- Frequent urination
- Vaginal, bladder infection

13. Did you seek help from your nearest healthcare facility in an instant?
- Yes
- No

14. Did you take admission to the health care facility?
- Yes
- No

15. Have you gone through the diagnosis process? If yes, what was your diagnosis?
- Preeclampsia
- Depression & Anxiety
- Malnutrition
- Heart Diseases
- Obesity
- Hypertension
- Gestational Diabetes
- Hyperthyroidism
- Convulsions
- Anomia
- Obesity
- And others

16. Did you receive medication for pregnancy or obstetric issues? If yes, then what?
- Yes
- No

17. Do/did you take any supplements?
- Iron
- Folate
- vitamin B12
- vitamin A
- Calcium Tab.

18. Which delivery process had you gone through or will you choose for?

- Normal
- Cesarean
- Painless normal delivery

19. Did you receive your postpartum check-ups? If yes, then when?
- Before 6 weeks
- After 6 weeks

20. Did/do you smoke alcohol during your pregnancy period?
- Yes
- No

21. Do/did you have any physical exercise practice?
- Yes
- No
-

22. How many times would you go/going for antenatal check-ups?
- Monthly
- Weekly
- Only after any complications

23. What were/are the reasons for not going for check-ups regularly?
- Financial problems
- Lack of support from family members
- Transportation
- Poor quality of healthcare services
- Long distance to healthcare facilities
- Any stigma
- others

24. How many hours do you sleep per day?
- Less than 8 hours
- 8-10 hours
- More than 10 hours