

**Original Article****A COMPARATIVE STUDY ON ANEMIA, GESTATIONAL DIABETES AND GESTATIONAL HYPERTENSION DURING PREGNANCY IN RURAL, SEMI URBAN AND URBAN HOSPITALS IN BANGLADESH**Shadia SN¹ Siddiqua A² Afroze F³**Article History:**

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Abstract:

Most of the women in developing countries undergo health problems in full or part of the pregnancy period. Major complications of pregnancy are anemia, gestational hypertension and Gestational Diabetes. The objective of this study was to compare the prevalence of anemia, gestational hypertension and Gestational Diabetes among antenatal women in rural, semi-urban and urban hospitals. The study was conducted among 384 pregnant mothers who attended for ANC in OPD of Gonosashasthaya Samaj Vittik Medical College Hospital (Savar) , Gonosasthaya Nogar Hospital, (Dhanmondi) , Sub-center of Gonosasthaya Kendro (Shimulia, Panisail, Barobarria, Delduwar, Shripur) from December 2021 to November 2022 by consecutive sampling. The age range of the patients was 18 to 40 years. Mean age was 24.74 years. In this study majority of population 169 (44%) were in age group 18 - 22 years. Most of the pregnant women 291(76%) were housewives, lived in Nuclear families 253(66%) and the maximum population were from lower middle 134 (35%) socio-economic condition. A significant number of pregnant mother 98(26%) were anemic, 38(10%) had GDM and only 34(9%) were gestational hypertension. Anemia is comparatively more in rural and semi-urban than urban. GDM and gestational hypertension is more in urban areas than rural and semi urban followed by 14(11%) and 20(16%) respectively. Special attention of policy makers, health professional, public health researchers and the community is required on this regards. So early diagnosis and treatment is required to avoid long-term health problems of the mother and her offspring.

EWMCJ Vol 12, No. 1&2, January 2024 -July 2024: P 9-13**Introduction**

In the developing countries most of the women undergo health problems in full or part of pregnancy periods. Major complications of pregnancy are anemia, gestational hypertension and Gestational Diabetes.¹ Anemia is the most common health problem during pregnancy.² In developing countries 56% and developed countries only 16%.³

A significant number of women 1%-20% suffering in Gestational hypertension(GDM) .⁴ GDM is alarming problem in globally because it is increasing day by day. ^{5,6} GDM affects not only mothers health but also baby's health like

obesity and Diabetes.⁶ But real situation of Bangladesh is unknown due to lack of enough data of rural and semi urban area. Suddenly different area of Bangladesh prevalence of GDM increasing in notifiable rate for rapid urbanization.^{8,9} Gestational hypertension another dangerous complication which is about 7% of pregnant women fall on risk during pregnancy.¹⁰ Accurate prevalence is unknown, it is almost near 10%.^{11,12}

The maternal mortality and morbidity is higher in Bangladesh then other countries of the world. Most of the women dies due to pregnancy related complications.

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Objective

The objective of our study is to compare the prevalence of anemia, GDM and gestational hypertension among antenatal women in rural, semi urban and urban hospitals.

Method and Subjects:

A Prospective cross-sectional study was performed on 384 pregnant mothers who attended for Antenatal care in out patient department (OPD) of Gonosashasthaya Samaj Vittik Medical College Hospital, (Savar) ,Gonosasthaya Nagor Hospital, (Dhanmondi), Sub-center of Gonosasthya Kendro (Shimulia, Panisail, Barobaria, Delduwar, Shripur) from December 2021 to November 2022. The sample were selected by simple random sampling method for the present study after fulfillment of inclusion criteria. All data have been collected by researcher and co researchers with an individual data sheet for each patient with consent of patients and her family member. All appropriate investigations were done. Finally all the necessary information were collected , processed and tabulated in numerical tables. Some were expressed in graphs and charts. Also Data has been analyzed by SPSS-20 version (Statistical Package for the Social Sciences).

Results:

In our study , age range of the patients was 18 to 40 years. Mean age was 24.74 years. In our study population 169 (44%) were in age group 18-22 years, 108 (28%) were in age group 23-27 years 86 (22%) were in age group 28-32 years and only 21 (6%) were in age group more than 33 years. We also found more pregnant women in early age 18-22 years in rural and semi urban compare to urban (Table-I and Figure-1)

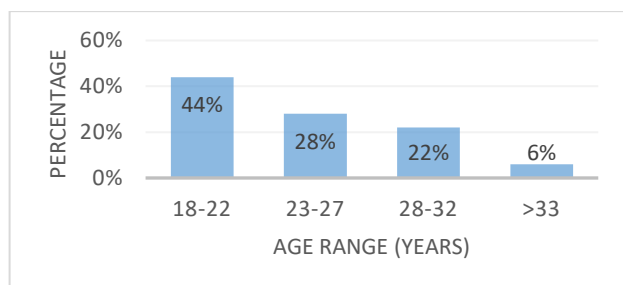


Figure-1: Bar diagram of age distribution in percentage

Age group	Rural	Semi-urban	Urban	Total
18-22	65	65	39	169
23-27	36	36	36	108
28-32	24	24	38	86
>33	3	3	15	21

Table I: Age Distribution of Study Population with living area

Sociology - demographic characteristics of pregnant women:

In this study we found most of the pregnant women 291(76%) were house wife, lives in nuclear family 253(66%) and the maximum population of sociolect-economic condition is lower middle 134 (35%). (Table -II)

Variable	Category	Frequency	Percentage
Occupation	House wife	291	76%
	Garments worker	64	17%
	Other	29	7%
Family type	Nuclear	253	66%
	Joint	127	33%
	Three generation	4	1%
Socio-economic condition	Poor	125	32%
	Lower middle	134	35%
	Middle	110	29%
	Rich	15	4%

Table-II : Socio-demographic characteristics of pregnant women

Reproductive and medical characteristics of pregnant women :

In our study majority pregnant women were experience regular menstrual cycle 296(77%) and only 88(23%) were irregular cycle. We found 151(39%) were first pregnancy and only 3% were Highest gravida (5-6). Pregnant mother who used contraceptives used before pregnancy 179(47%) and need fertility treatment with this pregnancy only 31(8%). In this study iron and folic acid supplementation got 235(61%) and 149(39%) never get any supplymentation in their pregnancy. (Table-III)

Variable	Category	Frequency	Percentage
Regularity of menstrual cycle	Regular	296	77%
	Irregular	88	23%
Regularity of Parity	Primi gravida	151	39%
	Gravida 1-2	144	37%
	Gravida 3-4	79	21%
	Gravida 5-6	10	3%
Contraceptive use before pregnancy	Yes	179	47%
	No	205	53%
Fertility treatment with this pregnancy	Yes	31	8%
	No	353	92%
Iron+ Folic acid	Yes	235	61%
	No	149	39%

Table-III: Reproductive and medical characteristics of pregnant women

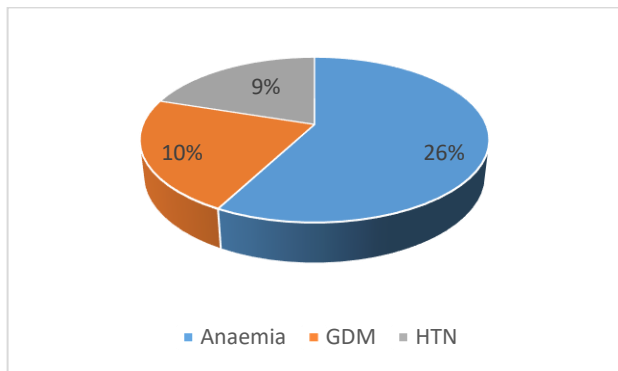


Figure-2 : Pie chart of major Complication in pregnancy

Pregnancy Induced Major Complication:

In our study out of 384 pregnant mother 98(26%) were anaemic 38(10%) had GDM and 34(9%) had gestational hypertension.(Figure-2) Anemia is comparatively more rural and semi-urban than urban.(Table-4) GDM and gestational hypertension is more in urban area than rural an semi urban followed by 14(11%) and 20(16%) respectively.(Table-V and Table-VI)

Variable	Anaemia		No Anaemia	
	Frequency	Percentage	Frequency	Percentage
Rural	36	28%	92	72%
Semi-urban	36	28%	92	72%
Urban	26	20%	102	80%

Table -IV: Distribution of study population in relation to Anaemia

Variable	GDM		No GDM	
	Frequency	Percentage	Frequency	Percentage
Rural	12	9%	116	91%
Semi-urban	12	9%	116	91%
Urban	14	11%	114	89%

Table -V: Distribution of study population in relation to GDM

Variable	Gestational HTN		No HTN	
	Frequency	Percentage	Frequency	Percentage
Rural	7	6%	121	94%
Semi-urban	7	6%	121	94%
Urban	20	16%	108	84%

Table-VI: Distribution of study population in relation to Gestational HTN

Figure - 3 shows a overall view or graphical summary of Anemia, Gestational Diabetes and Gestational Hypertension in pregnant mother of Rural, Semi Urban and Urban Hospitals in Bangladesh.

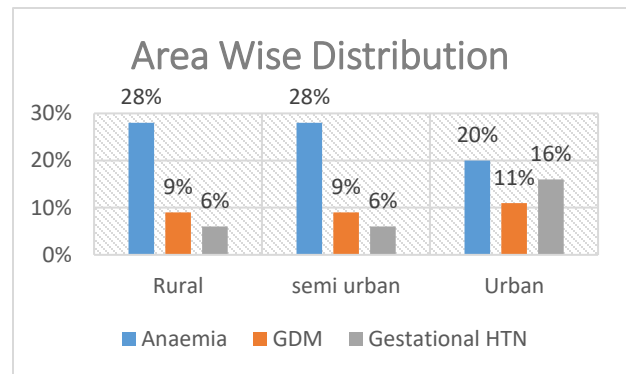


Figure- 3: Area wise distribution of anemia, gestational hypertension and Gestational Diabetes in percentage

To assess the size and direction of the linear relationship between body weight of pregnant mother and random blood sugar level, a bivariate pearson’s product-moment co relation coefficient (r) was calculated. The bivariate correlation between these two variables was positive and $r(384) = .21, p < .001$

DISCUSSION

Pregnancy is a positive natural event but many of them experience health problem .¹³ It has been reported that the prevalence of anemia among pregnant women in developing countries accounts for about 56% while in the developed world is about 16 %.⁸ In Bangladesh anemia is the most common nutritional disorder and prevalence is 41% of women.¹⁴ In our study we found 28% pregnant women anemic in rural and semi urban area and 20% found in urban area.

In our study we found prevalence of GDM is 9% in rural and semi- urban which is similar to study of Subrina Jesmin et al (2014). But In a study conducted by Subrina Jesmin et al (2014) to determine the prevalence of GDM was 9.7% according to the WHO criteria and 12.9% according to the ADA criteria in their study population. ¹⁵ Begum.R,et al.(2022)¹⁶ reported prevalence of GDM 13% in Bangladesh.

In our study demonstrates a high prevalence of GDM in urban area which is 11%. Also similar to Mazumdar .T. et al.(2022). reported compare to rural area, higher rate of GDM were observed among pregnant mother living urban area .¹⁷ In Bangladesh recent studies shows that the rate of GDM is 3 to 4 times higher than previous studies.^{15,16}

Hypertension is a serious global health problem and increasing day by day.¹⁸ In recent study we found prevalence of gestational HTN in rural

and semi-urban area 6% and higher in urban area 16% which is alarming.

In a study conducted by Sayeed et al, (2005) reported that diabetes and infant mortality is higher in Bangladesh. The crude prevalence of systolic and diastolic hypertension was 6.8 and 5.4%, respectively.¹⁹

In our study population 169 (44%) pregnant mother were in age group 18-22 years. Similar study found conducted by Chomon FA et al,(2022) reported 47% pregnant women were between the ages of 21-25 years.²⁰ In our study we found first time pregnant women (primigravida) are 39%. Another study Chomon FA et al,(2022) reported 44% had been primigravida.²⁰

In our study we found statically significant relationship between body weight of pregnant mother and random blood sugar level. The bivariate correlation between these two variables was positive and $r(384) = .21, p < .001$. We also found no significant relation in patient random blood sugar, hemoglobin concentration, blood pressure with age of the patient.

CONCLUSION

The prevalence of GDM and gestational HTN in the urban area is quite higher than rural and semi-urban area. Anemia is comparatively more in rural and semi-urban area. So need to special attention of policy makers, health professional, public health researchers, and the community. Need early diagnosis and treatment to avoid long term health problem as well as economic burdens.

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AUTHOR'S CONTRIBUTION

Dr. Shamima Nasrin Shadia contribution to conception, design, data collection, analysis, interpretation of data and manuscript writing. Dr. Ayesha Siddiqua and Dr. Farzana Afroze contributions to data collection, data computer entry and drafting manuscript. All the authors read and approved the final manuscript.

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