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Original Article

A COMPARATIVE STUDY ON ANEMIA, GESTATIONAL DIABETES AND GESTATIONAL HYPERTENSION DURING PREGNANCY IN RURAL, SEMI URBAN AND URBAN HOSPITALS IN BANGLADESH

Shadia SN[1], Siddiqua A[2], Afroze F[3]

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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 Nogor Hospital, (Dhanmondi), Sub-center of Gonosasthaya Kendro (Shimulia, Panisail, Barobaria, 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.

Keywords:
Anaesmia, Gestational Diabetes, Gestational Hypertension, Presgnancy, GDM

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Introduction:

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. [1] Anemia is the most common health problem during pregnancy.[2] In developing countries 56% and developed countries only 16%. [3]

A significant amount women (1% -20%) suffering in Gestational Diabetes Mellitus (GDM).[4] GDM is alarming problem in globally because it is increasing day by day. [5,6] GDM affects not only mothers health's also baby's 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 increased in notifiable rate for rapid urbanization.[8,9] Gestational hypertension another dangerous complication which is about 7% of pregnant women fall on risk.[10] Accurate prevalence is unknown, it is almost near 10%.[11,12]

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

1. Dr. Shamima Nasrin Shadia; Senior Lecturer, Department of Pathology, Gonosashasthaya Samaj Vittik Medical College Dhaka, Bangladesh.
2. Dr. Ayesha Siddiqua, Senior Lecturer,Department of Anatomy,Gonosashasthaya Samaj Vittik Medical College, Dhaka, Bangladesh.
3. Dr. Farzana Afroze, Senior Lecturer,Department of Anatomy . Gonosashasthaya Samaj Vittik Medical College, Dhaka, Bangladesh.

Address of Correspondence: Dr.Shamima Nasrin Shadia; Senior Lecturer, Department of Pathology, Gonosashasthaya Samaj Vittik Medical College Dhaka, Bangladesh. Mobile No. 01911954791, E-mail: dr.sadiagb@gmail.com

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. 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. Data has been analyzed by SPSS (Statistical Package for the Social Sciences) Version 20.

Results:

In our study , age range of the patients was 18 to 40 years.The mean age was 24.74 years. In our study majority of population 169 (44%) were in age group 18-22 years. Most of the pregnant women 291(76%) were house wife,live in Nuclear family 253(66%) and maximum population were sociolect-economic condition is lower middle 134 (35%). In our study out of 384 pregnant mother ,98(26%) were anaemic ,38(10%) had GDM and only 34(9%) had gestational hypertension. Anemia is comparatively more in rural and semi-urban than urban.GDM and gestational hypertension is more in urban area than rural an semi urban followed by 14(11%) and 20(16%) respectively.

A total 384 cases were selected by simple random sampling method for the present study after fulfillment of inclusion criteria. 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.

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.(Table-I & Chart-1)

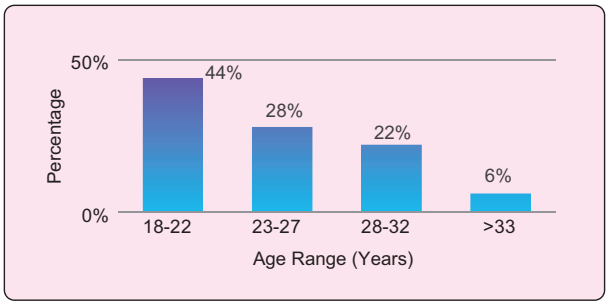

Figure 1: *Bar diagram of age distribution in percentage*

Table -I

Age Distribution of Study Population with living area

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

Sociology-demographic characteristics of pregnant women

Out of 384 pregnant women 291(76%) were house wife,64(17%) were garments worker and only 29(7%) were other occupation. Most of the pregnant women live in Nuclear family 253(66%) and the maximum population were from lower middle class condition 134 (35%) .(Table-II)

Table-II

Socio-demographic characteristics of pregnant women

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%

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 contraceptive used before

pregnancy 179(47%) and fertility treatment with this pregnancy only 31(8%).In this study iron and folic acid supplementation got 235(61%) pregnant mother.(Table-III)

Table-III

Reproductive and medical characteristics of pregnant women

Variable	Catagory	Frequency	Parcentage
Regularity of menstrual cycle	Regular	296	77%
	Irregular	88	23%
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%

Pregnancy Induced Major Complication

In our study out of 384 pregnant mother ,98(26%) were anaemic ,38(10%) had GDM and only 34(9%) had gestational hypertension.(Chart-2) Anemia is comparatively more rural and semi-urban than urban.(Table-3) GDM and gestational hypertension is more in urban area than rural an semi urban followed by 14(11%) and 20(16%) respectively.Table IV & Table-V)

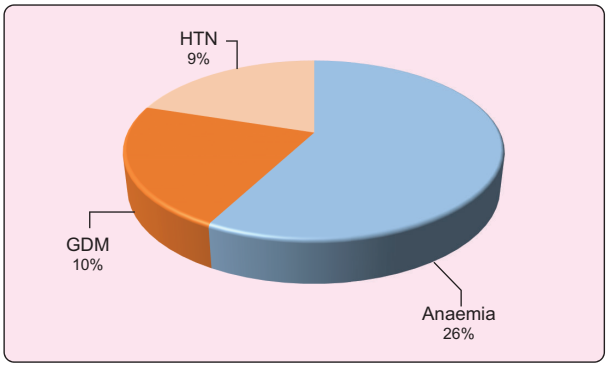

Figure-2: *Pie chart of major Complication in pregnancy*

Table-IV

Socio-demographic characteristics of pregnant women

Variable	Category	Frequency	Percentage
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Parity	primigravida	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%

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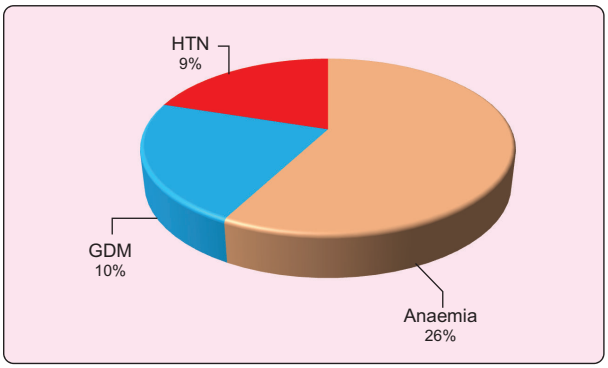

Figure-3: *Pie chart of major Complication in pregnancy*

Table -VI

Distribution of study population in relation to Anaemia

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-VII

Distribution of study population in relation to GDM

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-VIII

Distribution of study population in relation to Gestational HTN

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%

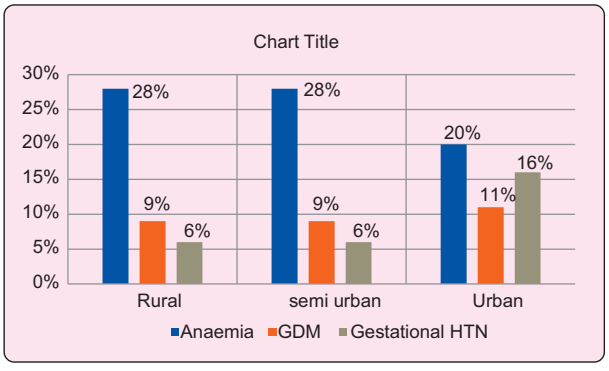

Figure-4: *Area wise distribution of anemia, gestational hypertension and Gestational Diabetes in percentage*

To assess the size and direction of the linear relationship between body weight of pregnant mother and random blood sugar level,a bivariante pearson's product-moment co relation coefficient (r) was calculated.The bivariante 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 contacted 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 bivariante 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 special attention of policy makers, health professional, public health researchers, and community workers is required in this arena. There is strongly need of 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 ,interpritation 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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