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Community

Prevalence of Gestational Hypertension among Rural Pregnant Women in Tamil Nadu

Aravinthkumar A[1], Govindarajan PK[2*], Felix AJW[3]
[1]Postgraduate, Department of community medicine, Rajah Muthiah Medical College Tamil Nadu, India
[2]Professor and Head of the Department, Department of community medicine, Rajah Muthiah Medical College, Tamil Nadu, India
[3]Reader cum Statistician, Department of community medicine, Rajah Muthiah Medical College, Tamil Nadu, India

Original Research Article

***Corresponding author**
Govindarajan PK

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Abstract: Gestational hypertension is the one of the most common cause of hypertension during pregnancy, constituting approximately 70%, of it and complicating about 6-17% pregnancies in nulliparous women and 2-4% in multiparous women. Gestational hypertension is characterized by new-onset elevations of BP above 140/90 mmHg after 20 weeks of gestation, in the absence of accompanying proteinuria. Gestational Hypertension, even when BP elevations are mild, requires enhanced monitoring as it is an important marker regarding follow-up and preventive medicine decisions. Earlier identification and prompt management of Gestational Hypertension can help to reduce the maternal and fetal complications associated with more severe forms of HDP .The objective of the present study is to estimate the prevalence of Gestational hypertension among rural pregnant women. The community based follow up study was done among the pregnant women of Orathur Primary Health Centre [PHC] area in Keerapalyam block of Tamilnadu. The study included all the pregnant women of the Orathur PHC irrespective of the gestational age excluding those lost to follow up and not delivered up to the study period and also those women who developed preeclampsia or other complications during the follow up . The pregnant women were followed upto the delivery and measurements including blood pressure, weight and proteinuria were recorded at each visits. Out of the 344 pregnant women, 31 [9%] women developed Gestational hypertension. Factors like Calcium supplement intake, and HDP in previous pregnancy were found significantly associated with gestational hypertension.

Keywords: Hypertensive disorder of pregnancy, Gestational hypertension, Prevalence, Orathur.

INTRODUCTION

Pregnancy and Childbirth are normal physiological process in every woman's life .Yet it is not devoid of complications posing a significant life threatening risk for both the women and child due to the complications that arises during pregnancy. It is estimated that some 830 women die every day from causes related to pregnancy or childbirth which is about one woman every two minutes[1]. And for every woman who dies, 20 or 30 encounter injuries, infections or disabilities[2]. Most of the deaths and injuries are preventable to an extent if identified earlier. Globally, in the year 2015 , there was about 303,000 maternal deaths with a maternal mortality rate[MMR] of 216 per 100000 live births[1]. In India, MMR was around 130 per 100000 live births in the year 2016[3].

Hypertensive disorders of pregnancy are an important cause of severe morbidity and mortality among both mothers and their babies. It has been recognized as third important cause of maternal mortality [4] . Globally , About 10 % of all pregnancies are complicated by hypertension and its complications [5]. In India, the prevalence of Hypertensive disorders of pregnancy is about 4-5%[6]. Hypertensive disorders in pregnancy have a wide spectrum of presentation, ranging from minimal elevation of blood pressure to severe hypertension with multiple organ dysfunctions with different outcomes. The American College of Obstetricians and Gynecologists[ACOG] has classified Hypertensive disorders of pregnancy into 4 types [1]Gestational Hypertension which is the development of hypertension for the first time after 20 weeks in a pregnant women which normalizes within 3 months of postpartum without development of Proteinuria or any other complications 2] Chronic hypertension, that exists before pregnancy or begins in the first 20 weeks of gestation; 3] Preeclampsia [raised BP and edema or proteinuria]/ Eclampsia [preeclampsia and seizures];

and 4] Preeclampsia superimposed on chronic hypertension..

Gestational hypertension is the one of the most common cause of hypertension during pregnancy, constituting approximately 70%, and complicating about 6-17% pregnancies in nulliparous women and 2-4% in multiparous women[7]. Gestational hypertension is characterized by new-onset elevations of BP above 140/90 mmHg after 20 weeks of gestation, in the absence of accompanying proteinuria. The diagnosis is usually made retrospective assessing throughout the course of pregnancy. Onset of proteinuria or other complications at any stage will change the diagnosis to preeclampsia- eclampsia and the failure of BP to normalize after the delivery requires changing the diagnosis to chronic hypertension.

Gestational Hypertension was initially regarded as a transient state and considered to present with normal delivery outcomes. But in some of the pregnant women BP elevations are severe leading to outcomes similar to women with preeclampsia. Also Gestational Hypertension acts as a sign of future chronic hypertension with non-reversal of Blood pressure in the postpartum period [7]. So, Gestational Hypertension, even when BP elevations are mild, requires enhanced surveillance as it is an important marker regarding follow-up and preventive medicine decisions. Earlier identification and prompt management of gestational hypertension can help to reduce the maternal and fetal complications associated with more severe forms of HDP.

Although many studies have been done on Hypertensive Disorders of Pregnancy in India and globally, there are only limited studies available with emphasis on Gestational Hypertension alone. Increase in the researches on Gestational Hypertension is needed to understand the complex pathologic interactions of HDP on delivery outcomes and also for the prediction of risk factors and risk groups so as to impart the preventive measures to the vulnerable mothers for the reduction of maternal morbidity and mortality.

So this study was carried out with the main objective of finding out the prevalence of gestational hypertension among rural pregnant women. This knowledge on the prevalence will helps to strengthen the antenatal care services at the primary level in the healthcare system of the state as well as country.

MATERIALS AND METHODS

Study design: Descriptive follow up study

Study area

This study was conducted at Orathur Primary Health Centre service area in Keerapalayam Block of Cuddalore district, Tamilnadu and it renders the service through the 7 subcentres. The study area was selected as it is one of the field practice area of Department of Community Medicine, Raja Muthiah Medical College. The population covered by the PHC and its subcentres is about 49,925.This population is distributed over 31 panchayats including 38 villages and 12 hamlet areas.

Study period

13 months [February 2017 to February 2018].

Study population and data collection

All the pregnant women in the study area were included in the study. Consent was obtained from the study participants prior to the study.

All the pregnant women in the area were registered in the subcentres and they attended the PHC for routine Antenatal visits. So the data collection and clinical examination was done at the ANC clinics of Orathur PHC for better coverage. Any woman who were missed at the antenatal visits, were interviewed and examined at the subcentres with ANM accomplice as female companion.

In the antenatal clinic, detailed history and preliminary clinical examination of the enrolled women was carried out. Blood pressure was recorded by sphygmomanometer and stethoscope in sitting position in non-dominant arm to the nearest 2mmHg.While recording the BP, pregnant women were made to relax at least 5 minutes before the first reading. Patients were made to sit upright with their upper arm positioned so it is level with their heart and feet flat on the floor. Excess clothing that might interfere with the BP cuff or constrict blood flow in the arm was removed. Proper cuff size was chosen to avoid error. Weight was measured using standard weighing machine. Height was measured using a stadiometer. Urinary protein excretion was noted for assigning the diagnosis. Then the pregnant women were assigned a follow up protocol and were followed up till the delivery at every visits. Visits are scheduled in such a way that every woman should have a visit atleast once in each trimester. Blood pressure, weight and urinary protein were assessed at every visits. Pregnant women whose BP was elevated above the normal level were followed up upto the postpartum period to assess the blood pressure status for confirmation of diagnosis.

Gestational Hypertension

The Pregnant women with systolic pressure more than 140 and / or diastolic pressure more than 90 mmHg in the follow up period and who did not developed proteinuria or other complications suggestive of preeclampsia /eclampsia throughout the course of the pregnancy and whose BP reverted back to normal levels within 3 month postpartum were diagnosed as case of Gestational Hypertension.

Inclusion criteria

All the pregnant women in the study area were included irrespective of the gestational age.

Exclusion Criteria

Those women who were previously diagnosed as Hypertensive and on drugs were excluded from the study. And those women who developed symptoms of preeclampsia [proteinuria] and eclampsia were excluded from the study as the study concentrates more on the Gestational Hypertension

A total of 393 women were enrolled for the study . 34 pregnant women who had not delivered till the end of the study period and 5 pregnant women who were lost to follow up were excluded from the study. So, there was 354 pregnant women and out of them 10 developed preeclampsia, eclampsia and Chronic Hypertension and they were excluded from the study. Hence a total of 344 pregnant women were included in the study.

A written Consent was obtained from all the pregnant women participated in the study. The study was approved by Institutional Ethical committee at Rajah Muthiah Medical College.

STATISTICAL ANALYSIS

The collected data were entered into excel spread sheet in Microsoft office version 2007. Data were analyzed using SPSS version 23 software. Chi square test has been used to assess the association between Gestational hypertension and selected variables.

RESULTS

Table 1 shows the demographic characteristics of the study participants. Among the study participants, Majority [48.5%] were in the age group between 21 to 25 years. Majority of them [82.5%] were doing unskilled profession. About 31.1% of the pregnant women were graduates .Majority [51.4 %] of the pregnant women was living in a joint family. Majority of them [44.8%] were earning more than Rs. 12000 per month..Out of the 344 pregnant women participated in the study, 31 women developed Gestational hypertension. The prevalence of Gestational Hypertension was 9% among the study population as shown in Fig No 1.

Table-1: Distribution of Study participants according to sociodemographic ariable

N	Variables		Frequency	Percentage
	Age	<20 yrs	50	14.5
		21-25 yrs	167	48.5
		26-30 yrs	109	31.7
		>31yrs	18	5.3
	Occupation	Unskilled	284	82.5
		Semiskilled	25	7.3
		Skilled	35	10.2
	Education	Primary	28	8.1
		Middle	25	7.4
		High	115	33.4
		Higher secondary	52	15.1
		Diploma	17	4.9
		Graduate	107	31.1
	Family	Nuclear	106	30.8
		Joint	177	51.4
		Extended	61	17.8
	Income	≤6000	67	19.4
		6001-12000	123	35.8
		≥12001	154	44.8

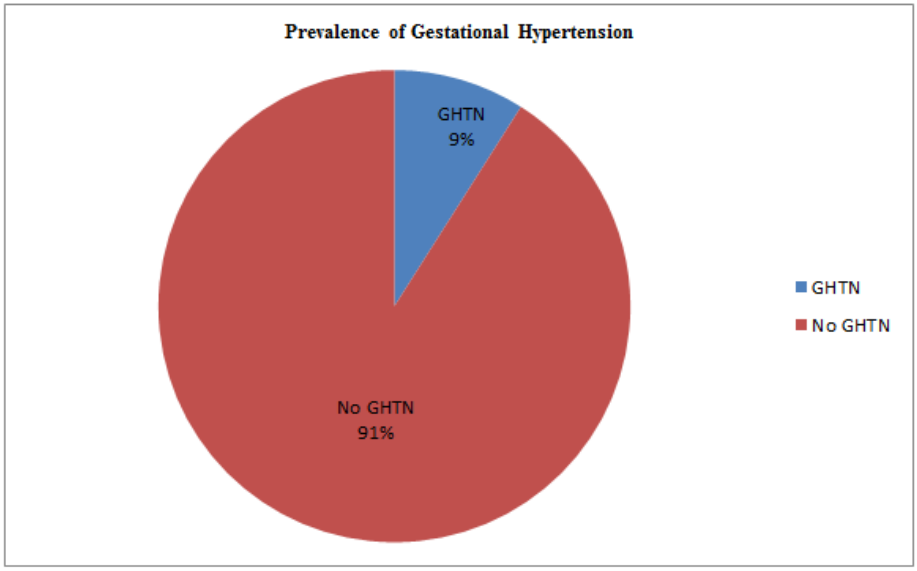

Fig-1: Prevalence of Gestational Hypertension among Pregnant women

Gestataional Hypertension was found higher [45.1%] in the pregnant women of age group between 21 – 25 years. Incidence of gestational hypertension is more in among the second gravida when compared to Primigaravida and Multigravida. But the association with Age and gravidity status is statistically insignificant with p values more than 0.05. Statistically significant association was seen between the incidence of Gestational hypertension and regular calcium intake. [$p \leq 0.05$]. History of Pregnancy induced hypertension in the previous pregnancy was found associated with the incidence of Gestational hypertension in the subsequent pregnancies and this association was statistically significant. [$p \leq 0.05$] as shown in Table 2.

Table-2: Association of Gestational hypertension with selected variables

Variable		Gestational hypertension				Chi- Square value	Significance p
		Present		Absent			
		N	Percentage	N	Percentage		
Age	Less than 20 years	3	6%	47	94%	1.261	0.738
	21 - 25years	14	8.4%	153	91.6%		
	26 - 30 years	12	11.0%	97	89.0%		
	More than 31years	2	11.1%	16	88.9%		
Gravida	Primigravida	9	5.7%	150	94.3%	4.091	0.129
	Second Gravida	15	12.2%	108	87.8%		
	Multigravida	7	11.3%	55	88.7%		
Consanguinity	Non consanguineous	25	8.6%	266	91.4%	0.407	0.600
	Consanguineous	6	11.3%	47	88.7%		
Calcium intake	Regular	30	10.5%	255	89.5%	4.650	0.026
	Irregular	1	1.7%	58	98.3%		
H/o HDP in previous pregnancy	Present	4	66.7%	2	33.3%	24.756	0.001
	Absent	27	8.0%	311	92.0%		

DISCUSSION

The present study was conducted to estimate the prevalence of Gestational hypertension among rural pregnant women in Orathur PHC area which is the field practice area of Rajah Muthiah Medical College, Chidambaram, so that to get an idea about the magnitude of problem in our community and appropriate interventions that is needed to prevent the adverse outcomes both in mother and the fetus. The prevalence of gestational hypertension was found to be 9% in this study. A study done by Gudeta TA in Ethiopia among the pregnant women admitted in a tertiary care hospital found that the prevalence of gestational hypertension was 15.2 % [8]. Umegbolu EI has estimated the incidence of gestational hypertension as 5.9 % in Nigeria[7]. In India, study done by Borade PV *et al*. in Maharashtra found out the prevalence of gestational Hypertension as 21.1%.[9] The variation found in the prevalence of present study with others can be attributed to the fact that our study was community based which has a different denominator in contrast to the other studies which was hospital based.

In this study, age was found not significant with gestational hypertension. Studies done by Umegbolu EI and Borade PV showed increase prevalence among pregnant women of age 30 years with a significant association[7, 9] . But in our study, the prevalence of gestational hypertension is more among the pregnant women in the age group of 21- 25 years. This may be due to the increased proportion of the women in that age group in our study because of the fact that the common age at marriage is around 21-25 years among the population in the study area. Also the sample is taken from the community unlike other studies which was hospital based.

In this study, Gravidity status is found not associated with Gestational Hypertension. This is in consistent with the findings of the study by Berhe et al in Ethiopia [10].But the study done by Shaba et al in Zambia showed a significant association of Gestaional hypertension with gravidity [11]. This can be due to the disparity in classification of gravidity. Gravida more than 2 are clubbed in our study whereas gravid upto 5 has been studied as separate classes by Shaba *et al*. [11].

History of HDP in previous pregnancy was found to be a significant factor [p value-0.001] for the development of Gestational Hypertension in subsequent pregnancy indicating the recurrent nature of the disease. This is similar to the results of study done by Takahashi K *et al.* which concluded that gestational hypertension recurs in almost one-third of women with a past history of it[12]. Consanguinity in the marriage was found not significantly associated with the development of gestational hypertension in our study.

The role of Calcium in HDP can be attributed to the action at parathyroid glands which has role in the smooth muscle relaxation and vasodilatation [14]. Pregnant women with regular calcium supplements intake were found less risk of developing gestational hypertension when compared to irregular intake which is consistent with the findings of the study conducted by Imad *et al*. which shows a 45 % decrease in risk of development of gestational hypertension with Calcium supplementation[13].

The main strength of this study is that it is a community based study which can show the actual prevalence in the community than a hospital based study. The study was conducted as a prospective cohort study rather than a retrospective cohort study like the most other longitudinal studies done so far. This eliminates the chance of recall bias and also increases the validity of measurements, thus giving a more accurate estimation of burden of PIH.

As the study included all pregnant women registered in subcenters and ANC registration at the corresponding sub-centers is almost 100%, every pregnant lady had an equal chance of being included in the study. Even the females belonging to higher SES who prefer private hospitals over government hospitals also get registered at their corresponding sub-centers and were included in the study. So the chances of selection bias are very less.

Limitations

As the study included pregnant women of all gestational ages, pre pregnant parameters cannot be collected which is the main limitation of the study. Pregnant women with chronic hypertension cannot be isolated from gestational hypertension as the exclusion of the case was solely done by past history stated by the participant. There are chances of undiagnosed cases of chronic hypertension included along with Gestational hypertension in the study.

CONCLUSION

Gestational hypertension is one of the most common form of Hypertensive disorders of pregnancy This disease which has a greater impact on the outcome of pregnancy and mortality has a significant prevalence in the community. The gestational hypertension should be identified earlier and may be treated to avoid Maternal and fetal morbidity and mortality.

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