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Original Research Article

Occurrence of Hypertensive Disorder of Pregnancy and its Preventive Strategies among Pregnant Women Attending Adeoyo Maternity Teaching Hospital, Yemetu, Ibadan North Local Government, Nigeria

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Abstract: The study aimed at investigating the occurrence of preeclampsia and its preventive strategies among pregnant women attending Adeoyo Maternity Hospital. Yemetu, Ibadan, Nigeria. A descriptive cross-sectional design was adopted using a systematic random sampling technique to select 400 consenting respondents from the antenatal clinic records of the hospital. Semi-structured questionnaires were used to elicit information on respondents' socio-demographic characteristics, Preventive Strategies against Pre-eclampsia (PSP) such as place of care, resting techniques and social habits using 30-point PSP scale. Preventive strategies score ≤ 15, >15 were categorised as poor, and good respectively. Blood pressure measurements taken with readings greater than 140/90 mmHg were considered to be elevated. Four Focus Group Discussion (FGD) sessions were conducted using an FGD guide. Quantitative data were analysed using descriptive statistics, Chi-square test at p=0.05, while qualitative data were analysed using thematic approach. Incidence of elevated blood pressure was 4.5%. Twenty-one percent mentioned that they had experienced swelling of the feet, ankle, hand and face, while 8.5% had tested positive to protein in the urine during pregnancy. Few (0.8%) had experienced pre-eclampsia in their earlier pregnancy and had their deliveries through caesarean section. Many of the respondents had good preventive strategies (95.3%) while 4.7% had poor preventive strategies respectively. The hospital (92.4%) topped the list of places where respondents sought care whenever they experienced symptoms suggestive of pre-eclampsia, while 6.5% reported they rested at home. Routine clinical examination is recommended for early detection to curb the prevalence of preeclampsia among pregnant women while uptake of preventive strategies is hereby advocated.

Keywords: Pregnancy, Adeoyo Maternity Hospital, preeclampsia.

INTRODUCTION

Hypertension is a life threatening complication of pregnancy which starts after 20th weeks of pregnancy. This condition is characterized with increased blood pressure (BP ≥140/90 mmHg), protein urea (urinary albumin protein ≥ 300 mg/24h) and Oedema. The clinical spectrum of hypertensive disorders of pregnancy ranges from mild to severe. Globally, hypertension in pregnancy complicates about 2%-10% of pregnancies as indicated by Osungbade *et al.*, (2011). According to the World Health Organization (WHO), the incidence of hypertension in pregnancy is seven times higher in developing countries (2.8% of live births) than in developed countries (0.4%) Dolea *et al.*, 2013. However, hypertensive disorder of pregnancy is the second leading cause of direct maternal and fetal deaths in Nigeria, with prevalence between the ranges of 2% to 16.7% [1-3].

A detailed review of literature, has indicated that the etiology hypertensive disorders of pregnancy is unknown, despite many attempts to identify possible causes. Evidence from literature revealed that women with moderate pre-eclampsia generally have no symptoms while on the other hand women with severe pre-eclampsia may present with symptoms such as headache, upper abdominal pain, or visual disturbances, elevated blood pressure, ankle oedema and proteinuria. The prevalence of pre-eclampsia varies in different

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populations and in different ethnic groups (Roberts 2002). Numerous risk factors for pre-eclampsia have been suggested but only few have actually been established in statistical models. On prevention of preeclampsia studies have showed that MgSO4 has proven to be superior compared to phenytoin and diazepam in reducing the risk of eclampsia and perhaps maternal mortality but with no significant reduction on adverse fetal outcomes (Ref). However, a review of literature has revealed high level of socio-cultural practices, religious belief that influences preventive strategies pregnant women adopt to prevent preeclampsia during pregnancy. Thus, this study is aimed investigating the prevalence of preeclampsia and its preventive strategies among pregnant women attending Adeoyo Maternity Hospital.

Objective of the study

1. To is determine prevalence the of preeclampsia among pregnant women attending Adeoyo Maternity Hospital Yemetu Ibadan.
2. To identify preventive strategies, adopt by pregnant women in preventing preeclampsia.

METHODOLOGY

Study site

Adeoyo Maternity Hospital Ibadan is a government owned Specialised Service Hospital in Ibadan North local government area of Oyo State, Nigeria. Adeoyo Maternity Hospital Ibadan is located at Yemetu Adeoyo, Ibadan, Oyo State. The Local Government Area has a population of about 300,937 people of which 150,837 are males and 149,100 are females. On a monthly basis, about 1,600 women register for antenatal care and about 3,800 women attend the immunization clinic. The Obstetrics and Gynecology Department has its clinic days from Monday through Friday every week from 9 am. Its location is accessible by taxi and buses from most part of the city and entire state. Average daily attendance by pregnant women at this clinic is more than 100/day.

Study design

A descriptive cross-sectional design was adopted and a systematic random sampling technique was used to select 400 consenting respondents from the antenatal clinic of the hospital.

Sampling procedure

The research assistants and the principal investigator were involved in the data collection. Which was interviewer administered. Data collection took place mostly in the morning when it was easier to get the participants at the antenatal clinic; they were collected in Yoruba language. Short briefing sessions were held at the end of each day where the day's work was reviewed and the next plan of action disseminated to the research assistants. The data collected were checked for completeness and accuracy in the field. Serial number was assigned to each questionnaire copy for easy identification

Instrument for data collection

Semi-structured interviewer administered questionnaire was used to elicit information on respondents' socio-demographic characteristics, prevalence of preeclampsia and its preventive strategies using 30-point scale. Preventive strategies scores ≤ 10, >10-20, and >20 were categorised as poor, fair and good, respectively. Four Focus Group Discussion (FGD) sessions were conducted using Focus Group Discussion guide.

Validity and Reliability

To ensure validity of the instrument, relevant literatures were consulted. A draft of the instrument was developed and was reviewed by the supervisor and experienced researchers in the field of public health and in data processing. Instruments were also subjected to a peer review. To determine the reliability of the instrument used, 10% of the instrument was pre-tested in a place with similar demographic characteristic as the study area, Adeoyo Hospital, Ring Road, Ibadan. The following steps were taken to ensure reliability of instruments

Data analysis

SPSS Version 15 was used for data entry, cleaning and analysis. To better determine respondent's level of awareness and knowledge of pre-eclampsia descriptive statistics was done coupled with Chi Square analysis which was used to test hypothesis to determine the association between some selected dependent and independents variable at a 0.05 P-Value. Qualitative data were analysed using thematic approach.

Ethical consideration

Prior to the commencement of this study the research protocols was submitted to Oyo State Ethical Committee for ethical approval, Also permission was obtained from the Management of Adeoyo Maternity Teaching Hospital before Data collection was done in the Centre. Informed consent forms were given to the participants which were both in verbal or a written form. Participation in the study was voluntary. The nature of the study, benefits and objectives were explained to the participant and were also assured that the information given will be treated with utmost confidentiality. However, participants were given equal opportunities to withdraw their consent freely during the study. Confidentiality of each participant was maximally maintained during and after the collection of her information. Finally, participant's right of confidentiality and the right of responsibilities of the respondents was maintained throughout the course of the study.

RESULTS

According to the results the age of respondents ranged from 16 to 43 years while the mean age was

28.6±5.2. The gestational age of pregnancy ranged from (1) week to (36) weeks (20.6%) with a mean gestational age of 24±2.0 weeks. Details of results on socio demographics is documented below.

Table 1: Socio demographic Characteristics

Age years (Variable)	**F**	**%**
16-20	24	6.0
21-25	94	23.5
26-30	144	35.0
31-35	104	26.0
35-40	31	7.8
4-45	3	0.8
Parity		
Primigravida	138	34.5
Primipara	139	34.8
Multipara	120	29.6
Granmultipara	3	0.9
Trimester		
1st Trimester	23	5.8
2nd Trimester	128	32.0
3rd Trimester	240	62.2
Tribe		
Yoruba	376	94.0
Igbo	15	15
Hausa	3	0.85
Cross River	3	0.8
Edo	2	0.5
Tiv	1	0.3
Occupation		
Trading	156	39.0
Self Employed	129	32.3
Civil Servant	71	17.8
Unemployed	26	6.5
Private	10	2.5
Students	8	2.15

Symptoms and Prevalence of Preeclampsia among Respondents

Blood pressure measurements were collected using a mercury sphygmomanometer and a stethoscope. The cut-off blood pressure level indicating a well-controlled blood pressure of 140 mmHg for systolic pressure and 90 mmHg for diastolic pressure. Any values above these figures represent uncontrolled hypertension, as seen in Table 4 below. Ninety-five (95.5%) had a normal blood pressure while 4.5% had a blood pressure measurement between 140/90 and above on one measurement. As revealed by the study 5.9% had a family history of preeclampsia, with 2.4% motioned that her aunty had experience the health condition, and another 1.8% reportedly that her mother and her sister had experienced preeclampsia respectively, see table below. Detailed knowledge about their health condition during pregnancy was explored. The results showed that 9.5% respondents had blood pressure detected by a midwife. Also protein in the urine test by a laboratory scientist was positive in 8.5% but negative in 91.5% subjects. Twenty-one percent (21.0%) reported experiencing swollen of the feet, ankle, hand and face while 78.9 % did not have the experience. Twenty-seven percent (27.0%) conceded having experienced severe headache while 72.5% reported no such experience. Slightly above fourteen percent (14.3%) experienced vision problems such as blurring and seeing flashing light but the remaining 85.8% did not have such experience. Concerning vomiting 38% chose "yes" while the remaining 62% chose "no". Finally, 14.3% conceded having experienced excessive weight gain due to fluid retention while 85.8% indicated having no such experience. Result shows that 3 (0.8%) respondents had experienced preeclampsia in earlier pregnancy, and they all had their baby through caesarean section. One of the respondents reportedly had experienced bleeding (post partum haemhorage) after her experience.

Table 1: Prevalence of Preeclampsia among Respondents, n=400

Variable	f	%
Blood Pressure Measurement		
BP reading between 139/89 and below	383	95.5
B P reading between 140/90 and above	18	4.5
Family History		n=170
Have any of your family members ever been diagnosed of preeclampsia		
Yes	10	5.9
No	160	94.1
Relationship with the family members who had experience preeclampsia		
Aunty	4	2.4
Sister	3	1.8
Mother	3	1.8
Ever experienced the following symptoms during Pregnancy, n=400		
High blood pressure detected by a mid-wife		
Yes	38	9.5
No	362	90.5
Protein in the urine detected by a lab scientist		
Yes	34	8.5
No	366	91.5
Swollen of the foot ankle and face		
Yes	85	21.0
No	315	78.8
Severe headache		
Yes	110	27.5
No	290	27.5
Vision problem, such as seeing flashing light		
Yes	57	14.3
No	343	85.8
Vomiting		
Yes	152	38.0
No	248	62.0
Ever Experienced Preeclampsia in their Early Pregnancy		
Yes	3	0.7
No	397	99.3
At what level of pregnancy was it diagnosed		
Above 20 weeks	3	100
At what age was the pregnancy of your baby delivered		
20 weeks	2	66.7
28 weeks	1	33.3
What was the delivery method		
Cesarean section	3	100
Complication Suffered		
Bleeding	1	33.3
No complication	2	667

The interviews, from FGDs disclosed further signs and symptoms of preeclampsia that pregnant women experience during pregnancy, with the following discussion as documented below:

> *Part of the orientation we were given when we came for antenatal is that if you noticed that you have a swollen hand or swollen leg, it may be a signal of preeclampsia.*

> *If one is having sleepless night, it could really be a signal of preeclampsia. If the person should go to the hospital to complain, they may ask her to check her blood pressure to confirm if she has preeclampsia.*

> *The signs I can mention is that if both the hand and the leg of a pregnant woman are swollen, it could be a sign of preeclampsia. And again, it is not good for a pregnant*

In a view of another respondents, she however reported that thinking all the time and fear is a sign of preeclampsia:

> *Woman to be thinking all the time, If one is constantly fearful or scared, it means the person has developed preeclampsia*

Preventive Strategies against Symptoms of Preeclampsia among Respondents

Respondents were asked what to do if they experienced symptoms of preeclampsia. Almost ninety-three percent (92.4%) knew that they should seek medical care for oedema of the feet; 94.1% knew that they should seek medical care for constant headache; 92.9% knew that they should seek medical care for palpitations while 94.1% knew that they should seek medical care for breathlessness, as documented in table 4.8a. Respondents' knowledge on what to do when predisposed to preeclampsia was sought. Ninety-eight percent (98.8%) knew that they should book early for clinic while 94.7% knew that they should keep review dates. Majority (95.9%) knew that they should monitor foetal movements; 91.2% knew that they should have adequate rest. Another 88.0% knew that they should have regular exercise; 94.7% knew that they should take a balanced diet with low salt and 98.2% knew that they should take drugs as prescribed.

Preventive strategies for preeclampsia among respondents, n = 170

Preventive strategies for preeclampsia	**f**	**%**
What should respondents do if the develop the following condition		
Swelling of the feet		
Seek medical care	157*	92.4
Rest at home	11	6.5
Seek help at faith healer	2	1.2
Palpitation (irregular heart beat)		
Seek medical care	158	92.4
Rest at home	12	7.1
Seek help at faith healer	-	-
Constant Headache		
Seek medical care	60	94.1
Rest at home	10	5.9
Seek help at faith healer	-	-
Breathlessness		
Seek medical care	160	94.1
Rest at home	10	5.9
Seek help at faith healer	-	-
Pregnant women with Preeclampsia predisposing factors		
Book early for clinic		
Yes	168	98.8
No	-	-
Don't know	2	1.2
Keep review date		
Yes	163	95.9
No	2	1.2
Don't know	5	2.9
Monitor fatal movements		
Yes	163	95.9
No	2	1.2
Don't know	5	2.9
Lie on left lateral positions		
Yes	125	73.5
No	17	10.0
Don't know	28	16.5
Have adequate rest 2-4hr per day		
Yes	55	91.2
No	9	5.3
Don't know	6	3.5

Preventive strategies for preeclampsia among respondents, n=170

Variable	f	%
Take balance diet with low salt		
Yes	161	94.7
No	2	1.2
Don't Know	7	4.1
Take drugs as prescribed		
Yes	167	98.2
No	1	0.6
Don't Know	2	1.2
Regular exercise		
Yes	151	88.8
No	6	3.5
Don't	13	7.6

Of, the interviewers on the focus group discussion majority agreed that going to the hospital to receive care against pre-eclmpsia was the right step, rather than going to churches and mosque for prayers,

I don't agree in taking the pregnant woman to the church or mosque. I think the best thing is to take her to the hospital immediately.

I totally agree with what my colleagues has said, since the Pastor or Imam is not a doctor. She should be taken to the hospital. They are not doctors, so hospital is the best place to take her to.

I think going to the hospital is the best thing. Although the Federal Government has said that courses on traditional herbal medicine should be taught in the university, I think they have now realized the important of herbal medicine. Probably, when that has been established, but for now hospital is the best option.

The best thing I thing a pregnant woman can do is come to the hospital to be monitored. If the person has high blood pressure before or if it is even induced, by the time they come to the hospital, the doctor will be able to direct them on what to do and the person should not miss her appointment time with the doctor for any reason.

In contrast one of the respondents however accord that using traditional herbs during pregnancy is good.

There is nothing wrong in using herb; I don't really see anything bad in using herb one of the respondents said, although the Yoruba use herbal concoctions, but we don't really use it in my own culture. Herb is good; it is good to use herb.

Resting Techniques Food and Social Habits to Avoid among Respondents

When asked about resting techniques, as shown in Table 4.9 below, 60.6% knew that lying down in bed with left side is a resting technique during pregnancy, 65.9 % knew that sitting with legs elevated on a stool is a way of resting. Results on Table 4.9 also show findings on food to avoid by pregnant women. Slightly above fifty-nine-percent (59.4%) knew that they should avoid fatty food while 80.0% knew that they should avoid salty food. Above (71.2%) knew that they should avoid too much starch. Concerning questions on social habits to avoid, 68.2% knew that they should avoid alcohol and another 65.3% knew that they should avoid cigarettes smoking.

Table 3: Resting techniques, food and social habits to avoid in reducing the risk of developing Preeclampsia, n= (170)

Variable	Frequency	Percentage
Resting Techniques, food and social habits	**F**	**%**
Lie down in bed on left side		
Yes	103	60.6
No	24	14.1
Don't know	43	25.3
Sit down with legs elevated on stool/chair		
Yes	112	65.9
No	24	14.1
Don't know	34	20.0
Food / habits pregnant women should avoid?		
Fatty foods		
Yes	101	59.4

Variable	Frequency	Percentage
Resting Techniques, food and social habits	**F**	**%**
No	22	12.9
Don't know	47	27.6
Salty food		
Yes	136	80.0
No	22	12.9
Don't know	12	7.1
Too much starch		
Yes	121	71.2
No	27	15.9
Don't know	22	12.9
Cigarette smoking		
Yes	111*	65.3
No	36	21.2
Don't know	23	13.5
Alcohol		
Yes	166	68.2
No	24	14.1
Don't know	30	17.6

How Pregnant Women Should Exercise and Use Medication

Results of knowledge on how to exercise showed that 82.4% knew that doing household chores is a way of exercise and 80.0% knew that taking walks is a way of exercising. Only 47.1% and 53.5% knew that they should always perform mental and body relaxation respectively to manage stress. Almost sixty-eight percent (67.7%) mentioned that mental relaxation can be achieved through sleeping, 15 .3% said it can be achieved through watching movie while 4.1% and 13.5% said it can be achieved through storytelling and reading books respectively. Respondents were asked about the extent to which medications should be taken and how what efforts are necessary to lose extra weight. Almost ninety-four percent (92.9%) knew that prescribed medications should always be taken.

Table 4: Perception of pregnant women on exercise and use medications, n = 170

Variable	F	%
How to exercise in order to reduce hypertension in pregnancy		
Carry out house chores		
Yes	104*	82.4
No	16	9.4
Don't know	14	8.2
Take walks		
Yes	136*	80.0
No	24	14.1
Don't Know	10	5.9
Extent of engagement in stress management		
Mental relaxation?		
Never	21	2.4
Rarely	11	6.5
Sometimes	58	34.1
Always	80*	47.1
Body relaxation		
Never	10	5.9
Rarely	90	5.3
Sometimes	60	35.5
Always	91	53.5
Never	10	5.9
Rarely	9	5.3
Sometimes	60	35.5
Always	91*	53.5
Activities that give mental relaxation		

Variable	F	%
Reading	23	13.5
Story telling	7	4.1
Sleeping	114	67.7
Watching movie	26	15.3
Compliance with prescribed medication		
Always	158*	92.9
Never	5	2.9
Don't know	7	4.1

*Correct

DISCUSSION

Occurrence of elevated blood pressure was determined among respondents. Findings however revealed that few of the respondents 18 cases had elevated blood pressure during pregnancy which is one of the major sign of preeclampsia. This was concurrent from the outcome of a study conducted by Ebegbe and Aziken, 2000-2005 were it was documented that out of the total deliveries recorded in the hospital within the period of the research 46 cases (6.3%) were complicated with elevated blood pressure. On symptoms of pre-eclampsia, evidence from this study however revealed that a reasonable percentage of respondents had experience proteinurea during pregnancy, this current findings was contradicted by a related study in *sri lanka* Korean-republic were 43 cases of 256 tested positive to micro proteinuria during pregnancy (Weerasekera & Hemantha, 2003). Less than quarter of respondents had experience swelling of the feet which are the main features of pregnancy induced hypertension this was contradicted by Nkwo, (2009) in a similar study in eastern part of Nigeria whose finding document high prevalence of leg Oedema among 1000 consecutive pregnant Igbo women over a 10 month period.

On those who had experienced pre-eclampsia in previous pregnancy, evidence reported that few of the respondents admitted they had experienced the health condition in their previous pregnancy. This current finding was contradicted by a related study in Malawi which recorded 8 cases among 52,489 deliveries. This current study finding also revealed that few of respondents who had experience preeclampsia in their earlier pregnancy were complicated with post-partum hemorrhage after their experience of preeclampsia.

Good knowledge on preventive strategies was demonstrated on either seeking medical care or resting at home whenever they experience possible symptoms of preeclampsia. Participants were also generally knowledgeable on precautions to take when predisposed to preeclampsia. More so, participant generally scored high on knowledge of foods and social habits to avoid in preventing pre-eclampsia. This was in line with a study in Zimbabwe (Pswarayi, *et al.*, 2010) where majority of respondent were knowledgeable on food and social habit to avoid in preventing pre-eclampsia. The reasons behind this could be as a result of respondents' birth experience, because most of the respondents had given birth more than once. On resting techniques during pregnancy above half of the respondents knew that they have to sit down with legs elevated on stool while a reasonable percentage reported they lie down in bed with their left side. A sizeable proportion of respondents were knowledgeable on the fact that attending clinic was essential for preeclamptic patients. However, majority almost all appeared to know that resting for 2 to 4 hours a day was equally important. This finding was in line with a related study in Calabar Nigeria (Oyira *et al.*, 2009) who documented in his study that resting for 2-4 hr during pregnancy can reduce the risk of developing preeclampsia.

Studies have showed that physical activity has been noted to reduce body fat, peripheral resistance and cardiovascular load thereby enhancing blood pressure control (Taylor-Tolbert *et al*., 2000; WHO, 2002). However, it was also noteworthy in the study that majority knew that exercise help to reduce the risk of developing pregnancy induced hypertension. Also more than half of the respondents knew that carrying house chores is a mild way of exercising in reducing pregnancy induced hypertention and another reasonable percentage knew that taking a walk is another way of exercising.

However studies have showed that non-strenuous physical activities such as house chores and walking are recommended and are initial steps to attain blood pressure control (Hagberg, Park & Brown, 2000). Blumental *et al.*, (2001) further states that combined physical activity and weight reduction contribute to increase blood pressure control which is a major sign of preeclampsia. It is interesting to note that over seventy percent of the study sample in the present study knew about the importance of physical activities using various techniques ranging from taking a walk to doing household chores.

On stress management, it was evident that half of the respondents engaged in body relaxation always while few did it sometimes. Also, on mental relaxation shows that less than half do it always. This finding was contradicted by related study in Zimbabwe pswarayi, (2010) were majority of respondents admitted that they engaged in stress management sometimes.

RECOMMENDATIONS AND CONCLUSION

In reducing incidence of preeclampsia pregnant women are encouraged to use ANCs regularly to have their pregnancy monitored for early detection of preeclampsia. Clients experiencing stress are encouraged to adopt stress management interventions including breathing exercises, and listening to music. Listening to music or watching television enables one to feel relaxed there by reducing stress. Exercise should be done routinely in moderation. Stress management techniques need to be integrated with the client's everyday living as a way of promoting health. Stress contributes to very high blood pressure (Carrol, 2000). Therefore, mental relaxation is essential. It was encouraging to note that the majority of respondents at least knew that mental relaxation or physical relaxation should be done always.

Limitation to the study

This study was conducted in one health facility and findings from the study cannot be generalized in the whole country.

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