

# Prevalence and Determinants of Hypertension in Pregnancy among Women Attending Antenatal Clinic in Ile-Ife, Osun State, Nigeria

Olayinka Adeyosola Adijat<sup>\*1</sup>, Alib Elizabeth Folakemi<sup>2</sup>, Atolagbe James E<sup>2</sup>

<sup>1</sup>Department of Public Health Adeleke University, Ede, Osun State, Nigeria

<sup>2</sup>Department of Public Health and Preventive Care & Prost, CPGS Adeleke University, Ede, Osun State, Nigeria

## Abstract

This study assessed the awareness and knowledge of hypertension in pregnancy among women attending antenatal clinic at State Hospital, Oke-Ogbo, assess the level of knowledge of gestation hypertension among women attending antenatal clinic. This study used a descriptive survey that employed quantitative methods. Simple random sampling technique was used to select 240 eligible respondents from State Hospital, Oke-Ogbo, Ile-Ife. An interviewer administered questionnaire was used to collect information. The data were analysed using Descriptive and Inferential Statistics.

The data were subjected to univariate, bivariate and multivariate analyses. The association between socio-demographic, socioeconomic, obstetric, lifestyle characteristic factors and hypertension in pregnancy was determined using chi square test. The risk factors associated with hypertension in pregnancy were identified using binary logistic regression analysis. The level of significance was determined at p-value less than 0.05. The results showed that 91.6% of the respondents are within age group 21-30 years, 85.8% are Yoruba. Respondents (59%) have heard of hypertension in pregnancy and respondents (85.8%) had health workers as the major source of information. Respondents (88%) reported irregular heartbeats as sign and symptoms, early morning headache (77.1%) and swollen legs (60.4%). The level of knowledge of hypertension in pregnancy among the respondents showed that 45.0% of them had good knowledge, and 24% had fair knowledge while 31% had poor knowledge. Majority of the pregnant women are aware and have good knowledge of hypertension in pregnancy. Unmarried (single mothers), ethnicity (non Yoruba's), primigravida and family history of hypertension were the risk factors significantly associated with hypertension in pregnancy.

**Keywords:** Prevalence • Determinant • Hypertension • Pregnancy • Antenatal

## Introduction

Hypertension is a severe public health issue that claims the lives of 9.4 million people each year around the world [1]. At least 45 percent of heart disease deaths and 51 percent of stroke deaths are caused by hypertension. The African region has the highest prevalence of hypertension, with 46 percent of those aged 25 and up suffering from it, while the American continent has the lowest frequency, with 35 percent (World Health Organisation, WHO, 2011). Hypertension is becoming more common in Nigeria [2]. Hypertension, often known as high or elevated Blood Pressure (BP), is a global public health problem. It is one of the most important public health challenges in both developed and developing countries. A systolic blood pressure of 140 mmHg or higher, and a diastolic blood pressure of 90 mmHg or higher, measured after a period of rest on two occasions, or a systolic blood weight of 160 mmHg and a diastolic blood weight of 110 mmHg

measured on one occasion in a person who is already hypertensive, are both considered hypertension. Hypertension In Pregnancy (HIP) is a major public health challenge around the globe [3]. With regard to the population and diagnostic criteria utilized, it is projected that 6-8 percent of pregnancies are complicated by hypertension. Hypertension is a multisystem disorder that can be fatal during pregnancy. Globally, it is responsible for maternal and perinatal mortality and morbidity. Pregnancy hypertension was found to be more frequent in the daughters of pre-eclamptic mothers. In a study on pre-eclampsia worsened by advanced maternal age conducted in Finland, it was discovered that increased maternal age is a factor for hypertension in pregnancy. A high Body Mass Index (BMI) is a strong predictor of pregnancy-related hypertension. According to a Ugandan study, women from low-income families have a higher prevalence of high blood pressure during pregnancy.

**\*Address to correspondence:** Olayinka Adeyosola Adijat, Department of Public Health Adeleke University, Ede, Osun State, Nigeria **Email:** [ludveyux2@gmail.com](mailto:ludveyux2@gmail.com)

**Copyright:** © 2021 Hoffman GS. This is an open-access article distributed under the terms of the creative commons attribution license which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

**Received:** 09 December, 2021; **Accepted:** 23 December, 2021; **Published:** 30 December, 2021

In addition, a large cohort research found that low socioeconomic position is a barrier to prenatal treatment and contributes to a higher rate of hypertension during pregnancy [4]. According to a recent study, hypertension is more common in pregnant women in Africa, with roughly 15% in Harare, Zimbabwe, and 17% in Nigeria. Nigeria has one of the world's highest maternal mortality rates, with hypertension accounting for 24.8 percent of all pregnancies. Maternal mortality rates in Nigeria are twice as high in rural areas as they are in urban areas. According to a study conducted in a Nigerian teaching medical institution on hypertension condition in pregnancy among pregnant women, the incidence of hypertension disorder in pregnancy was 17 percent, which was higher than in developed nations, for example, the United States and the United Kingdom, where the rates were 3 percent and 1 percent, respectively [5]. The continuation of Severe Preeclampsia And Eclampsia (SPEE) is a common obstetric complication in Ile-Ife, Nigeria, and has been linked to nearly a third of maternal mortality in developing nations. However this study seeks to assess the level of knowledge of gestation hypertension among women attending antenatal clinic at State Hospital, Oke-Ogbo, Ile-Ife, Osun State, Nigeria [6].

## Literature Review

### Hypertension

Hypertension, often identified as high or increased Blood Pressure (BP), is a major public health issue around the world. High blood pressure is a long-lasting medical disease in which the blood pressure in the arteries is too high. When blood vessel pressure is high, the heart must work harder to pump blood, which causes it to overwork. It is dubbed the "silent killer" since it lacks obvious symptoms [7].

### Causes of hypertension

The etiology of elevated blood pressure in most patients is unknown. Primary hypertension and essential hypertension are two different categories of hypertension. Over 90% of patients with high blood pressure suffer from primary hypertension [8]. Secondary hypertension, on the other hand, affects fewer than 10% of persons with high blood pressure. (World Health Organization, 2013). Secondary hypertension can be caused by chronic kidney illness, adrenal gland tumors, thyroid disease, congenital blood vessel abnormalities, persistent alcohol use, obstructive sleep apnea, and other medical issues.

### Sign and symptoms of hypertension

Hypertension is dubbed the "silent killer" since it usually lacks noticeable signs and symptoms, despite a dangerously high blood pressure in most persons. Some people, on the other hand, may experience more frequent signs and symptoms for instance, dull headaches, vomiting, nosebleeds than usual. These symptoms normally do not arise till blood pressure has risen to dangerously high levels [9].

### Risk factors

Modifiable risk factors and non-modifiable risk factors are the two types of risk factors. Obesity, sedentary lifestyle (lack of physical activity), tobacco use, unhealthy eating regimen (heavy in salt), excessive alcohol use, stress, and other modifiable risk factors comprise age, family history, and race.

### Complications of hypertension

Hypertension is among the chief causes of death worldwide, following the World Health Organization. Hypertension is thought to be responsible for 7.5 million fatalities, or 12.8 percent of all deaths (WHO, 2015). Hypertension causes excessive high pressure on the arterial wall, which can affect blood vessel and organ function. Hypertension can lead to a variety of problems, including cardiac arrest, cerebrovascular illness, chronic heart failure, hypertension retinopathy, and renal disease if it is not well managed. Hypertension affects over 70% of people who have a heart attack. Furthermore, hypertension is responsible for around 80% of stroke cases.

### Treatment of hypertension

The aim of hypertension treatment is to minimize a patient's lasting overall risk of cardiovascular disease and death. This includes addressing all modifiable risk factors, as well as the care of concomitant clinical illnesses such congestive heart failure and diabetes mellitus, and achieving blood pressure levels of  $\leq 130/90$  mmHg. Hypertension treatment has been linked to a decrease in cardiovascular problems. This includes a 35 percent -40 percent reduction in stroke incidence, a 20% -25 percent drop in myocardial infarction, and a 50% drop in coronary heart failure (ESH, 2003). There are two basic ways for achieving therapy objectives. These include dietary changes as well as pharmacological treatment. The management of hypertension necessitates a change in lifestyle. Lifestyle modification refers to hypertension people adopting healthy lifestyles that lower blood pressure, improve antihypertensive medicine efficacy, and lower cardiovascular risk [10].

## Research Methodology

This study was carried out on pregnant women attending antenatal clinic at State Hospital Oke-Ogbo, Ile-Ife, Ife East. Ife East is a Local government in Osun State with its headquarters in the town of Oke-Ogbo. The target population for this study were all pregnant women attending antenatal clinic in State Hospital Oke-Ogbo, Ile-Ife. This study adopted descriptive cross sectional survey which employed a quantitative survey technique. The study population was pregnant women attending antenatal clinic at State Hospital Oke-Ogbo, Ile-Ife. Pregnant women (aged 15-49 years) who were in the second and third trimesters attending antenatal clinic at State Hospital Oke-Ogbo, Ile-Ife. The pregnant women in the second and third trimester with comorbidity, such as diabetes mellitus, thyroid diseases, heart failure were excluded. The sample size was determined using Fischer's formula (population size  $< 10,000$ )

$$N = Z^2pq$$

$$d^2$$

Z = Standard normal deviate corresponding to confidence level; at 95% confidence level (1.96 for a two tailed test).

P = 17% Prevalence rate of hypertension in pregnancy in Sokoto (Singh et al., 2014)

q = 1.0–p

d = degree of accuracy required (0.05)

n =  $1.962 \times 0.17 (1 - 0.17)$

0.052

n = 0.5420

0.0025

N = 217

Simple random sampling technique was used. The register of the pregnant women for the two clinic days was retrieved. Twenty eligible subjects on each clinic day were selected from the list of newly registered pregnant women. An interviewer administered semi-structured questionnaire to collect information in this study<sup>1</sup>. Data was collected using pretested semi-structured questionnaire administered by the researcher and nurses who are staff of State Hospital Oke-Ogbo, Ile-Ife. Weight, height, blood pressure and protein in the urine were retrieved from the records of the routine procedure by the nurses at each clinic day. Data was collected for a period of six weeks. Data analysis was done using Statistical Package for Social Sciences (SPSS 20.0 version) Univariate analysis was employed.

## Results

### Socio-demographic and economic characteristics of respondents

Variables	Frequency (n)	Percentage (%)
<b>Age (Years)</b>		
<20	22	9.2
20-35	144	60
>35	74	30.8
Mean ± SD	24.34 ± 3.21	-
<b>Marital status</b>		
Married	193	80.4
Others (separated, widowed)	39	16.3
Single	8	3.3
<b>Married type</b>		
Monogamy	142	59.2
Polygamy	98	40.8
<b>Level of education</b>		
No formal education	24	10
Primary	41	17.1
Secondary	67	27.9

Tertiary	108	5
<b>Occupation status</b>		
Unskilled	38	5.8
Skilled	100	41.7
Professional	2	42.5
<b>Husband's occupation status</b>		
Unskilled	42	17.5
Skilled	51	21.3
Professional	147	61.3
<b>Religion</b>		
Christianity	130	54.2
Islam	108	45
Others	2	0.8
<b>Ethnicity</b>		
Yoruba	206	85.8
Igbo	28	11.7
Hausa	2	0.8
Others (Igbala, Nupe)	4	0.7

**Table 1:** Socio-demographic and economic characteristics of respondents.

Table 4.1 shows the socio-demographic and economic characteristics of the respondents. The mean age of respondents was  $24.34 \pm 3.21$ . 60% of the respondents are within age 21-35 years and 9.2% are below 20 years. Forty percent of the respondents had post-secondary education, 27.9% had secondary education and 10% had no education.

Forty two percent of respondents are professionals and 15.8% are unskilled [12]. Sixty one percent of the respondents' husband are professional, 17.5% are unskilled. Fifty four percent are Christians and 85% are Yorubas.

### Awareness of hypertension in pregnancy among respondents

Table 4.2 shows awareness of hypertension in pregnancy among pregnant women. Fifty nine percent had heard of hypertension in pregnancy, of which, 85.8% heard of it from health workers, 12.7% from patients with history of hypertension in pregnancy and 1.4% heard from Radio/TV.

Awareness	Frequency (n)	percentage (%)
Ever heard of hypertension in pregnancy? (n=240)		
Yes	142	59.2
No	98	40.8

**Source of information (n= 142)**

Health workers	122	85.8
Radio/TV	2	1.4

**Table 2:** Awareness of hypertension in pregnancy among respondents.

## Discussion of Result

### Awareness of hypertension in pregnancy

More than over half of those polled said they were aware of hypertension during pregnancy. This was in agreement with findings from a study conducted in Yemetu, Ibadan North Local Government Area, Nigeria by [13]. Which reported that 58.6% of the respondents were aware of hypertension in pregnancy. This finding was also consistent with a report of a study conducted in Calabar, Cross River State, where 60.2% Pregnant women were aware of hypertension in pregnancy. The finding was higher than the 23.5% reported in Zimbabwe where majority of the pregnant women have low awareness of hypertension in pregnancy [15]. This high level of awareness might be due to regular attendance in the antenatal clinic. The majority of pregnant women received their information from health care providers. This was in line with a research evaluating pregnant women's awareness of hypertension during pregnancy, in which the participants acquired their information from health care providers [14].

### Knowledge of hypertension in pregnancy

This study showed that majority of the respondents have knowledge of the signs and symptoms of hypertension in pregnancy. In this study, most of the respondents reported irregular heartbeat, early morning headaches and swollen legs as signs and symptoms of hypertension in pregnancy. This was in agreement with the study of conducted in Ibadan, Southwest Nigeria, which stated that most of the respondents are knowledgeable about irregular heartbeats and early morning headaches as signs and symptoms of hypertension in pregnancy [15,16]. This was also in agreement with the findings of a study conducted in Akure, Southwest Nigeria, which reported that 63% of respondents had knowledge of early morning headaches while 65% of respondents had knowledge of swollen legs as signs and symptoms of hypertension in pregnancy [17]. This was also similar to the findings of a study conducted in the United States which reported 83% of respondents had knowledge of irregular heartbeat and early morning headaches (79%) as signs and symptoms of hypertension in pregnancy [18]. Majority of the respondents knew about the risk factors associated with hypertension in pregnancy such as age (above 35 years), teenage pregnancy, family history and previous history of hypertension in pregnancy. This was similar to a study conducted in Ibadan, Southwest Nigeria, by Okhae and Arulogun which reported that about 55% of the respondents knew that age, family history and previous history of hypertension in pregnancy are risk factors of hypertension in pregnancy [19]. This was also in agreement with the study carried out in Limpopo, South Africa by which reported that most respondents had knowledge of age, teenage pregnancy, family history and previous history of hypertension in pregnancy as risk factors associated with hypertension in pregnancy [20].

### Knowledge of signs and symptoms of hypertension in pregnancy

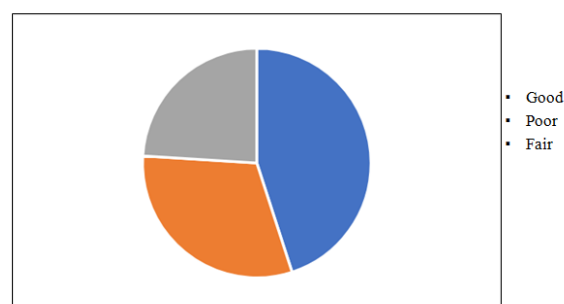
The understanding of signs and symptoms of hypertension in pregnancy is shown in Table 4.3. Irregular heartbeats was the most commonly reported sign and symptom (88 percent). Early morning headache (77%), was followed by nose bleeding (71%), and swollen legs (60.4%), with muscular tremor coming in last (24.1 percent) [21].

Variable	Frequency (n)	Percentage (%)
<b>Sign and Symptoms</b>		
Irregular heartbeats	211	88
Early Morning headache	185	77.1
Swollen legs	145	60.4
Chest pain	132	55
Nose bleeding	100	71.7
Tiredness	67	27.9
Muscle tremor	58	24.1
Vomiting	54	22.5

**Table 4:** Knowledge of risk factors of hypertension in pregnancy among pregnant women.

### Knowledge of risk factors of hypertension

Table 4.4 shows knowledge of respondents on risk factors of hypertension in pregnancy [22]. Eighty five percent reported that teenage pregnancy could put a woman at risk of hypertension in pregnancy, then women aged 35years and above (80.4%), while previous history of high blood pressure (71.3%). Family history of hypertension (69.2%), primigravida (67.1%), gravid multiparity (55.4%) and multifetal gestation (10.0%) [23]. The knowledge was further categorised into good, fair and poor based on the scores. Forty five percent had good knowledge, 24. 0% had fair knowledge and 31% had poor knowledge of hypertension in pregnancy as shown in Figure 4.1.



**Figure 1:** Level of Knowledge of hypertension in pregnancy among respondents.

### Limitation of the Study

The limitation of the study might have arisen from response and recall biases as information from respondents was based on self-



report. The responses were reported as provided with no proof of verification. Self-reported information may reflect a desirability of responses rather than actual practices and may create bias. Response to questions related to events in the past (such as previous history of hypertension, ever smoke cigarette, for example) may be subjected to recall bias.

## Conclusion

The research concludes that more than half of the respondents are aware of hypertension in pregnancy. It equally concludes that most of the pregnant women are knowledgeable about the signs and symptoms of hypertension in pregnancy, as irregular heartbeat and early morning headaches, while about half of them reported swollen legs and chest pain as sign and symptoms related to hypertension in pregnancy. Majority of the pregnant women got their information from health workers.

## Recommendations

- Early delivery is indicated for women who have severe pre-eclampsia at term.
- Expectant care is indicated in women with severe pre-eclampsia who have a viable fetus before 34 weeks of pregnancy, provided that uncontrolled maternal hypertension, increasing maternal organ failure, or fetal distress are not present and can be monitored.
- Limiting dietary salt consumption during pregnancy is not recommended in order to avoid the development of pre-eclampsia and its complications.
- Regular moderate exercise, quitting smoking, and other healthy lifestyle choices are encouraged.
- Prenatal check-ups should be scheduled on a regular basis (blood pressure).
- Pregnant women should not only be educated about the symptoms of gestational hypertension, but they should also be encouraged to take preventive measures.
- Early caesarean section counselling should be prioritized for women with hypertensive disorders during pregnancy.
- Female children's education should be encouraged.
- Early marriage and teenage childbearing are discouraged, especially in Nigeria's northern regions.

## Conclusion

For patients with cryoglobulinemic inflammation, we have a tendency to take into account treatment of the underlying disorder (if present) to be first-line medical aid. For hepatitis C virus (HCV)-associated cryoglobulinemic inflammation, antiviral medical aid directed at HCV ought to be thought of as first-line treatment for patients WHO square measure candidates. Interferon-free direct-acting antiviral regimens are shown to be terribly effective within the treatment of chronic HCV infection and preliminary results of the employment of those regimens square measure promising for the treatment of HCV-associated cryoglobulinemic inflammation. shut collaboration with a doctor or hepatologist is required, given the quality in selecting from the assorted treatment choices. Patients with

severe life- or organ-threatening manifestations of cryoglobulinemic inflammation could profit by treatment with rituximab additionally and doubtless before the initiation of antiviral medical aid. we have a tendency to additionally advocate treatment with rituximab in patients WHO have a reason to or WHO have failing antivirals. pheresis, in conjunction with the immunological disorder, may be used as connected medical aid to antiviral and/or rituximab medical aid for patients with severe organ- or critical unwellness. Cyclophosphamide use is best reserved for patients with severe unwellness WHO square measure unable to be treated with antiviral or rituximab medical aid. The role of endocrine use remains poorly outlined, with some studies supporting moderate or high-dose glucocorticoid use to treat active unwellness.

## References

1. Akinkugbe, OO. "Non-Communicable Diseases, the Next Epidemic: Nigerians' Preparedness." *Nig J Clin Pract* (2000): 17-42.
2. Abdullahi, Ali Arazeem, and Amzat Jimoh. "Knowledge of Hypertension among the Staff Of University of Ibadan, Nigeria." *J Public Health epidemiol* 3 (2011): 204-209.
3. Chobanian, AV, GL Bakris, HR Black, and Cushman WC, et al. National Heart, Lung and Blood Institute Joint National Committee on prevention,detection, valuation and treatment of high blood pressure education program Coordinating committee. *J Am Med Assoc*, 289 (2003): 2560 – 2572.
4. Colbern, Gail T, Chiang Mimi H, and Main Elliott K. "Expression of the Non classic Histocompatibility Antigen HLA-G by Preeclamptic Placenta." *Ame J obstet Gynecol* 170 (1994): 1244-1250.
5. Conde-Agudelo, Agustin, and Belizán José M. "Risk Factors for Pre-Eclampsia in a Large Cohort of Latin American and Caribbean Women." *BJOG*. 107 (2000): 75-83.
6. Craici, Iasmina, Wagner Steven, and Garovic Vesna D. "Preeclampsia and future cardiovascular risk: formal risk factor or failed stress test?." *TACA 2* (2008): 249-259.
7. Fadare, RI, OA Akpor, and OB Oziegbe. "Knowledge and Attitude of Pregnant Women towards Management of Pregnancy-Induced Hypertension in Southwest Nigeria." *J Adv Med Pharm sci* (2016): 1-10.
8. Haelterman, Edwige, Qvist Rikke, Barlow Patricia, and Alexander Sophie, et al. "Social Deprivation and Poor Access to Care as Risk Factors for Severe Pre-Eclampsia." *European . Eur J Obstet Gynecol Reprod* 111 (2003): 25-32.
9. Heidenreich, Paul A, G Trogon Justin, Khavjou Olga A, and Butler Javed, et al. "Forecasting the future of cardiovascular disease in the United States: A policy statement from the American Heart Association." *Circulation* 123 (2011): 933-944.
10. Jim, Belinda, Sharma Shuchita, Kebede Tewabe, and Acharya Anjali, et al. "Hypertension in pregnancy: a comprehensive update." *Cardiol Rev* 18 (2010): 178-189.
11. Lamminpää, Reeta, Vehviläinen-Julkunen Katri, Gissler Mika, and Heinonen Seppo, et al. "Preeclampsia complicated by advanced maternal age: a registry-based study on primiparous women in Finland 1997–2008." *BMC pregnancy and childbirth* 12 (2012): 1-5.
12. Makinde, ON, Adegoke OA, Adediran IA, and Ndububa DA, et al. "HELLP syndrome: the experience at Ile-Ife, Nigeria." *J Obstetrics Gynaecol* 29 (2009): 195-199.
13. Maputle, S, Khoza L, and Lebesse R. "Knowledge towards Pregnancy-Induced Hypertension among Pregnant Women in Vhembe District, Limpopo Province." *J Human Ecol* 51 (2015): 47-54.
14. Marshall, J Iain, Wolfe,Charles DA and McKeivitt Christopher. "Lay Perspectives on Hypertension and Drug Adherence: Systematic Review of Qualitative Research." *BMJ* 345 (2012).

15. Mayo, (2015). clinic: high blood pressure (HTN) [Internet]. Mayo Foundation for Medical Education and Research; c2001-2015. [updated 2014 Sept 5, cited 2018 March 15];
16. McClure, M Elizabeth, Saleem Sarah, and Pasha Omrana, et al. "Stillbirth in developing countries: a review of causes, risk factors and prevention strategies." *J Matern Fetal Neonatal Med* 22 (2009): 183-190.
17. Mütze, Sabine, Rudnik-Schöneborn Sabine, Zerres Klaus, and Werner Rath, et al. "Genes and the preeclampsia syndrome." *J Perinat Med* (2008): 38-58.
18. Okhae, Kelly Relobhegbe, and Sola Arulogun Oyedunni. "Knowledge of Pre-Eclampsia among Pregnant Women Attending Adeoyo Maternity Hospital, Yemetu Ibadan North Local Government Area, Nigeria." *Int J Science Res* 6, (2017): 559-564.
19. Sibai, Baha M. "Diagnosis and management of gestational hypertension and preeclampsia." *Obstetrics Gynecol* 102 (2003): 181-192.
20. Singh, Swati, Ekele Bissallah Ahmed, Egondou Shehu Constance, and Nwobodo Emmanuel Ikechukwu, et al. "Hypertensive disorders in pregnancy among pregnant women in a Nigerian Teaching Hospital." *Niger Med J* 55 (2014): 384.
21. Fatemeh, Tavassoli, Marziyeh Ghasemi, Nayereh Ghomian, and Anahita Ghorbani, et al. "Maternal and Perinatal Outcome in Nulliparous Women Complicated with Pregnancy Hypertension." *JPMA. J Pakistan Med Ass* 60 (2010): 707.
22. World Health Organization. (2015). *Global Status Report on Non-Communicable Disease 2010* Geneva, Switzerland: World Health Organization
23. Whitney B You, Wolf Michael, Cooper Bailey Stacy, and Pandit Anjali U, et al. "Factors associated with patient understanding of preeclampsia." *Hypertension pregnancy* 31(2012): 341-349.

**How to cite this article:** Adeyosola Adijat,Olayinka,Elizabeth Folakemi Alib,andJames E Atolagbe. "Prevalence and Determinants of Hypertension in Pregnancy among Women Attending Antenatal Clinic in Ile-Ife, Osun State, Nigeria." *Int J Pub Health Safety*6 (2021) : 255