KNOWLEDGE OF HYPERTENSION IN PREGNANCY AS A CAUSE OF MATERNAL MORTALITY AMONG PREGNANT MOTHERS IN OWERRI SENATORIAL ZONE OF IMO STATE, NIGERIA.

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Abstract

The study was conducted to ascertain knowledge of hypertension among pregnant women in Owerri senatorial zone of Imo state, Nigeria. Three specific objectives were formulated with three corresponding research questions. The only null-hypothesis was also postulated to guide the study. Descriptive survey research design was used for the study and the sample consisted of 432 pregnant women. Questionnaire was the instrument for data collection. Percentages and ANOVA were used to analyze the data. The results of the study showed that pregnant women had high level of knowledge of the concept and risk factors of hypertension. There was significant difference in the level of knowledge of hypertension among pregnant women according to level of education. The study therefore recommends that government and voluntary health agencies should sponsor intensive enlightenment campaign through print and electronic media in order to sustain the knowledge level of pregnant women regarding hypertension.

Key words: Knowledge, Hypertension, Maternal mortality, Pregnant women and Risk factors.

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Introduction

Hypertension is the most common medical problem encountered in pregnancy and remains the leading cause of maternal mortality (Roccella, 2000). It increases hardening of the arteries, thus predisposing individuals to heart diseases, peripheral vascular diseases, stroke, heart failure and kidney failure. Castelli (2004) explained that its prevalence is on the increase in developing countries where adoption of western lifestyle and stress of urbanization, both of which are expected to increase morbidity associated with unhealthy lifestyle are not on the decline. Ejike, Ezeanyika and Ugwu (2010), stated that hypertension causes one in every eight deaths worldwide, making it the third leading killer disease in the world. They also estimated that about one billion adults, the world over, had hypertension in the year 2010 and the number is expected to rise to 1.56 billion in the year 2025.

In sub-Saharan Africa, it is the most rapidly rising cardiovascular disease and affecting over 20 million people (Kadiri, 2005). He also maintained that in Nigeria, hypertension is the commonest non-communicable disease with over 4.3 million Nigerians above the age of fifteen years classified as being hypertensive.

Hypertension is the persistent raised levels of blood pressure in which the systolic pressure is above 140 mmHg and diastolic pressure above 90 mmHg (Hyman & Parlik 2003). The normal blood pressure is below 120/80 mmHg; blood pressure between 120/80 and 139/89 is called 'Pre-hypertension, and a pressure of 140/90 or above is considered high (abnormal) blood pressure. According to Expert Committee on Non-Communicable Diseases (1993), blood pressure of 120/80 mmHg is considered normal for a 30 year old person, while blood pressure of 140 mmHg is considered high for such a person. Similarly, blood pressure of 150/90 mmHg is considered normal for a 60-year old person, while blood pressure of 160/100 mmHg is high for such a person. Hypertension is sometimes called "the silent killer" because people who have it are often symptom-free. In this study, hypertension is perceived as a systolic blood pressure greater than 140 mmHg and a diastolic blood pressure greater than 90 mmHg among adults. The top number which is the systolic pressure corresponds to the pressure in the arteries as the heart contracts and pumps blood forward into the arteries. The bottom number which is the diastolic pressure represents the pressure in the arteries as the heart relaxes after contraction. The diastolic pressure reflects the lowest pressure to which the arteries are exposed. Blood pressure is normally measured at the brachial artery with a sphygmomanometer (pressure cuff) in millimeters of mercury (mmHg) and given as systolic over diastolic pressure.

Hypertension is classified into primary and secondary hypertension (Stanler, 2004). Primary hypertension has an unknown cause and accounts for ninety per cent to ninety five per cent of all hypertension cases (Chris, 2009). This type of hypertension is strongly associated with lifestyle. Usually, the patients do not have many signs and symptoms but may experience frequent headache, tiredness, dizziness or nose bleeds. Although the cause is not known, obesity, smoking, alcohol, diet and heredity play a role in essential or primary hypertension.

Secondary hypertension has a known cause and accounts for five per cent to ten per cent of all hypertension cases. Chris (2009) maintained that the most common cause of secondary hypertension is an abnormality in the arteries supplying blood to the kidneys. Other causes include airway obstruction during sleep, stress, diseases and tumors of the adrenal glands, lifestyle, spinal cord injury, hormone abnormalities (oral contraceptive estrogen replacement), thyroid disease, toxemia of pregnancy, renal problems such as vascular lesion of renal arteries, diabetic neuropathy, pains as well as anxiety and hypoglycemia. There are some factors which predispose adults to hypertension.

Jones, Dumber and Jirovec (2003) identified several factors which predispose individuals to hypertension. Such factors are genetic factors, age, obesity, excess salt intake, cigarette smoking, environmental stress, oral contraceptives, sedentary lifestyle, elevated levels of plasma lipids and unregulated secretion of aldosterone. There are risk factors that can be modified and those that can not be modified. Modifiable (behavioral) risk factors are those that can be changed or modified by intervention, thereby reducing the probability of hypertension disease. Modifiable risk factors for hypertension include overweight or obesity, physical inactivity, excessive alcohol consumption, tobacco and cigarette smoking, elevated levels of plasma lipids particularly cholesterol, high salt intake, stress and contraceptive pills (Forman, Meir & Curhan 2009; Org, Cheung, Man, Lau & Lam, 2007; Erhum, Olayiwola, Agbani & Omtoso, 2005; Burt, Cutler & Higgins, 2004; Castelli, 2004; Chhabra, Lal & Sharma, 2002). The non-modifiable risk factors of hypertension which cannot be controlled and changed are genetic predisposition, age and gender (Thatch & Schutz, 2004; Gaudemaris, Lang, Chaltellier, Larabi, Lauwers, Maitre & Diene, 2002; Rahman, Douglas & Wright, 2004).

Hypertensive disorder in pregnancy is a condition in which the pregnant woman presents an elevated blood pressure during pregnancy or puerperium and this is the cause of maternal death (Tebeu, Foumane, Mbu, Fosso, Biyaga & Fomulu, 2011). Kimbally, Barassoumbi, Buambo,Gombet, Kibeke and Monabeka (2007) defined hypertension in pregnancy as a condition presented with a

diastolic blood pressure of at least 90 mmHg or a systolic blood pressure of at least 140 mmHg. Hypertension in pregnancy includes eclampsia and pre-eclampsia during the second stage of pregnancy. In some cases, the condition remains mild throughout the pregnancy. In other words, it may become severe with a further rise in the blood pressure and increase in the amount of protein in the urine. In the most severe stage of this disease, convulsion develops (eclampsia). If the condition is not treated, the woman rapidly becomes unconscious and dies from heart failure, kidney failure or brain damage (Jatau, 1982). He further estimated that each year, as many as 600,000 women die from complications of pregnancy or childbirth. All but 2 per cent of these deaths occur in the developing world (Elizabeth & Gordon, 2004).

Mortality is the measure of relatively frequency in the occurrence of death within a defined population during a specific period of time (Obionu, 2006). It is the number of deaths in a given population annually (Park, 2009). Mortality that is related to women or mothers is termed maternal mortality. World Health Organization WHO (2007) conceptualized maternal mortality based on the revision of the International Classification of Disease (ICD) which defined maternal mortality as the death of a woman while pregnant or within 42 days of termination of pregnancy from any cause related to or aggravated by the pregnancy or its management but not from accident or incidental causes. Olorukoba (1992) conceptualized maternal mortality as the death of a woman from pregnancy related causes or child birth, and forty days after child birth. Maternal mortality in the context of this study is the death of a woman during pregnancy and child birth. WHO (2007) estimated a total of 536,000 maternal deaths worldwide in 2005 with developing countries accounting for 99 per cent or 533,000 of these deaths. They also noted that slightly more than half of the maternal deaths, 270,000 occurred in sub-Saharan Africa regions alone, followed by South Asia (188,000). United Nations Population Fund (2008) further estimated that 55,000 maternal deaths occur in Nigeria annually. Deaths of mothers during pregnancy can occur from a variety of causes. One of such causes is hypertension. The implication is that women must understand that the presence of hypertension during pregnancy can cause death. Hence, knowledge of hypertension in or during pregnancy is important.

There are many variables that may impinge on knowledge of hypertension. Literature shows that studies on knowledge of hypertension examined socio-demographic factors of age, race, level of education, parity, gender, income, location, occupation and marital status (Hamdan, Saeed, Kutbi, Choudhry & Nooh, 2010). However the

present study was concerned with demographic factor of level of education.

Level of education has been noted to be associated with knowledge of hypertension. According to Ali and Jimoh (2011) in a study on Knowledge of hypertension among the staff of university of Ibadan, Nigeria observed that level of education significantly influences awareness of complications and knowledge of risk factors of hypertension. The higher the educational attainment, the higher the acquisition of knowledge, attitude and behaviour, while the lower the level of education, the lower increase in knowing risk factors and preventive measures of hypertension. Similarly, the findings of Derakhshan, Shaihin, Fateme, Sabet and Hamid (2006) in a study to determine the knowledge of pregnancy induced hypertension in Iranian pregnant women and the effect of a simple educational interventional measure reported that the level of knowledge and attitude of pregnant women increased significantly after education.

Statement of the Problem

In Nigeria, many pregnant women lose their lives to hypertension. This is not an acceptable situation, considering the fact that hypertension is preventable and manageable to reduce its impact on the health and lives of people in Nigeria. However, some studies have been conducted on the knowledge of hypertension in many parts of the world including Nigeria. Incidentally, there are no studies, to the best knowledge of the researchers that seems to have been carried out in Owerri Senatorial Zone of Imo state to determine the level of knowledge of hypertension in pregnancy as a cause of maternal mortality among pregnant women. In view of the above, the need arose to determine if pregnant women in Owerri senatorial zone of Imo state have adequate knowledge of hypertension. This was the task of the present study.

Purpose of the Study

The purpose of the study was to determine the level of knowledge of hypertension in pregnancy as a cause of maternal mortality possessed by pregnant women in Owerri Senatorial Zone of Imo State. Specifically, the study was set to determine the level of knowledge of:

1. concept of hypertension possessed by pregnant women;
2. risk factors of hypertension possessed by pregnant women and
3. hypertension possessed by pregnant women according to level of education?

Research questions

The following research questions were posed to guide the study.

1. What is the level of knowledge of the concept of hypertension possessed by

pregnant women?

2. What is the level of knowledge of risk factors of hypertension possessed by pregnant women?
3. What is the level of knowledge of hypertension possessed by pregnant women accordingto level of education?

Hypothesis

1. There is no significant difference in the level of knowledge of hypertension possessed by pregnant women according to level of education.

Methods

The research design was a descriptive survey research design. The population for the study consisted of 8,640 pregnant women in Owerri senatorial of Imo state. A multi-stage sampling procedure was used to draw a sample of 432 adults in the senatorial zone. The sample was done in five stages. Stage one involved random selection of six local governments from the nine existing local governments in Owerri senatorial zone of Imo state. The second stage involved stratification of the local governments into urban and rural areas. The third stage involved simple random of balloting with replacement to select two autonomous communities giving a total of twelve autonomous communities. The forth stage involved purpose selection of two villages each from the twelve selected autonomous communities giving a total of twenty four villages. The last stage involved systematic selection of eighteen households each from the twenty four selected villages making a total of four hundred and thirty two households. One pregnant woman found in each household constituted the sample, and where there is no pregnant woman in a household, it was skipped. The instrument for data collection was the researchers' structured questionnaire on knowledge of hypertension questionnaire (KCRHQ). It had three sections. Section A was concerned with the bio-data of the respondents, section B consisted of six questions on the concept of hypertension while section C comprised of nine questions on risk factors of hypertension based on the objectives of the study. The instrument was validated by five experts from the department of Health and Physical education, University of Nigeria, Nsukka. The modification of the instrument was based on the judgment of the experts. Split-half method using Cronbach Alpha statistic was used to establish the internal consistency of the instrument. The validated instrument was administered by the researchers and three research assistants on face to face basis to the respondents. Data collected were analyzed using the Statistical Package for Social Science (SPSS) batch system The generated data were presented in tables using Ashur's (1977) modified version by Okafor's (1997) criteria for describing level of knowledge were utilized for answering the

research questions. According to the scale, a proportion of less than 40 per cent is considered "low level of knowledge; 41-59 per cent is "average knowledge; 60-80 per cent is "high" level of knowledge and above 80 per cent is considered "very high" level of knowledge. ANOVA statistic was used to test the only null hypothesis at .05 level of significance and appropriate degrees of freedom.

Results

Table 1

Level of knowledge of Pregnant Women Regarding the Concept of Hypertension - KCH (n = 408)

Dimensions	n	($\bar{x}$ %)	Decision
Knowledge of the Concept of Hypertension (KCH)	408	64.60	High

Data in Table 1 above show a mean score of 64.60 per cent which fell between 60-80 per cent. This implies that the level of knowledge of pregnant women regarding the concept of hypertension was high.

Table 2

Level of knowledge of Pregnant Women Regarding the Risk Factors of Hypertension - KRFH (n = 408)

Dimensions	N	($\bar{x}$ %)	Decision
Knowledge of Risk Factors of Hypertension (KRFH)	408	61.73	High

Table 2 shows a mean score of 61.73 per cent which fell between 60-80 per cent. This implies that the level of knowledge of pregnant women regarding the risk factors of hypertension was high.

Table 3

Level of knowledge of Pregnant Women Regarding Hypertension by Based on Level of Education (408)

		Level of Education							
		No formal Education (n=20)			Primary Education (n=32)			Secondary Education (n=102)			Tertiary/University Education (n=254)		
S/n	Dimensions	$\bar{X}$	%	Decision	$\bar{X}$	%	Decision	$\bar{X}$	%	Decision	$\bar{X}$	%	Decision
1.	KCH	48.50		Moderate	47.41		Moderate	60.48		High	69.69		High
2.	KRFH	53.90		Moderate	45.47		Moderate	56.49		Moderate	66.50		High

Key

*KCH = Knowledge of Hypertension

*KRFH = Knowledge of Risk Factors of Hypertension

Table 3 show that the mean score of pregnant women with tertiary education (= 69.69%) was slightly higher than those with secondary education (= 60.48%), without formal education (= 48.50%) and those with primary education (= 47.41%). This implies that pregnant women with tertiary/university and secondary education had high level of knowledge while pregnant women without formal education and primary education possessed moderate level of knowledge regarding the concept of hypertension.

Table 3 further shows that the mean score of pregnant women with tertiary education (= 66.50%) was higher than those with secondary education (= 56.49%), primary education (= 45.47%) and those with no formal education (= 53.90%). This implies that pregnant women with tertiary education possessed high level of knowledge while pregnant women with secondary education, primary education and those with no formal education had moderate level of knowledge regarding the risk factors of hypertension.

Table 4

Result of One-Way Analysis of Variance (ANOVA) Testing the Null Hypothesis of no Significant Difference in the Level of Knowledge of Hypertension according to Level of Education.

Dimensions of Hypertension	Sum Between Groups	Sum Within Groups	df	Mean Between Groups	Mean Within Groups	F	P-value
KCH	22963.450	202194.227	3	7654.483	500.481	15.294	.000*
KRFH	18267.584	205400.759	3	6089.195	508.418	11.977	.000*

*significant at .05 level.

Table 4 shows that the F-value for KCH (15.294, P = .000 < .005) and KRFH (F = 11.977, P = .000 < .05) are less than .05 level of significance and at 3 and 404 degrees of freedom. The null hypothesis of no significant difference was therefore rejected. This implies that pregnant women differed in their level of knowledge of various dimensions of hypertension according to their level of education. Scheffe's test was prepared to determine the specific educational dispositions of the adults that contributed to the observed differences as shown in Table 5.

Table 5

Scheffe's Post- Hoc Analysis of Group Mean Scores Based on Level of Education of Knowledge of Hypertension in Pregnancy as a Cause of Maternal Mortality

Dimensions of Hypertension	Level of Education (I)	Level of Education (J)	Mean Difference (I- J)	P-value
KCH	No formal Education	Primary education	1.094	.999
		Secondary education	-11.980	.189
		Tertiary/University Education	-21.193*	.001
	Primary education	No formal education	-1.094	.999
		Secondary education	-13.074*	.041
		Tertiary/University education	-22.287*	.000
	Secondary education	No formal education	11.980	.189
		Primary education	13.074*	.041
		Tertiary/University Education	-9.213*	.007
	Tertiary/University education	No formal education	-21.193*	.001
		Primary education	22.287*	.000
		Secondary education	9.213*	.007
KRFH	No formal education	Primary education	8.431	.633
		Secondary education	-2.590	.974
		Tertiary/University education	-12.600	.124
	Primary education	No formal education	-8.431	.633
		Secondary education	-11.021	.123
		Tertiary/University Education	-21.031*	.000
	Secondary education	No formal education	2.590	.974
		Primary education	11.021	.123
		Tertiary/University education	-10.010*	.003
	Tertiary/University education	No formal education	12.600	.124
		Primary education	21.031*	.000
		Secondary education	10.010*	.003

*The mean difference is significant at .05.

Table 5 presents the mean differences from the paired mean comparison of the four educational levels of pregnant women with regard to the level of KCH and KRFH. The table shows that all the levels of education with asterisks show significant difference since their p-values are less than .05 level of significance while those without asterisks primary education and no formal education (mean difference = 1.094, p-value = .999) and secondary and no formal education (mean difference = 11.980, p-value = .189) show there is no significant difference in the knowledge of pregnant women regarding the concept of hypertension.

The table further reveals that all the levels of education with asterisks show significant difference while primary and no formal education (mean difference = -8.431, p-value = .633), secondary and no formal education (mean difference = -2.590, p-value = .974), tertiary/university and no formal education (mean difference = -12.600, p-value = .124) and secondary and primary education (mean difference = -11.021, p-value = .123) without asterisks show there is no significant difference in the knowledge of pregnant women regarding risk factors of hypertension.

Discussion

Results in Tables 1 and 2 revealed that pregnant women in Owerri Senatorial Zone possessed high ($\overline{X}$ = 64.60%) level of knowledge regarding the concept of hypertension (KCH) and risk factors of hypertension ($\overline{X}$ = 61.73%). The finding was expected and therefore not surprising. This is because pregnant women might have been attending ante-natal services, seminars, workshops and conferences where hypertension is being discussed. Besides, pregnant women in Owerri senatorial zone might also be educated and their level of education can enhance their knowledge of health matters including hypertension. This finding is in consonance with the findings of Ali and Jimoh (2011) who reported in their study that some members of staff demonstrated a relatively high level of knowledge about the complications associated with hypertension but knowledge about the risk factors of hypertension and attitude towards the illness was still low.

Result in Table 3 showed that pregnant women with no formal education had moderate level of knowledge of hypertension while those with primary education possessed moderate level of knowledge of risk factors of hypertension (KRFH). Furthermore, pregnant women with secondary education possessed moderate level of knowledge of hypertension while those with tertiary/ university education possessed high level of knowledge of hypertension. This finding is, however, not surprising and expected. It is expected that pregnant women with university/

tertiary and secondary education should exhibit high level of knowledge while those with primary and no formal education should possess low level of knowledge of hypertension. This is because; experience has shown that educated pregnant women tend to avail themselves with health awareness programmes thereby exhibiting high knowledge. In addition, the information they have on ante-natal services, healthy lifestyles and health issues in school could help them embrace positive attitude towards hypertension. This finding is in consonance with the findings of Ali and Jimoh (2011) which reported that level of education significantly influenced awareness of complications and knowledge of risk factors of hypertension.

Result in Table 4 indicated that there was significant difference in the level of knowledge of hypertension according to level of education. This finding was anticipated and therefore, not a surprise. Educational level of any given group of individuals is expected to influence their knowledge of a given health concept or behaviour. This is because pregnant women with high educational attainments are expected to exhibit adequate and high knowledge of the concept and risk factors of hypertension. It is a well established fact that education stimulates and empowers an individual's intellectual capacity to understand concepts especially when such concepts are concretized. This finding is in consonance with that of Myo, Thaworn, Janthila, Nongluk, Suchart, Wilawan, Phatchanan, Puangpet, Nara, and Apiradee (2012) findings which reported that those with primary school education were likely to be aware of hypertension than those who did not have primary school education. Scheffe's test (Table 5) indicated that tertiary/university education had higher mean difference for knowledge of the concept and risk factors of hypertension according to level of education. This agrees with the findings of Ali and Jimoh (2011) which reported that level of education significantly influences awareness of complications and knowledge of risk factors of hypertension. Similarly, the findings of Derakhshan, Shaihin, Fateme, Sabet and Hamid (2006) reported that the level of knowledge and attitude of pregnant women increased significantly after education.

Conclusions

From the findings of the study, the following conclusions were drawn;

1. Pregnant women had high level of knowledge regarding the concept of hypertension (KCH).
2. Pregnant women had high level of knowledge regarding risk factors of hypertension (KRFH).
3. Pregnant women with no formal education had moderate level of knowledge in the concept and risk factors of hypertension while those with

primary education possessed moderate level of knowledge for KCH and KRFH. Furthermore, pregnant women with secondary education possessed moderate level of knowledge of the concept and risk factors of hypertension while those with tertiary/university education possessed high level of knowledge in the concept and risk factors of hypertension. There was significant difference in the level of knowledge of the concept and risk factors of hypertension among pregnant women according to level of education. Scheffe's test analysis revealed that pregnant women with tertiary/university education had higher significant difference in the level of knowledge of the concept and risk factors of hypertension among the levels of education.

Implications for Health Promotion

Health promotion which is the process of enabling people to increase control over their health should be emphasized and this will help in creating awareness regarding the importance of engaging in health promoting lifestyle practices during pregnancy. Health promotion measures and motivating strategies need to be utilized by pregnant women in order to sustain their level of knowledge regarding hypertension in pregnancy as a cause of maternal mortality. This implies that public health educators and other health professionals must be acquainted with relevant behaviour change techniques. Lifestyle modification should be used to enable pregnant women increase control over their health especially hypertension. The lifestyle changes are weight reduction and regular aerobic exercise, elimination of dietary sugar and reduction of sodium (salt) in the body by disuse of condiment sodium and the adoption of a high potassium diet which rids the body of excess sodium, reduction of stress, reduction in alcohol consumption, elimination of tobacco and cigarette smoking, and avoidance of foods high in plasma lipids particularly cholesterol.

Recommendations

Based on the findings, discussion and conclusions of the present study, the following recommendations were made:

1. Government and voluntary health agencies should sponsor intensive enlightenment campaign through print and electronic media in order to sustain the knowledge level of pregnant women on hypertension in pregnancy and its complications.
2. There should be campigns by public health educators, medical and paramedical staff towards sensitizing and enlightening pregnant women on the health effects of hypertension in pregnancy.

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