

Knowledge towards Pregnancy-induced Hypertension among Pregnant Women in Vhembe District, Limpopo Province

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ABSTRACT Hypertensive disorders of pregnancy remain the commonest direct cause of maternal mortality in South Africa. Information about Pregnancy-induced hypertension has not reached many pregnant women in South Africa. The 2005-2007 statistics shows that there were 628 reported maternal deaths due to Pregnancy-induced hypertension. Pregnancy-induced hypertension is particularly sinister in its early stages as a woman may be totally unaware of its presence. The purpose of this study was to assess the knowledge of pregnant women towards Pregnancy-induced hypertension in Vhembe district, Limpopo province. A qualitative, exploratory approach was used. Population comprised of pregnant women who were residing at one village in Vhembe district. Non-probability, purposive and snowball sampling method was used to sample ten pregnant women. Data was collected through semi-structured in-depth interviews. Trustworthiness was ensured by considering the criteria of credibility, dependability, applicability and transferability. Data was analysed qualitatively through open coding method. The results revealed knowledge deficit about Pregnancy-induced hypertension symptoms, prevention of complications and about the impact of Pregnancy-induced hypertension on the unborn baby. Health care providers should implement the focused health education programs during antenatal visit.

INTRODUCTION

The fifth Goal of the United Nations' Millennium Development Goals for 2015 is to reduce the maternal mortality ratio (MMR) by three fourths (Simwaka et al. 2005). However, Pregnancy-induced hypertension (PIH) is a leading cause of maternal and perinatal mortality and can also lead to long-term health problems like chronic hypertension, kidney failure, or nervous system disorders (Singh and Srivastava 2015; Ashford 2002). In South Africa, Pregnancy induced hypertensive disorders are the most common medical complications of pregnancy in all the nine provinces and the incidence ranges between 70-80 percent (Department of Health 2007). Pregnancy induced hypertension (PIH) develops during pregnancy due to failure of trophoblast to completely invade and thereby destroying the spiral arteries by 20-24 weeks of pregnancy (Sellers 2010; Olusanya and Solanke 2012). Maternal deaths due to complications of hypertension occur in women less than 20 years when compared with the general pregnant population (Department of Health 2007; Khan et al. 2014). This is the major cause of maternal and perinatal mortality because most women are unaware of its presence while others have differ-

ent views on the physiological and pathological cause and others associate its signs with superstitions (Poon et al. 2010). Moodley and Molefe (2007); Rehana et al. (2006) pointed that hypertensive disorders of pregnancy (HDP) remain the commonest direct cause of maternal mortality in South Africa since 1998. Even in the United Kingdom, despite the fact that maternal deaths are rare, hypertensive deaths are the second commonest cause of maternal deaths after thrombo-embolism (Centre for Maternal and Child Enquiries 2011).

Pregnancy induce hypertension strikes mostly the primigravidae after 20th to 24 weeks of gestation and frequent occurrences are often seen at term (Pipkin and Roberts 2000). They further supported that preeclampsia is a condition that typically begins after the 20th week of pregnancy and may continue six weeks after delivery. The Guidelines of the Department of Health (2007) indicate classification of hypertensive disorders of pregnancy according to the time of onset, whether before or after 20 weeks of pregnancy and the presence or absence of proteinuria. The following hypertensive disorders were defined as:

- ♦ **Essential Hypertension:** Hypertension without proteinuria diagnosed before 20

weeks of pregnancy, or a history of essential hypertension prior to the pregnancy.

- ♦ **Chronic Renal Disease:** Hypertension with proteinuria, diagnosed before 20 weeks of pregnancy, or a history of chronic renal disease prior to the pregnancy
- ♦ **Gestational Hypertension:** Hypertension without proteinuria, detected after 20 weeks of pregnancy
- ♦ **Pre-eclampsia:** Hypertension with proteinuria, both detected for the first time after 20 weeks of pregnancy
- ♦ **Unclassified Hypertension:** Hypertension detected in a woman in whom the Blood Pressure was not measured before 20 weeks of pregnancy. This may be proteinuric or non-proteinuric.
- ♦ **Superimposed Pre-eclampsia:** Pre-eclampsia that develops in a woman with chronic hypertension or chronic renal disease (Department of Health 2007).

To diagnose hypertensive disorders during pregnancy the following will be detected; a blood pressure (BP) of 140/90 mmHg or more, on 2 occasions at least 2-4 hours apart and the presence of 1+ proteinuria or more on reagent strip (dipstick) testing on clean catch urine specimens taken at least 4 hours apart and persisting through pregnancy, or: Protein excretion ≥ 300 mg in a 24 hour specimen of urine (Männistö et al. 2013; Department of Health 2007). The other signs and symptoms include edema, severe headache, blurry vision and excessive nausea and vomiting (Sellers 2010). PIH is a multiorgan disease affecting predominantly the circulatory system, renal system, central nervous system, coagulation and liver. A placental immunological or chemical defect causes a prostaglandin imbalance, which affects the endothelium (lining) of blood vessels resulting in spasm of blood vessels, platelet aggregation and leakage of plasma from capillaries (Solomon and Seely 2006). Women who are at risk of developing PIH includes, those who had high blood pressure before becoming pregnant, developed high blood pressure or preeclampsia in a previous pregnancy, obese prior to pregnancy, under age 20 or over age 40, pregnant with more than one baby and those who have diabetes, kidney disease, rheumatoid arthritis, lupus or scleroderma (Solomon and Seely 2006; Rahimi et al. 2013). Pregnancy induced hypertension can lead to severe maternal and fetal complications like placental

abruption when the placenta pull away from the wall of the uterus causing maternal and fetal distress, temporary kidney failure, liver problems, pulmonary edema and intracerebral hemorrhage. The woman might end up having preterm baby, a still born or a baby who is having intra-uterine growth retardation (Buchmann et al. 2007).

Complications of hypertension in pregnancy remain the most common direct cause of maternal deaths (Männistö et al. 2013). There has been a 13.7 percent reduction in deaths due to complications of hypertension (Department of Health 2007). It is further indicated that this is unlikely to be due to problems with classification and may be the first real sign that the recommendations on managing hypertension in pregnancy are being adhered to Department of Health (2007) in the Saving Mothers report. PIH constitutes 14 percent of maternal mortality in developing countries because in its early stage a woman may totally be unaware of its presence (Solomon and Seely 2006). Screening for hypertension is simple and inexpensive. There are limited effective methods for prevention of PIH; however, health education during antenatal clinic attendance can play a very important role. Lack of attendance at antenatal clinics continues to be a common patient related avoidable factor and health messages must continue to stress the need to attend antenatal clinic early in pregnancy. This important fact should always be remembered when pregnant women are provided with information and education during visits for antenatal care, labour or in the puerperium. This important information should also be given to communities and relatives of pregnant women. Early detection and timely intervention is essential to prevent maternal and perinatal complications.

Pregnant women of this village in Vhembe district displayed knowledge deficit towards PIH. Calder and Dunlop (2006) supported when stating that women's knowledge about pregnancy-induced hypertension is often substantial even before medical intervention because of their regular attendance at the antenatal clinic. According to these authors PIH can be diagnosed in women who are normotensive in their first two weeks of pregnancy. The results of the study by Calder and Dunlop (2006) showed that 82 percent of the pregnant women had a formal lecture on PIH which influenced their knowledge on the condition, 60 percent had their first lecture on pregnancy induced at the hospital, 10 percent

had it at village gatherings and 12 percent had at the market place whereas 18 percent did not receive any lecture on PIH. The results of the study by James et al. (2009), on pregnant women attitude and beliefs about PIH indicate that 80 percent of women visit the hospital when they notice that their legs are swollen and 60 percent believed that swollen legs has to do with juju, which is, superstition. Quixley and Cameron (2005) observed that PIH was becoming less as the general health of the population had improved; they attributed this to regular visits to hospitals by those affected. Calder and Dunlop (2006) had different version when pointing that PIH has traditionally been regarded as a disease of primigravidae.

The study by Derakhshan (2006) which was conducted before and after a special education programme to pregnant women, showed negative views before education was 57.5 percent and changed to 19.7 percent after education. Considering the low level of knowledge in more than 50 percent of the women before education, it is established that there is a necessity to have special education with relevant curriculum for those specific at-risk population on one hand and the health system workers on the other. Through health education of the at-risk population a high level of awareness of the condition will be achieved and will reduce related mortality and morbidity and contribute to the achievement of MDG 5. As documented in Saving Mothers' report (Department of Health 2007), South Africa is not making optimal progress towards meeting the Millennium Development Goals related to maternal and child health 1990 to 2015. The provision of good antenatal services ensures early detection of pregnancy induced diseases and the prompt management of such diseases, this also include hypertensive diseases. Recent evidence suggests that part of the problem that is not showing reductions in maternal mortality is as a result of inadequate knowledge, negative attitude and lack of preventive practice on the part of the pregnant women who have strong traditional beliefs (Olusanya and Solanke 2012). Beliefs and negative attitude may also be related to the issues of PIH. The purpose of the study was to assess the level of knowledge of pregnant women towards PIH in Vhembe District, Limpopo Province, South Africa. The following research question guided the study

“what knowledge do pregnant women have regarding PIH?”

METHODOLOGY

Research Design

A qualitative, explorative, and descriptive research design was used to explore and describe (Babbie and Mouton 2009) the knowledge of pregnant women towards PIH in Vhembe district.

Sampling

The population comprised all pregnant women who were residing at Shigalo village and attending the antenatal care at the local clinic (Babbie and Mouton 2009; Polit and Beck 2008; Weiman et al. 2005). A non-probability, purposive and snowball sampling method was used to sample ten participants. The number of participants was determined by data saturation of knowledge of 10 pregnant women towards PIH which was reached. The inclusion criteria, a woman should be pregnant with a blood pressure (BP) of 140/90 mmHg or more, on 2 occasions at least 2-4 hours apart and the presence of 1+ proteinuria or more on reagent strip (dipstick) testing on clean catch urine specimens taken at least 4 hours apart. The participant must agree to participate in the study.

Data Collection Methods

Permission to access the village and conduct the study was obtained from the Village Headman and ethical clearance from Ethics Committee of University of Venda. Participants were provided with sufficient and understandable information about participation in the study. The right to self-determination was ensured by obtaining and signing of informed consent forms by participants. Confidentiality and anonymity were ensured by protecting participants' identity, privacy, worth and dignity. No victimisation of participants who refused to participate in the research took place.

A rapport was developed with participants when visiting clinic to make appointment and when meeting participants for interview. Data were collected from 10 participants (Table 1) at their homes for not more than 45 minutes. A semi

structured in-depth interview session was used. Participants were interviewed using the local language, Tshivenda. The researchers used the following questions: “*What symptoms of and complications of PIH have you notice during this pregnancy, and what measures did you undertook to alleviate the symptoms of PIH?*” Probing as a communication strategy was used as a clarity seeking methods (Maree 2010; De Vos et al. 2010). Permission to use the tape recorder was obtained from all participants in order to capture the information (De Vos et al. 2010). Data was then translated into English afterwards by the language practitioner before data analysis.

The narrative data from interviews were analysed qualitatively using the open coding method as described by Cresswell (2009). All transcripts were read carefully to get a sense of the whole study. A list was made of all similar topics was compiled. Field notes were also coded and categorised. Data were then grouped according to main theme and sub-themes. To ensure trustworthiness, criteria as outlined in Lincoln and Guba (1985) were used. Credibility was ensured by prolonged engagement to increase rapport and clarify descriptions with participants through familiarity and participants were able to talk freely about more hidden and sensitive information (De Vos et al. 2010). Data triangulation was ensured by using different data collection methods, namely, in-depth individual interview, voice recorder and field note taking. Member checking was done to confirm and validate the findings through interviews and discussion with colleagues in order to discover the truth (De Vos et al. 2010; Babbie and Mouton 2009).

RESULTS AND DISCUSSION

Theme and sub-themes which reflect knowledge towards PIH that have emerged during data analysis of this study are summarised in Table 2.

The discussion will focus on themes and sub-themes as presented in Table 2.

Theme 1: Demonstration of Knowledge towards PIH

The paper shows that 60 percent primigravidae who were interviewed did not have knowledge about the condition, whereas most of the 20 percent of multiparous women displayed knowledge on the predisposing factors,

Table 1: Demographic data for participants (n 10)

	Categories	No. of participants	%
Age	< 18 years	2	20
	18 – 30 years	6	60
	>30 years	2	20
Educational Level	High school	5	50
	Primary school	2	20
	Tertiary	3	30
Occupation	Employed	3	30
	Unemployed	7	70
Parity	1 – 2	7	70
	3 – 4	3	30
Gestational Age	1 st trimester	1	10
	2 nd trimester	6	60
	3 rd trimester	3	30
Number of Antenatal Visits	1 – 2	2	20
	3 – 4	8	80
Diagnosed with PIH	Yes	10	100
	No	0	0

Table 2: Themes and sub-themes

Theme	Sub-themes
1. Demonstration of Knowledge towards PIH	1.1 Knowledge of signs and symptoms of PIH 1.2 Knowledge regarding prevention of PIH complications 1.3 Knowledge deficit about the impact of PIH on the unborn baby

signs and symptoms, complications and measures to control PIH, however, accurate knowledge about the physiological causes of PIH were not known.

One participant said “*I never had high blood and no one is having high blood at home, so I didn’t think I can have high blood.*” PIH is the major cause of maternal and perinatal mortality because most women are unaware of its presence while others have different views on the physiological and pathological cause and others associate its signs with superstitions (Poon et al. 2010). PIH strikes mostly the primigravidae after 20th to 24 weeks of gestation and frequent occurrences are often seen at term. Patients are clueless about the symptoms of PIH; they are also feeling that they are not ill; they don’t feel the changes unless the condition is becoming moderate to severe. In the study by James et al. (2009) it was revealed that multiparous women were aware of the condition whereas primigravidae did not have knowledge. This was fur-

ther supported by Calder and Dunlop (2006) results' on the knowledge of pregnant women about PIH, it was indicated that most of the pregnant women were aware about the potential risks of PIH because of their regular attendance at antenatal clinic.

Sub-theme 1.1: Knowledge of Signs and Symptoms of PIH

All participants were normotensive before pregnancy. Those who experienced signs of PIH only know about the following symptoms dizziness, swollen legs, headache and sweating. This was supported by the following quotes; *"I was at a Health Centre when I was told that my blood pressure is higher than expected, they gave me a letter and told me that I should go to the hospital to see the doctor, then when I got there I was admitted for a week then transferred to the tertiary hospital for further management, after a couple of days I was told that they will make me to deliver the baby (induce labour) because blood pressure was uncontrollable."*

The Department of Health (2007) and Sellers (2010) pointed that signs and symptoms of PIH include edema, severe headache, blurry vision and excessive nausea and vomiting. Some signs develop slowly whereas in some they develop in a sudden way without warning (Brown et al. 2013). Fraser et al. (2006) pointed that the oedema due to PIH pits on pressure and may be found in non-dependent anatomical areas such as the face, hands, lower abdomen, vulva and sacral areas. Primigravidae displayed knowledge deficit towards the signs and symptoms of PIH. The following quotations were cited *"Yaaa..... when I am pregnant, the baby presses some of the structures and this disturbs the return of blood, that's why I developed the swelling"*. The other participant said *"Swollen or big face is associated with that a person will deliver a male infant"*. This may contribute to limited health seeking behavior. The action that was taken by some women when having swollen legs included; *"I think this is normal; I visited the hospital"*, and no mention was made on traditional healers. During pregnancy, the body retains more water than normal in which gathers in the body tissues and muscles (Fraser et al. 2006). This is a normal physiological process and most women experience swelling on the face, neck, feet, hand and ankles. However, the

abnormal swelling of PIH will be noticed as the swelling of face and hands doesn't resolve within a day (Riaz et al. 2011). The normal occurrence is that oedema of the ankles is common in late pregnancy. PIH further cause oedema of the brain, hyperaemia and perivascular petechiae and Fraser et al. (2006) indicated that these changes may explain the cerebral symptoms of headache and visual disturbances.

Pregnant women further perceived weight gain as being normal during pregnancy. When asked about weight gain during pregnancy, response from participants were *"I thought is normal for one to gain weight when she is pregnant to show that the baby is growing"*. The other participant said *"Rapid weight gain perceived as the baby is growing well."* Weight gain during pregnancy comprises the products of conception (fetus, placenta, and amniotic fluid) and hypertrophy of several maternal tissues (uterus, breasts blood, fat stores and extracellular and extravascular fluid) (Fraser et al. 2006). The authors also indicated that an optimal weight gain for an average pregnancy is 12.5 kg, of which 9 kg is gained in the last 20 weeks of pregnancy. The fluid retention can further add up to 25 percent of pregnant woman's weight (Lindheimer et al. 2008). Women may lack accurate information on at which stage of pregnancy can they gain weight and consider that as normal. Fraser et al. (2006) pointed that normally 9 kg is gained in the last 20 weeks of pregnancy. When the woman gains weight rapidly before the 20th week of gestation that should be investigated. Whereas, within the rural communities, obesity is regarded to be normal when the woman is pregnant and this could be confused with edema. It is documented that obesity increases maternal risk of PIH gestational diabetes, thromboembolic disorders, and cesarean section; infants of obese mothers are at risk for macrosomia, birth trauma, and congenital anomalies (Xiong et al. 2002; Chawla and Anim-Nyame 2015). In this paper, women were not aware of the presence of protein in the urine and the implications thereof. One participant said *"at the clinic when we attend, they take the urine, but I don't know what they are checking because they never tell us anything."* During the clinic attendance the urine examined for the presence of protein. PIH causes vasospasm of the afferent arterioles and this result in decreased renal blood flow (Fraser et al. 2006; Männistö et al.

2013). When there's a decrease amount of urine to less than 500ml in 24 hours, this causes damage to the glomerular endothelial. When the glomerular endothelial is damaged, this allows plasma proteins in the form of albumin to filter into urine, hence protein in urine (Lindheimer et al. 2008).

Sub-theme 1.2: Knowledge Regarding Prevention of PIH Complications

Although, it is doubtful if PIH can be prevented, the incidence appears to be reduced if the pregnant woman restricts the weight gain to about 0.5 kg/week in the second half of pregnancy (Fraser and Cooper 2009). Midwives at the clinic also advise pregnant women who are at risk not to take salt to prevent fluid retention and pre-eclampsia. This was confirmed by one participant who said *"I was told that I should avoid excess intake of salt, get enough rest and to avoid stress can help in the control of high blood pressure during pregnancy"*. However, in the systematic review that studied sodium restriction (603 women) found no significant benefit by dietary salt restriction (Duley et al. 2005). The other participant said *"The sister told me to attend the clinic regularly and to lose weight."* Early booking and regular antenatal care attendance should be encouraged. Early identification of women at risk of PIH may help to prevent complications of the condition. The antenatal care service constitutes screening for health and socioeconomic conditions that are likely to increase the possibility of specific adverse pregnancy outcomes. It is the services that focus on the identification of risk factors, early diagnosis of pregnancy complications, appropriate management, and health education (Department of Health 2007). This was in line to what women said *"YaaaI do attend the clinic as I am told by the sister"*. During antenatal care attendance, education about warning symptoms is also important because early recognition may help women receive treatment and prevent worsening of the condition. When pregnant women are having mild hypertension with the Blood pressure of 140/90mmHg – 140/99mmHg, the client should be seen more frequent at the clinic. The woman should be advice to visit the clinic more than once a week for Blood pressure monitoring and for urine testing. However, limited information on the PIH was displayed by one participant who was recently diagnosed said *"I don't feel anything, I am not*

sick but I am given so many treatment". Weissgeber et al. (2004) hypothesized that losing weight and exercises during pregnancy prevent pre-eclampsia by improving vascular function.

Sub-theme 1.3 Knowledge Deficits about the Impact of PIH on the Unborn Baby

PIH is one of the most common causes of both maternal and neonatal morbidity and mortality (Sivakumar et al. 2007; Chawla and Anim-Nyame 2015). PIH is a multi-system disorder and it affects the fetus because of utero-placental insufficiency (Sibai 2005; Riaz et al. 2011). While many women with hypertension were aware that they could experience maternal complications during pregnancy, the women could not name specific risks to the fetus/baby. It was often expressed that hypertension causes direct risk to the mother only (Chawla and Anim-Nyame 2015). Participants had to say when asked about the knowledge they have on the impact of PIH on the unborn baby *"I didn't know that when the blood pressure is high I can even loose the baby"*.

Effect of PIH on the fetus, the predominant etiologic theory of preeclampsia is that the reduced uteroplacental perfusion is the unique pathogenic process in the development of preeclampsia. Fetal prognosis is poor because of hypoxia and fetal acidosis. The fetus may face risks of fetal immaturity. Fetal mortality is approximately 10 percent if PIH develops, and increases as high as 25 percent (Bangal et al. 2011). Decreased uteroplacental blood flow would result in intrauterine growth restriction, low birth weight and may be delivered prematurely (Sivakumar et al. 2007; Xiong et al. 2001). Sivakumar et al. (2007) pointed that the neonate may have spectrum of haematological changes which may add to the existing morbidity in them. If pregnancy-induced hypertension is suspected, a non-stress test will be performed to monitor the baby. It is important that pregnant women maintained scheduled appointment. The woman must monitor fetal movements 3 hourly and report any reduction in the fetal movements. In severe cases a baby need to be delivered before the expected time (Sellers 2010).

CONCLUSION

Hypertension increases maternal risk for pre-eclampsia and eclampsia, cerebral hemorrhage, and renal failure; fetal risks that include preterm

birth, intrauterine growth restriction, placental abruption, and stillbirths. However, PIH is still a little-understood entity, despite the enormous impact of its complications on maternal and fetal outcomes. Little is understood about how to best educate women about PIH and provide them with information needed to seek prompt and appropriate care. The possibility that women do not seek timely care may be increased if women have a poor understanding of signs and symptoms of PIH. Early booking, regular antenatal clinic attendance and contextual health education should be encouraged.

RECOMMENDATIONS

The importance of antenatal care attendance should be emphasized amongst the community members. It is recommended that the Basic Antenatal Care (BANC) approach by the Department of Health (2007), which aims to ensure a focused approach to provision of ANC be utilized for pregnant women in Primary Health Care facilities. The BANC approach, if implemented in all health facilities, would encourage an early booking visit at <12 weeks gestational period. The return visits should be scheduled at 20, 26, 32, and 38 weeks, and 41 weeks, if the woman is still pregnant.. The health care providers should implement the health education programs during the women's antenatal visit. They must also schedule enough time for education and actively involve community members who have influence on health seeking behaviour. Information should be provided in simple, clear and plain language and to check that women understood the information. There must be posters that provide information on PIH in the clinics and health care centers, these posters must be written in their language and also handouts must be available to accompany the antenatal care card. Health facilities should provide daily low-dose aspirin between 60 and 81 milligrams, beginning late of the first trimester. Encouragement of provision of calcium supplements during pregnancy to prevent preeclampsia and to lose weight. Facilities must ensure that other conditions, such as diabetes, are well-managed. To minimize this risk, after delivery, emphasis to maintain the ideal weight, eating a variety of fruits and vegetables, exercise regularly, and not to smoke.

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