



PREGNANCY INDUCED HYPERTENSION AND ITS OUTCOME TO THE MOTHERS AND NEWBORN IN ZLITEN, LIBYA

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ABSTRACT: *This study determined the incidence of pregnancy induced hypertension and outcomes on mothers and newborn in Zliten, Libya during the Calendar Year 2022. It also looked into the significant relationship between the incidence of Pregnancy Induced Hypertension (PIH), the socio-demographic and obstetrical-related profile of the respondents, and significant relationship between the incidence of Pregnancy Induced Hypertension and outcomes to mothers and newborn. The descriptive-correlational research design was employed in this study. Sixty nine mothers of Zliten, Libya were the respondents of this study. Purposive sampling was employed in selecting the respondents. A questionnaire-checklist formulated by the researcher and content validated by a pool of experts was utilized to gather the data needed in the study. Frequency and percentage and simple linear correlation analysis were used to treat and interpret the data gathered for the study. Based on the findings of the study, the following conclusions were drawn: (1) A great number of the respondents belong to the age bracket of 30-34 years old, college graduates and college graduates with master's units, have family monthly income of P 2,000 -24,00, had been pregnant twice, have 1 living child, had prenatal check-up once a month for the 1st and 2nd trimester then twice for the 3rd trimester until birth Most of them are married, attended regional training programs/ seminars and delivered at public hospitals. Great majority had their first pregnancy at the age of 20 - 24 years old, delivered through Normal Spontaneous Delivery (NSD), attended by physician, while, majority have no family history of hypertension; (2) Out of the 69 respondents, most of them experienced PIH. A great percentage had mild pre-eclampsia followed by severe pre-eclampsia and moderate pre-eclampsia; (3) there is a significant relationship between the incidence of PIH and age, training programs/ seminars attended and type of delivery. Moreover, an inverse significant relationship was found out between the incidence of PIH and place of delivery. On the other hand, majority of the newborns experienced small for gestational age (SGA) as complications of PIH. Based on the findings of the study, it is recommended that: (1) Health workers/ providers should inform women during the prenatal and postnatal visits the sign and symptoms of PIH and stress the importance of contacting the health care provider if these are felt/ evident, (2) The recognition of the importance of pregnant woman's education and the use of strategies that facilitate the successful transfer of this information to women of varying degrees of health literacy must be emphasized. Recommended strategies to facilitate this process includes plain non-medical language, taking time to explain and speak slowly, reinforcing key issues based information and requesting feedback to indicate understanding and where applicable, her partner or significant others as well, and 3) Further study should be conducted such as knowledge of mothers on Pregnancy Induced Hypertension.*



THE PROBLEM

Introduction

Pregnancy Induced Hypertension is known as toxemia or pre eclampsia, a form of high blood pressure in pregnancy. PIH is the second most common medical disorder seen during pregnancy. Hypertensive disorders of pregnancy affect 6-8% of all pregnancies, with wide variation as per different geographical areas. Although the cause of PIH is unknown factors, there are known to increase the risk of PIH such as risk factor which includes age during first pregnancy, pregnant women younger than 20 and above 35 years of age.

Along hemorrhage and infections, PIH plays greatly to maternal mortality and morbidity in pregnancy and to newborn as well. The World Health Organization (WHO, 2015) estimates that at least one woman dies every seven minutes from complications of hypertensive of pregnancy. Pregnancies complicated with hypertensive disorders are associated with increased risk of adverse fetal, neonatal, and maternal outcome including preterm birth, intra uterine growth restrictions, perinatal death, ante partum hemorrhage, postpartum hemorrhage and maternal death. Most death in PIH occurs due to complications per se. With the advent of ante natal care in the area, toxemia and eclampsia has become manageable. However, in developing countries especially in rural areas, it still continues to be a major obstetric problem. Thus, everyone can reduce the maternal mortality by prevention and proper management of these complications.

Hence, the present study was conducted to find out the incidence and outcomes of PIH to both the mothers and newborn, so early diagnosis would reduce morbidity and mortality among PIH patients.

The reported incidence of PIH shows great variation, which may be attributable to differences in definition, population composition, demographic and obstetric characteristics, or actual disease incidence. Based on several carefully designed, well-controlled recent clinical trials, the incidence of PIH appears to range from 5 to 9 percent for gestational hypertension and from 5 to 7 percent for preeclampsia among nulliparous women without chronic hypertensive disease or diabetes mellitus. The incidence of PIH in nulliparous women is 4-5 times higher than that in multipara (WHO, Global Maternal Sepsis, 2015).

As for the incidence of eclampsia, two national samples studied in the United States in 1979-1996 and in Britain in 2002 showed that eclampsia occurs in approximately one of every 2,000 pregnant women. The incidence of eclampsia has decreased substantially over the last 20 years. The incidence of PIH is distributed unevenly throughout late gestation, increasing with advancing gestation. Approximately half of PIH cases occur at term (37 weeks' gestation), including most cases of gestational hypertension. Early-onset PIH is often associated with severe preeclampsia. It should be noted, however, that the severity of hypertension and the presence and severity of proteinuria do not always parallel each other, nor do they reflect the duration of PIH. Severe preeclampsia can develop rapidly, and one third of eclamptic seizures occur before both proteinuria and hypertension have been documented. Although it is widely accepted that PIH is unique to pregnancy and regresses after delivery, a large proportion of eclampsia patients have their first seizure during the puerperium. Therefore, based on empirical observations, PIH consists of a matrix of subcategories characterized by the severity of hypertension a proteinuria (mild vs. severe)



and the timing of onset (ante partum, intrapartum, or puerperium), and landmarked by the presence or absence of proteinuria and seizure. The prevalence of Pregnancy Induced Hypertensions was 43.1 per 100 singleton pregnancies in retrospective basics study of 200,000 births in North Carolina, USA.

The beauty of research is that it allows a wide array of possible angle of inquiries for a countless number of reasons but no purpose is as useless as that of which is exclusive to the researcher. Thus, this endeavor sees its outcome to benefit the following:

To the Department of Health, this study would serve as a baseline data on cases of Pregnancy Induced Hypertension in the vicinity covering the area of this investigation. It is hopeful that it will help health administrators and political leaders to facilitate the decentralization of facilities, technical and professional resources and to make it available for rural people.

In the area of nursing discipline, this investigation will contribute to the pool of knowledge in health education as it provides a local blueprint of the status of maternal health in the locality;

To the respondents, this would provide them knowledge on what the Pregnancy Induced Hypertension is all about. Through this, they could be advocates in their own rights

To the Rural Health Unit in Zliten, Libya this research is seen to contribute in the assessment of cases of pregnancy induced hypertension in their area of responsibility. This will assist them in mapping up projects and programs to help families deal with cases associated with it;

To future nurses, this study would serve as a reference material in their pursuit for other related researches and more knowledge and understanding on pregnancy induced hypertension, which they can apply during their related learning experiences when giving health education activities; and

To the researcher, this endeavor is seen as a doorstep towards a borderless exposure into health related investigatory ventures which undeniably will help her appreciate more the significance of her chosen field of career for the advancement of the welfare of humanity.

Statement of the Problem

The study determined the incidence of Pregnancy Induced Hypertension and its outcomes to mother and newborn in Zliten, Libya during the Calendar Year 2022.

Specifically, it sought to answer the following questions:

1. What is the profile of the respondents in terms of the following?

A. Personal-Related Factors

A. age,

B. civil status,

C. educational attainment,

D. occupation,



E. family monthly income, and

F. training programs/ seminars attended related to obstetrical health;

B. Obstetrical-related Factors

A. age of first pregnancy,

B. number of pregnancy,

C. number of living children,

D. type of delivery,

E. place of delivery,

F. birth attendant,

G frequency of prenatal check-up, and

H. family history of hypertension?

2. What is the incidence of Pregnancy Induced Hypertension among the respondents?

3. Is there a significant relationship between the incidence of Pregnancy Induced Hypertension and the personal-related and obstetrical - related profile of the respondents?

4. is there a significant relationship between the incidence of Pregnancy Induced Hypertension and outcomes to the mother and new-born?

5. What are the outcome of PIH to the mother and newborn?

Scope and Delimitation

This study determined the incidence of Pregnancy Induced Hypertension and its outcomes to the mother and newborn in Zliten, Libya during the Calendar Year 2022. It also looked into the relationship between the incidence of Pregnancy Induced Hypertension and the personal-related and obstetrical - related profile of the respondents, and the relationship between the incidence of Pregnancy Induced Hypertension and its outcomes to the mother and newborn.

The dependent variables of the study are the incidence of pregnancy induced hypertension and outcomes to the mother and newborn while the independent variables are the personal-related and obstetrical-related factors.

The descriptive-correlational research design was employed in this study. Sixty nine mothers of Zliten, Libya were the respondents of this study. Purposive sampling was employed in selecting the respondents. A questionnaire-checklist formulated by the researcher and content validated by a pool of experts was utilized to gather the data needed for the study. Frequency and percentage and simple linear correlation analysis were used to treat the data gathered for the study.



THEORETICAL FRAMEWORK

This consists of readings taken from several sources which are found to have significant bearing to this study. These bits of information have in one way or another enriched the formulation of the problems and profoundly influenced the direction of this investigative endeavor.

Watson's Theory of Human Caring

An anonymous author once said "In the stages of illness, one need only the absence of pain and the presence of family". The science of caring theory by Margaret Jean Watson exemplifies this by creating a baseline of quality care that a person can utilize in providing care to a sick person. The knowledge of mothers on pregnancy induced hypertension and the ability to care for the member of the family is related to Watson's theory of human caring. As Watson's states "Human being is a valued person in and of him to be cared for, respected, nurtured, understood and assisted". Watson (1996) defines caring as an experience of being strengthened by meeting the needs of comfort, relief and transcendence that is met through physical, psycho spiritual, social and environmental context of life. Watson (1996) p. 454.

Pender's Health Promotion Mode

Nola J. Pender's health promotion model was also an influence in this study, focused on explaining health promotion. Health promotion according to Pender (1982), are activities directed towards the development of resources that maintain or enhance an individual's wellbeing, which activities has two phases; a decision making phase and action phase. In decision making phase, the model emphasizes cognitive factors that composed primarily the maintenance of health promoting behavior and factor that indirectly influence pattern of health behavior. In action phase, both barrier and cues to action triggers activity in health promoting behaviors.(Pender, 1982, Health Education for Selfcare p. 150)

On Pregnancy-Induced Hypertension

Pregnancy-induced hypertension (PIH) is a syndrome of hypertension with or without proteinuria and edema, with the clinical manifestation usually occurring late in pregnancy and regressing after delivery of the conceptus. It is a major pregnancy complication, causing premature delivery, fetal growth retardation, abruptio placentae, and fetal death, as well as maternal morbidity and mortality. PIH has been recognized for centuries; however, the etiology of this syndrome remains uncertain. Pre eclampsia is a condition that typically starts after 20 weeks of pregnancy and is related to increase blood pressure and protein in the urine (as a result of kidney problem). Pre-eclampsia affect the placenta and it affect the mother's kidney, liver and brain. When pre-eclampsia causes seizure; the condition is called eclampsia-the leading cause of maternal death. There is no proven way to prevent pre eclampsia. Most women, who develop signs of pre- eclampsia, however are closely monitored to lessen or avoid related problems (Bullock, 1996).

The definition and classification of PIH continues to generate controversy because of limited knowledge of the etiology of PIH and the continuous nature of the signs and symptoms used for diagnosis. Two definitions of PIH are widely used in clinical practice and research. One was proposed by the US National High Blood Pressure Education Program Working Group (this is known as the American College of Obstetricians and Gynecologists definition) and



the other by the International Society for the Study of Hypertension in Pregnancy (known as the international definition). A modified version of the international definition (created by Redman and Jefferies and known as the Oxford definition) has recently gained attention. The term "PIH" is restricted to hypertension in pregnant women who have no pre-existing overt chronic hypertension or renal diseases and no high blood pressure or proteinuria before 20 weeks' gestation, and in whom hypertension and proteinuria occur for the first time during the second half of pregnancy (after 20 weeks), during labour, or during the puerperium, and subside after delivery. Therefore, "chronic hypertension in pregnancy" and "preeclampsia superimposed on chronic hypertension" is beyond the scope of the current paper.

Preeclampsia is characterized by vasospasm, pathologic vascular lesions in multiple organ systems, increased platelet activation with platelet consumption, and subsequent activation of the coagulation system in the microvasculature. The pathogenesis of preeclampsia has not yet been fully established, however. In recent years, some hypotheses have been proposed. The prevailing hypothesis in the current literature was proposed by Friedman et al. (1998) briefly, in normal pregnancy, the development of mutual immunologic tolerance between maternal tissue and foetal (paternal) allograft is thought to lead to important morphologic and biochemical changes in the-systemic and utero-placental circulation. The endovascular trophoblastic destroys the muscular layer and autonomic innervations of the spiral arteries. Meanwhile, endothelium increases the synthesis of prostacyclin and nitric oxide, vascular relaxing factors. These changes result in vasodilatation of the uterine circulation. In preeclampsia, immunologic maladaptation might lead to a disturbance of trophoblastic invasion in the spiral arteries.

The insufficient invasion and in growth of the trophoblastic inhibits vessel dilation, reducing maternal blood supply to the intervillous space and thus reduce perfusion causing hypoxia. It is believed that poorly perfused trophoblastic elaborates an unknown substance that is toxic to endothelial cells, causing endothelial dysfunction and damage and ultimately lead to the clinical syndrome of preeclampsia. The most commonly suspected endothelial toxin is oxygen free radicals. Injured endothelial cells release endothelin, a potent vasoconstrictor, and produce less nitric oxide. These changes, coupled with endothelial damage, cause progressive vasoconstriction and platelet aggregation. Damaged vascular endothelium expresses antigens which induce endothelial cell antibodies. Binding of these anti-vascular antibodies and immune complexes to resting endothelial cell monolayer might be involved in altered prostacyclin secretion, increased platelet adherence, activation of the complement cascade, and disruption of the monolayer. Coagulation will be triggered, and thrombin will be generated locally, contributing to platelet aggregation. With endothelial damage and attenuation of the normal vasodilatation of pregnancy, a decrease in glomerular filtration rate and renal blood flow, impaired escape from aldosterone, and enhanced sensitivity to angiotensin are observed. These events may lead to hypertension, edema, and proteinuria. It must be stressed, however, that the pathogenesis proposed above is still a hypothesis, and it was pieced together on the basis of numerous individual studies. Although the "hypo perfusion" model was supported by an elegant experiment carried out in rhesus monkeys, in which a syndrome resembling preeclampsia was produced by chronic constriction of the lower aorta, not every monkey in the experimental group developed this syndrome. Furthermore, in humans, a puzzling phenomenon has long been documented in that some pregnancies with idiopathic fetal growth retardation have placental pathology very similar to that of pregnancies with preeclampsia, i.e., restricted vessel dilation, utero-placental blood hypo perfusion, and hypoxia. However, these women do not develop PIH. In contrast, some



preeclampsia patients appear to have a normal placenta. Thus, even if the endothelial dysfunction model explaining the pathogenesis of preeclampsia proves to be true, individual susceptibility to endothelial damage may play an important role in the development of this syndrome. (American Journal of Obstetrics and Gynecology).

Recurrence and Ultimate Chronic Hypertension

PIH has a high rate of recurrence in subsequent pregnancies. Several studies consistently showed that approximately 30-50 percent of women who had PIH in their first pregnancy had PIH in their second pregnancy, although the severity of the syndrome appeared to decline. Concerned about misdiagnosis of preeclampsia, some researchers followed only eclamptic patients. Chesley (1974) summarized studies carried out from 1925 to 1962 and found that approximately 10 percent of these women had at least another case of eclampsia in a subsequent pregnancy (5 percent of total subsequent pregnancies), and one third had at least another episode of gestational hypertension or preeclampsia in a subsequent pregnancy (27 percent of total subsequent pregnancies). More recently, Sibai et al. (2003) followed 182 women who had eclampsia in 1977-1989. Among the 366 subsequent pregnancies, 13 percent of pregnancies had mild preeclampsia, 9 percent had severe preeclampsia, and 2 percent had eclampsia. Furthermore, women who had early-onset eclampsia (<37 weeks' gestation) had a 3-4 times higher incidence of recurrent PIH and more severe preeclampsia than did those who had late-onset eclampsia. All of these incidence rates of PIH in subsequent pregnancies were several times higher than those for women who had been normotensive during their first pregnancy.

On Epidemiologic Factors Associated with PIH

On Genetic factors

Family history. Familial clustering of PIH has long been recognized, leading to the concept of a genetic basis for this syndrome. The incidence of preeclampsia in mothers, daughters, sisters, and granddaughters of probands is 2-5 times higher than in mothers-in-law, daughters-in-law, and other controls.

Immune-response genes. Since PIH may be due to maternal immunologic maladaptation to the fetus, it has been suspected that maternal/fetal immune response genes may contribute to the development of PIH.

Antioxidant enzymes and the hypertension gene. Since the pathogenesis of PIH suggests that endothelial dysfunction might play a pivotal role in the development of preeclampsia, and oxygen free radicals are the presumed culprit, attention has recently shifted towards major antioxidant enzymes, which protect the endothelium from oxidative damage.



On Immunologic factors

Unprotected sexual intercourse. Two cohort studies and one case-control study found that the duration of pre conceptional sexual cohabitation and the number of unprotected intercourse episodes were inversely related to the incidence of PIH. A dose response gradient was observed, with an increasing risk of PIH for those with fewer episodes of sperm exposure and shorter durations of cohabitation.

Parity, previous abortion, and paternal change. PIH occurs mainly in primiparous women (85 percent), who have a 4-5 times higher risk than multiparous women. Multiparous patients also have milder symptoms, and most of these cases are recurrent cases. According to Dieckmann et al., using renal biopsies, found typical histologic lesions in 71 percent of preeclamptic primigravida but in only 14 percent of multipara. It is now believed that the high risk is related to the maternal first exposure to chorionic villi, specifically the trophoblast, which is of fetal origin. The protective effect of previous pregnancy is also supported by the role of history of spontaneous or induced abortion in preventing preeclampsia and eclampsia. The latter study by Mahran et al. (1970) further showed that with three and four consecutive pregnancies, there was a significant trend of an increase in PIH risk with having a different father in each successive pregnancy, implying a short sexual cohabitation with the index partner.

Assisted reproductive technology. Analogous to altered paternity, artificial donor insemination resulted in a substantial increase in preeclamptic gestations in a well-designed cohort study of 584 such pregnancies. The incidence was similar in multigravida and primigravid women, and the expected protective effect of a previous pregnancy was submerged. In parallel, pregnancies with oocyte donation were reported to have a higher incidence of preeclampsia. Among singleton gestations, the assisted pregnancies had an approximately twofold greater risk of PIH than the spontaneous pregnancies. (American Journal Obstetrics and Gynecology).

Anti-phospholipid antibodies. Antiphospholipid antibodies (APAS) have been linked to adverse maternal and fetal sequelae, such as recurrent fetal loss, fetal growth retardation, PIH, thromboembolism, and thrombocytopenia. The two major subtypes of APA, anticardiolipin antibody and lupus anticoagulant, have been related to PIH.

On Physiologic Factors

Maternal age. Numerous studies have examined the association between maternal age and risk of PIH. Women over age 35 years have a two- to four fold higher risk than younger women. This conclusion is supported by more recent large studies. Furthermore, certain studies showed that the age effect is more prominent among blacks and among multipara. The higher risk of PIH in elderly gravid may in part be explained by the higher incidence of chronic hypertension in older women; i.e., women with latent chronic hypertension are misdiagnosed as having PIH. (Bullock, 1996)

Pre pregnancy body mass. It is well documented that obese women have a higher incidence of PIH. Because of the difficulties in distinguishing between genuine PIH and chronic hypertension or preeclampsia superimposed on chronic hypertension, the higher incidence of PIH among obese women may to some extent reflect a higher prevalence of chronic hypertension. (Bullock, 1996).



Multiple gestations. Pregnancies with multiple gestations have a higher incidence of PIH than do those with singleton gestation. It was found out that a pregnant woman with twin gestation has three times the risk of developing PIH than does a woman with a singleton pregnancy 95 percent. The incidence of eclampsia is also three times higher in twin pregnancies than in singleton pregnancies. As in the case of singleton gestation, a multiparous twin pregnancy has a lower incidence of PIH than does a primiparous twin pregnancy, but the incidence remains much higher than in the case of a multiparous singleton. (Bullock, 1996).

Polyhydramnios and hydrops fetalis. Polyhydramnios has been associated with PIH. However, conditions associated with hyperplacentalos, such as multiple gestations, diabetes, and hydrops fetalis, are often associated with polyhydramnios. (Bullock, 1996).

Race/ethnicity. Most epidemiologic and clinical studies of PIH have collected information on race/ethnicity. The comparison most commonly made in the United States is between black women and white women. However, the results so far have been equivocal and vary in magnitude, despite the large number of reports available. (Bullock, 1996).

Environmental Factors

Smoking. Maternal smoking has been related to a variety of adverse pregnancy outcomes. Ironically, the risk of PIH among smokers in the past three decades has been consistently observed to be lower than that in nonsmokers. Both cohort and case-control studies have shown that the number of cigarettes smoked per day is negatively associated with the incidence and relative risk of PIH. Interestingly, women who had stopped smoking before pregnancy still had modestly lower risks than never smokers. Patients who are current smokers also have milder symptoms of hypertension and proteinuria than do patients who are never smokers. (Bullock, 1996).

High altitude. Two studies from Colorado and one from Saudi Arabia showed that pregnant women residing at high altitudes had an increased risk of PIH. Both of the Colorado studies found that women living at high altitudes had a lower blood volume and that arterial oxygen saturation was inversely related to mean arterial pressure. On the other hand, a placental histologic study showed that the placenta is capable of adapting to hypobaric hypoxia to increase its functional capacity for gaseous exchange. This is achieved principally through a reduction in the thickness of the villous membrane. However, ecologic evidence showing that infants born at high altitudes are generally lower in birth weight than those born at sea level suggests that this morphologic change may still not be sufficient for compensation. (Bullock, 1996).

Physical activity and job stress during pregnancy. The relative risk of preeclampsia decreased with increasing time spent in leisure activity, with maximal intensity of the activity, and with energy expenditure in the activity. The inverse dose-response pattern was less obvious for gestational hypertension. (Bullock, 1996).

Low-dose aspirin, calcium, and fish oil supplementation. In the mid-1980s, Walsh et al. Revealed the imbalance between thromboxane A₂ and prostacyclin in preeclamptic patients, which is believed to cause vasoconstriction and thrombosis. Soon after the discovery, many scientists and physicians thought that aspirin might prevent preeclampsia, because aspirin can selectively inhibit cyclooxygenase and therefore reduce thromboxane A₂ synthesis. Now aspirin is not recommended for routine prevention or treatment of preeclampsia.



Classification of Hypertensive Disorders Complicating Pregnancy

Gestational Hypertension

Gestational hypertension is a hypertension without proteinuria occurring after 20 weeks gestation or postpartum. It is a temporary diagnosis during pregnancy which has to be confirmed 12 weeks after delivery. If hypertension returns to normal levels, the final diagnosis is transient hypertension. If hypertension persists, the final diagnosis is chronic hypertension.

Preeclampsia/ Eclampsia

Preeclampsia is the presence of hypertension and proteinuria occurring after the 20 weeks of gestation except in cases of extensive trophoblastic proliferation. Preeclampsia has further classified as severe in the presence of one or more of the following signs and symptoms: 1. BP of at least 160 mmHg systolic or 110 mmHg diastolic; 2) Proteinuria of at least 4 grams/day or a persistent qualitative 2+ or more on dipstick. With severe renal involvement, the serum creatinine will be expected to rise; 3) Oliguria of less than 400 cc/day signifying decreased renal blood flow and diminished glomerular filtration rate; 4) Severe headache or visual disturbances attributed to cerebral edema; .5) Pulmonary edema or cyanosis can be due to hemodynamic changes, pre dominantly an increase after load; 6) Intrauterine growth restriction (IUGR) is caused by diminished by utero-placental blood flow; 7) Abdominal pain, epigastria or RUQ in location results from distension of Glissons capsule of the liver due to hepatocellular edema and/or necrosis. Rarely, these symptoms may presage liver rupture from sub capsular hematoma; 8) Haemolysis is evident as increase serum LDH, Hemoglobinuria, hyperbilirunemia or the presence of schistocyte; 9) Elevated liver enzyme is caused by hepatocellular necrosis; and 10) Low platelet count (thrombocytopenia) < 100,000/mm³ are probably due to microangiopathichemolysis induced by spasm. The triad of haemolysis elevated liver enzymes and low platelet count is given the pneumonic HELLP Syndrome. (Wikipedia).

Eclampsia is the presence of convulsion in a woman with underlying preeclampsia. If preeclampsia is not present, convulsion may represent neurologic disorders.

Chronic Hypertension

Chronic hypertension is suggested by the presence of blood pressure of 140/90 mmHg or greater prior to pregnancy or is detected before the 20 weeks of pregnancy and persists long after delivery. Multiparty and hypertension in a previous pregnancy help support the diagnosis. Essential familial hypertension is responsible for 90% of underlying vascular disease in pregnant women (Smeltzer & Bare, 2000).

Chronic Hypertension with Superimposed Preeclampsia/ Eclampsia

A. Superimposed preeclampsia

Is characterized by an increased diastolic or systolic blood pressure over baseline

Hypertensive BP readings and as signs and symptoms of end- organ dysfunction.

B. Superimposed eclampsia



Is convulsion occurring in a woman with chronic hypertension and superimposed

Preeclampsia. The indicators of severity in pregnancy aggravated hypertension are similar to those of acute preeclampsia.

Conceptual Framework

The researcher was guided by the model illustrated below:

Independent Variables

Dependent Variable

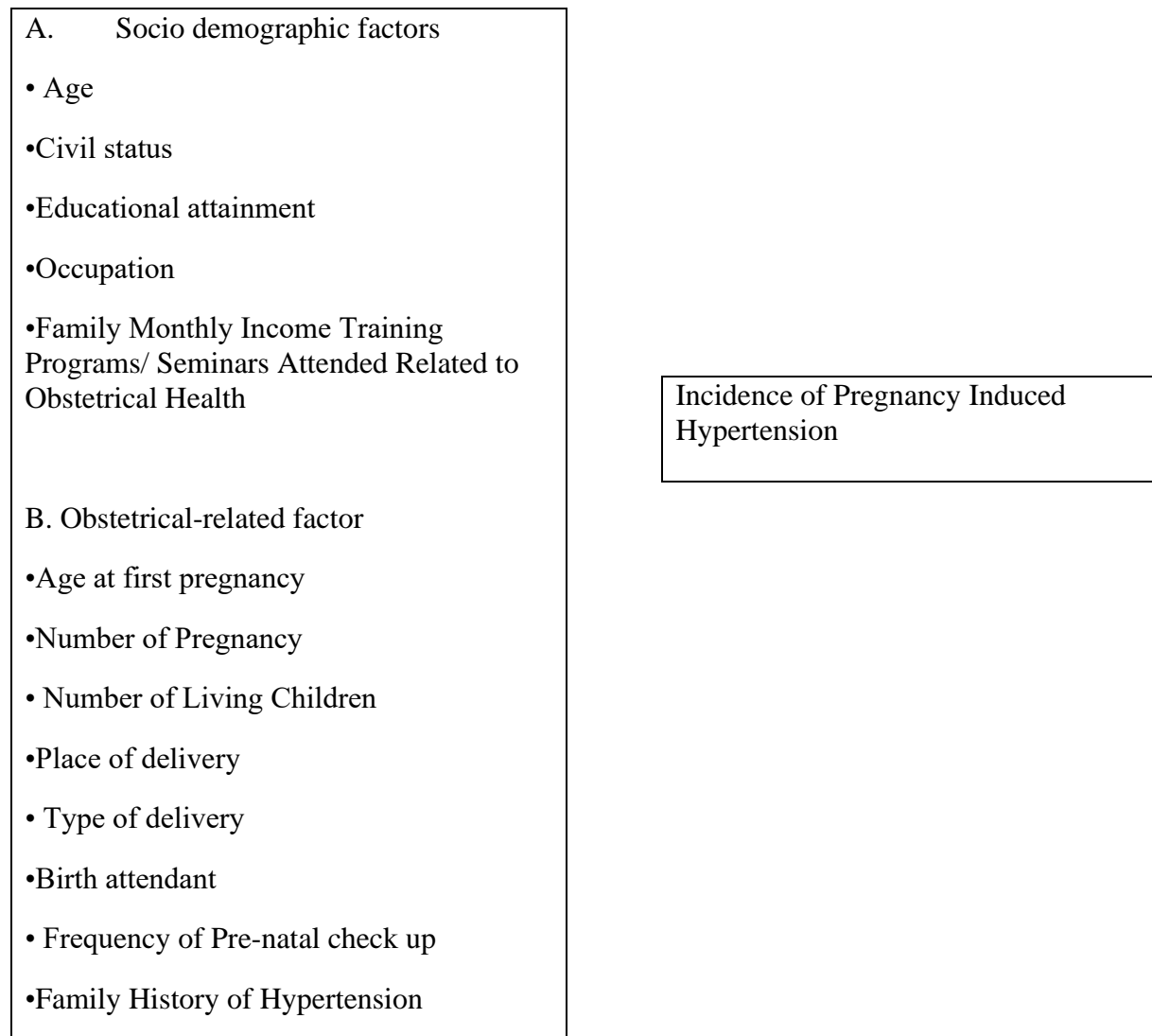


Figure 1. Research Paradigm

The research paradigm shows the relationship between incidence of Pregnancy Induced Hypertension and personal-related and obstetrical – related factors, and the relationship between the incidence of Pregnancy Induced Hypertension and its outcome to mothers as well as the newborn.



Operational Definition of Terms

To facilitate a better understanding of the study, the following terms are operationally defined.

Incidence of Pregnancy Induced Hypertension. This refers to the extent or rate of occurrence of pregnancy induced hypertension to the respondents.

Outcomes. This refers to the consequences of pregnancy induced hypertension to the respondents from pregnancy to childbirth.

Personal-Related Factors. This refers to the personal characteristics of the respondents which include the following:

Age. This refers to a particular period during which the mother had survived from birth up to the time the study was conducted.

Civil Status. This refers to the social standing of the respondents whether they are married, divorced, widow/widower, or separated at the time this study was conducted.

Educational Attainment. This refers to the level of education the respondents have achieved or completed at the time this study was conducted. In this study it is categorized as post graduate, college graduate, college level, high school graduate, high school level, elementary graduate, and elementary level.

Occupation. This refers to the employment or activities engaged in by the respondents wherein they can source out for a living.

Family Monthly Income. This term refers to the earnings of the family in a monthly basis.

Training Programs/ Seminars Attended Related to Obstetrical Health. It refers to the number of times the respondents attended training programs and seminars related to obstetrical health.

Obstetrical-Related Factors. This pertains to the obstetrical attributes of the respondents categorized as:

Age at First Pregnancy. This refers to the age of the respondents the time they had their first pregnancy.

Number of pregnancy. It refers to the number of pregnancies the respondents had during the conduct of the study.

Number of Living Children. This pertains to the status of the respondents with regards to the number of children they had delivered.

Place of Delivery. This refers to whether the respondents delivered in the hospital, RHU or at home.

Birth Attendant. It refers to the persons who attended the delivery of the respondents whether a doctor, nurse, midwife or trained birth attendant.



Type of Delivery. This refers to the method or manner the respondents delivered their baby. It is categorized as either normal spontaneous or caesarean section delivery.

Frequency of Prenatal check-up. This refers to the frequency of check-up the respondents had from the start of their conception up to the period before the delivery of the child.

Family History of Hypertension. This refers to the presence of hypertension to other members of the family or relatives, either in the paternal or maternal side.

Assumptions

This study was guided by the following assumptions:

1. The responses of the respondents to the questionnaire-checklist are true and honest.
2. The instrument used to measure the incidence of Pregnancy Induced Hypertension and outcomes to mothers and newborn are valid and reliable.

Hypothesis

Based on the concepts of the problem, the researcher posited that:

1. There is no significant relationship between the incidence of Pregnancy Induced Hypertension and personal-related and obstetrical-related factors.
2. There is no significant relationship between the incidence of Pregnancy Induced Hypertension and its outcomes to mother and new born.

METHODOLOGY

The research design, population and sample, data gathering instrument, data gathering procedures as well as the statistical tools for data analysis is presented in this section.

Research Design. This study utilized the descriptive- correlational method of research. The descriptive method described the personal-related and obstetrical- related profile, incidence of Pregnancy Induced Hypertension, and its outcomes to the mothers and newborn. The correlational method determined the relationship between the incidence Of Pregnancy Induced Hypertension and the personal - related and obstetrical-related factors and the relationship between incidence of Pregnancy Induced Hypertension and outcomes to the mother and newborn.

Population. The respondents of the study were 70 mothers of reproductive age in Zliten, Libya. The respondents were arbitrarily set by the researcher and purposive sampling was employed to determine the respondents. however, one of them did not continue as a respondent of the study. Table 1 shows the distribution of respondents.

**Table 1****Distribution of the Respondents**

Area Code	N
A	10
B	10
C	10
D	9
E	10
F	10
G	10
Total	69

Data Gathering Instrument. The data gathering instrument used in this study is a questionnaire-checklist formulated by the researcher and content validated by a pool of experts. It comprised of two (2) parts. Part I gathered information on the personal-related and obstetrical-related profile of the respondents. Part II elicited information on the incidence of pregnancy induced hypertension and outcomes to mothers and new born.

Data Gathering Procedures. The researcher asked permission from the Municipal Mayor and the Barangay Captains concerned to conduct the study as well as to seek permission to gather the needed data in their respective jurisdiction.

The questionnaires were personally distributed to and retrieved from the respondents. The researcher motivated the respondents to cooperate and answer the questions honestly by being available for clarifications and explanation of items they found unclear. For those mothers who do not know how to read, the researcher personally translated the questionnaire into the dialect they can understand.

Statistical Treatment of Data

The following statistical tools were used to treat and interpret the data gathered.

1. Frequency and percentage described the personal-related and obstetrical-related profile of the respondents.
2. Simple linear correlation analysis determined the significant relationship between the incidence of PIH and the personal-related and obstetrical-related factors, and the relationship between incidence of PIH and outcomes to mothers and newborn.



PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

This chapter presents, analyzes and interprets the data gathered in this study to provide answer to the problems raised in the previous chapter.

Problem 1. What is the profile of the respondents in terms of the following:

A. Personal-Related Factors

- a. age,**
- b. civil status,**
- c. educational attainment,**
- d. occupation,**
- e. family monthly income, and**
- f. training programs/ seminars attended related to obstetrical health;**

B. Obstetrical-Related Factors

- a. age at first pregnancy,**
- b. number of pregnancy,**
- c. number of living children,**
- d. birth attendant,**
- e. place of delivery,**
- f. birth attendant,**
- g. frequency of prenatal check-up, and**
- h. family history of hypertension?**

A. Personal-Related and Obstetrical-Related Profile of the Respondents

The distribution of the respondents in terms of personal-related and obstetrical-related factors is shown in Table 2.

**Table 2: Distribution of the Respondents in terms of Personal-Related and Obstetrical-related Factors**

Socio-Demographic factors	F	%
Age		
35 and above	13	18.8
30-34	22	31.9
25-29	17	24.6
20-24	17	24.6
Total	69	100.0
Civil status		
Others(widow/ separated/ divorced)	12	17.1
Married	57	82.6
Total	69	100.0
Educational Attainment		
Master's Degree with Doctorate	1	1.4
Master's degree	8	11.6
College Graduate with Masters unit	15	21.7
College Graduate	15	21.7
Vocational Graduate	9	13.0
College level	8	11.6
High School Graduate	8	11.6
High School Level	2	2.9
Primary Graduate	3	4.3
Total	69	100.0
Occupation		
Professional	41	59.4
Skilled	8	11.6
Non-Skilled	12	17.4
None(Plain housewife)	8	11.6
Total	69	100.0
Family Monthly Income		
2500-2900	2	2.9
2000-2400	33	33.3
1500-1900	10	14.5
1000-1400	20	29.0
500-900	14	20.3
Total	69	100.0
Training/Programs/Seminars attended		
National	2	2.9
Regional	63	91.3
Local	4	5.8
Total	69	100.0
Obstetrical-Related Factors		
Age at first pregnancy		
35-above years old	1	1.4



30-34 years old	1	1.4
25-29 years old	3	4.3
20-24 years old	49	71.0
15-19 years old	15	21.7
Total	69	100.0
Number of Pregnancy		
6 and above	6	8.7
5	17	24.6
4	13	18.8
3	11	15.9
2	20	29.0
1	2	2.0
Total	69	100.0
Number of Living Children		
6 and above	1	1.4
5	21	30.4
4	12	17.4
3	10	14.5
2	14	20.3
1	10	14.5
0	1	1.4
Total	69	100.0
Place of delivery		
Public hospital	59	85.5
Private hospital	4	5.8
Home delivery	6	8.7
Total	69	100.0
Type of delivery		
Caesarian section	13	18.8
Normal spontaneous delivery	56	71.2
Total	69	100.0
Birth attendant		
Significant others(family, relatives, friends)	11	15.9
Doctor	54	78.3
Midwife	3	4.3
Trained birth attendant	1	1.4
Total	69	100.0
Frequency of prenatal check ups		
Never	4	5.8
Once a month for the 1 st and 2 nd trimester and 1 st two months of the third trimester, then every week for the last month until birth.	30	43.5
Once a month for the 1 st and 2 nd trimester then twice for the third trimester until birth.	34	49.3
Once a month for the whole 1 st and 2 nd and	1	1.4



3 rd trimester until birth.		
Total	69	100.0
Family history of Hypertension		
No	41	59.4
Yes	28	40.6
Total	69	100.0
If yes, which of the following		
Paternal	26	92.86
Maternal	2	7.14
Total	28	100.0

Personal-Related Factors

On Age. A great number of the respondents (22 or 31.9%) belong to the age bracket of 30-34 years old, while the least (13 or 18.8%) are 35 years old and above.

On Civil Status. Most of the respondents (57 or 82.6%) are married and the rest (12 or 17.1%) are Divorced.

On Educational Attainment. An equal number of the respondents (15 or 21.7%) are college graduates and are college graduates with master's units and the least (1 or 1.4%) finished master's degree with doctoral units.

On Occupation. Majority of the respondents (41 or 59.4%) are professionals, while the least (8 or 11.6%) are skilled workers and no job (plain housewives), respectively.

On Family Monthly Income. A mark percentage of the respondents (33 or 333) have a family monthly income of P 2,000 -2,400, while the least (2 or 2.9%) have P 2,500-2,900. (63

On Training Programs/ Seminars Attended. Most of the respondents or 91.3%) attended regional training programs/ seminars and there were two (2.9%) who attended in the national level.

On Obstetrical-Related Factors

On Age at First Pregnancy. Great majority of the respondents (49 or 71%) had their first pregnancy at the age of 20-24 years old, and the least (1 or 1.4%) are 30-34 years old and 35 years old and above, respectively.

On Number of Pregnancy. A substantial number of the respondents (20 or 29%) had been pregnant twice, and the least (2 or 2.0%) had been pregnant once.

On Number of Living Children. A mark percentage of the respondents (21 or 30.4%) have one living child, while the least (1 or .4%) have more than six children.

On Place of Delivery. Most of the respondents (59 or 85.5%) delivered at public hospitals while four (5.8%) delivered in private hospitals.

On Type of Delivery. A great majority of the respondents (56 or 71.2%) delivered through Normal Spontaneous Delivery while the remaining 13 (18.18%) through Cesarean Section.



On Birth Attendant. Great majority of the respondents (56 or 78.3%) were attended by physicians and only one (1.4%) by trained birth attendant.

On Frequency of Prenatal Check Up. A mark percentage of the respondents (34 or 49.3%) had prenatal check-up once a month for the 1st and 2nd trimester then twice during the 3rd trimester until birth and there is one (1.4%) who had once a month prenatal check-up for the whole 1, 2nd and 3rd trimester until birth.

On Family History of Hypertension. Majority of the respondents (41 or 59.4%) have no family history of hypertension. For those who have family history of hypertension (28 or 40.6%), most of them claim that they have inherited from their paternal side (26 or 92.86%).

Problem 2. What is the incidence of Pregnancy Induced Hypertension among the respondents?

The incidence of Pregnancy Induced Hypertension among the respondents is shown in Table 3.

Table 3: Incidence of Pregnancy Induced Hypertension among the Respondents
Incidence of Pregnancy Induced Hypertension

Incidence of Pregnancy Induced Hypertension	F	%
Yes	64	92.8
No	5	7.2
Total	69	100.0
If Yes, which of the following		
Gestational hypertension	7	10.1
Mild preeclampsia	20	29.0
Moderate preeclampsia	12	17.4
Severe preeclampsia	15	21.7
Eclampsia	10	14.5
No experience	5	7.2
Total	69	100.0

It can be noted from the table that out of the 69 respondents, most of them (64 or 92.8%) experienced PIH. A great percentage (20 or 29%) had mild pre-eclampsia followed by severe pre-eclampsia (15 or 21.7%) and moderate pre-eclampsia (12 or 17.4%). The least (7 or 10.1%) had gestational hypertension.

Pregnancy Induced Hypertension has a high rate of recurrence in subsequent pregnancies. Several studies consistently showed that approximately 30-50 percent of women who had PIH in their first pregnancy had PIH in their second pregnancy, although the severity of the syndrome appeared to decline.

Concerned about misdiagnosis of preeclampsia, some researchers followed only eclamptic patients. Chesley (1978) summarized studies carried out from 1925 to 1962 and found that approximately 10 percent of these women had at least another case of eclampsia in a subsequent pregnancy (5 percent of total subsequent pregnancies), and one third had at least



another episode of gestational hypertension or preeclampsia in a subsequent pregnancy (27 percent of total subsequent pregnancies). More recently, Sibai et al. (2003) followed 182 women who had eclampsia in 1977-1989. Among the 366 subsequent pregnancies, 13 percent of pregnancies had mild preeclampsia, 9 percent had severe preeclampsia, and 2 percent had eclampsia. Furthermore, women who had early-onset eclampsia (<37 weeks' gestation) had a 3-4 times higher incidence of recurrent PIH and more severe preeclampsia than did those who had late-onset eclampsia. All of these incidence rates of PIH in subsequent pregnancies were several times higher than those for women who had been normotensive during their first pregnancy.

Problem 3. Is there a significant relationship between the incidence of Pregnancy Induced Hypertension among the respondents and their personal- related and obstetrical-related profile?

Relationship Between the Incidence of Pregnancy Induced Hypertension and Personal-related and Obstetrical-related Factors

Table 5 presents the significant relationship between the incidence of Pregnancy Induced Hypertension among the respondents and their personal-related and obstetrical-related profile.

Table 5: Correlation Coefficients between the Incidence of Pregnancy Induced Hypertension and Personal-Related and Obstetrical-Related Factors

Personal-Related Factors	Incidence of Pregnancy Induce Hypertension
Age	.0322**
Civil status	-.045
Educational attainment	.129
Occupation	-.010
Family monthly income	.205
Training/programs/seminars attended	.821**
Obstetrical-Related Factors	
Age at first pregnancy	-.226
Number of pregnancy	.059
Number of living children	.150
Place of delivery	-.806**
Type of delivery	.535**
Frequency of prenatal check up	.181
Family history of hypertension	-.661**

"Correlation is significant at the 0.05 level (2-tailed)

Correlation is significant at the 0.01 level (2-tailed)

As observed from the table, a significant relationship existed between incidence of PIH and age ($r = .0322$), training programs/ seminars attended ($r = .821$) and type of delivery ($r = .535$). This means that the older the mothers, those who attended training programs/ seminars related to obstetrical health and delivered through NSD tend to have higher chances to experience Pregnancy Induced Hypertension.



Numerous studies have examined the association between maternal age and risk of PIH. Women over age 35 years have a two- to four fold higher risk than younger women. This conclusion is supported by more recent studies. Furthermore, certain studies showed that the age effect is more prominent among blacks and among multipara. The higher risk of PIH in elderly gravid may in part be explained by the higher incidence of chronic hypertension in older women; i.e., women with latent chronic hypertension are misdiagnosed as having PIH. Physiologically, as women age, collagen progressively replaces normal muscle in the walls of myometrial arteries. These vascular changes with age were not altered by adjustment for parity. These lesions may restrict the luminal expansion of the arteries and consequently restrict blood flow to the placenta. The atrophic changes in vascular microstructure in older women may also result in defective vascularization of the decidua. Both under perfusion and under vascularization may play important roles in causing placental hypoxia and, in turn, PIH (American Journal of Obstetrics and Gynecology).

On the other hand, an inverse significant relationship existed between incidence of pregnancy induce hypertension and place of delivery ($r=-, 806$) and family history hypertension ($r=-, 661$). This implies that those mothers who delivered at home and have family history of hypertension whether paternal or maternal side tend to have chance to develop PIH.

Familial clustering of PIH has long been recognized, leading to the concept of a genetic basis for this syndrome. The incidence of preeclampsia in mothers, daughters, sisters, and granddaughters of probands is 2-5 times higher than in mothers-in-law, daughters-in-law, and other controls. Since PIH occurs only in females who choose to reproduce and to carry their fetuses to term, even a carefully designed study may have difficulties establishing a specific mode of inheritance. For instance, restricted dilation of the spiral arteries may cause acute atherosclerosis or hypoxia, early fetal death, and, consequently, spontaneous abortion. Women with foetal loss only would not be clinically observed to have PIH. Since PIH is most likely to occur in nulliparous women, women with spontaneous abortion, induced abortion, or infertility may not have chance to develop PIH (American Journal of Obstetrics and Gynecology).

Further scrutiny of the table revealed that the personal-related profile such as civil status, educational attainment, family monthly income, and occupation and the obstetrical-related profile of the respondents like age at first pregnancy, number of pregnancy, number of living children, and frequency of prenatal check- up do not influence the mothers to acquire Pregnancy Induced Hypertension.

Problem 4. Is there a significant relationship between the incidence of Pregnancy Induced Hypertension and its outcomes to the mother and newborn?

Relationship between the Incidence of Pregnancy Induced Hypertension and Its Outcomes to the Mother and Newborn

The significant relationship between the incidence of Pregnancy Induced Hypertension and its outcomes to the mother and newborn is exhibited in Table 6.



Table 6: Correlation Coefficients between the Incidence of Pregnancy Induced Hypertension among the Respondents and Outcomes

Variable	Maternal Outcome	Neonatal Outcome
Incidence of Pregnancy Induce Hypertension	.202	.134

*Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

As gleaned from the table, outcomes to mothers and newborns are not significantly related to the incidence of PIH as manifested by the r- values of .202 and 134, respectively. This result means that having PIH does not influence whatever the outcome of pregnancy to the mother and to the child.

Problem 5. What are the outcomes of PIH to the mother and newborn?

Table 7 presents the outcomes of PIH to the mothers and newborns.

Table 7: Outcomes of Pregnancy Induced Hypertension to the Mother and Newborn

Maternal Outcome	f	%
None	38	55.1
Abruptio placenta	4	5.8
Preterm labor	1	1.4
Maternal death	4	5.8
Gastritis	5	7.2
Urinary Tract Infection	16	23.2
Epilepsy	1	1.4
Total	69	100.0
Neonatal Outcome		
None	14	20.3
IUGR(Intra Uterine Growth Restriction)	3	4.3
IUFD(Intra Uterine Fetal Death)	12	17.4
Prematurity	19	27.5
SGA(Small for Gestational Age)	21	30.4
Total	69	100.0

On Maternal Outcome

Majority of the respondents (38 or 55.1%) did not experience complications as outcome of Pregnancy Induced Hypertension. On the other hand, a great number (16 or 23.2%) experienced UTI and the least (1 or 1.4%) had preterm labor and epilepsy, respectively.

On Neonatal Outcome

Out of the 69 respondents, there are 14 (20.3%) who did not have complications to their newborn. However, great percentage of the respondents (21 or 30.4%) had Small for



Gestational Age (SGA) followed by prematurity (19 or 27.5%), IUFD (12 or 17.4%) and Intra Uterine Growth Restriction (IUGR) (3 or 4.3%).

Pregnancy-induced hypertension (PIH) is a syndrome of hypertension with or without proteinuria and edema, with the clinical manifestation usually occurring late in pregnancy and regressing after delivery of the conceptus. It is a major pregnancy complication, causing premature delivery, fetal growth retardation, abruptio placentae, and fetal death, as well as maternal morbidity and mortality. PIH has been recognized for centuries; however, the etiology of this syndrome remains uncertain, limiting effective intervention.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter comprises the summary of the findings, the conclusions drawn and recommendations forwarded by the researcher.

Summary

This study determined the incidence of Pregnancy Induced Hypertension and its outcomes to mothers and newborn in Zliten, Libya during the Calendar Year 2022. It also looked into the relationship between the incidence of Pregnancy Induced Hypertension and the personal-related and obstetrical related profile of the respondents, and the relationship between the incidence of Pregnancy Induced Hypertension and its outcomes to the mother and newborn.

The dependent variables of the study are the incidence of Pregnancy Induced Hypertension and outcomes to the mother and newborn while the independent variables are the personal-related and obstetrical - related factors.

The descriptive-correlational research design was employed in this study. Sixty nine mothers of Zliten, Libya were the respondents of this study. Purposive sampling was employed in selecting the respondents. A questionnaire-checklist formulated by the researcher and content validated by pool of experts was utilized to gather the data needed for the study.. Percentage and simple linear correlation analysis were used to treat the data gathered for the study.

Frequency and

Findings

After a thorough analysis and interpretation of the data which were gathered, the following are salient findings of the study.

1. Profile of the Respondents

a. Socio-demographic Factors

On Age. A great number of the respondents (22 or 31.9%) belong to the age bracket of 30-34 years old.

On Civil Status. Most of the respondents (57 or 82.6%) are married.

On Educational Attainment. An equal number of the respondents (15 or 21.7%) are college graduates and are college graduates with master's units



On Occupation. Majority of the respondents (41 or 59.4%) are professionals.

On Family Monthly Income, A mark percentage of the respondents (33 or 33.3) have a family monthly income of P 2,000-2,400,

On Training Programs/ Seminars Attended. Most of the respondents or 91.3%) attended regional training programs/ seminars.

b. On Obstetrical-Related Factors

On Age at First Pregnancy, Great majority of the respondents (49 or 71.9%) had their first pregnancy at the age of 20-24 years old.

On Number of Pregnancy. A substantial number of the respondents (20 or 29%) had been pregnant twice.

On Number of Living Children. A mark percentage of the respondents (21 or 30.4%) have one living child.(63

On Place of Delivery. Most of the respondents (59 or 85.5%) delivered at public hospitals.

On Type of Delivery. A great majority of the respondents (56 or 71.2%) delivered through Normal Spontaneous Delivery.

On Birth Attendant. Great majority of the respondents (56 or 78.3%) were attended by physicians.

On Frequency of Prenatal Check Up. A mark percentage of the respondents (34 or 49.3%) had their prenatal checkup once a month for the 1st and 2nd trimester then twice for the 3rd trimester until birth.

On Family History of Hypertension. Majority of the respondents (41 or 59.4%) have no family history of hypertension.

Incidence of Pregnancy Induced Hypertension

Out of the 69 respondents, most of them (64 or 92.8%) experienced PIH. A great percentage (20 or 29%) had mild pre-eclampsia followed by severe pre-eclampsia (15 or 21.7%) and moderate pre-eclampsia (12 or 17.4%).

3. Relationship between the Incidence of Pregnancy Induced Hypertension and the Personal - Related and Obstetrical-Related Factors

There is a significant relationship between incidence of PIH and age ($r=0.322$), training programs/ seminars attended (821) and type of delivery ($r=0.535$). On the other hand, an inverse relationship existed between incidence of pregnancy induced hypertension and place of delivery ($r=-0.806$) and family history hypertension ($r=-0.661$).

4. Relationship between the Incidence of Pregnancy Induced Hypertension and Outcomes to the Mother and Newborn Outcomes of PIH to mothers and newborn is not significantly related to the incidence of PIH.



4. Outcomes of PIH to the Mother and Newborn

Majority of the respondents (38 or 55.1%) did not experience any complication of Pregnancy Induced Hypertension. However, a great percentage (21 or 30.4%) had newborns who are SGA.

CONCLUSIONS

Based on the findings of the study, the following conclusions were drawn:

1. A great number of the respondents belong to the age bracket of 30-34 years old, are college graduates and college graduates with master's units, have family monthly income of P 2,000 - 2,400, had been pregnant twice, have one living child, had prenatal check-up once a month for the 1st and 2nd trimester then twice for the 3rd trimester until birth. Most of them are married, attended regional training programs/ seminars and delivered at public hospitals. Great majority had their first pregnancy at the age of 20 - 24 years old, delivered through Normal Spontaneous Delivery (NSD), attended by physician, while, majority have no family history of hypertension;
2. Out of the 69 respondents, most of them experienced PIH. A great percentage had mild pre-eclampsia followed by severe pre-eclampsia and moderate pre-eclampsia.
3. There is a significant relationship between incidence of PIH and age ($r=0.322$), training programs/ seminars attended ($r=0.821$) and type of delivery ($r=0.535$). On the other hand, an inverse relationship existed between incidence of pregnancy induced hypertension and place of delivery ($r=-0.806$) and family history hypertension ($r=0.661$).
4. The outcomes of PIH to mothers and newborn are not significantly related to the incidence of PIH.

RECOMMENDATIONS

Based on the findings of the study, it is recommended that:

1. Health workers/ providers should inform women during the prenatal and postnatal visits the sign and symptoms of PIH and stress the importance of contacting the health care provider if these are felt/ evident.
2. The recognition of the importance of pregnant woman's education and the use of strategies that facilitate the successful transfer of this information to women of varying degrees of health literacy must be emphasized. Recommended strategies to facilitate this process includes plain non-medical language, taking time to explain and speak slowly, reinforcing key issues based information and requesting feedback to indicate understanding and where applicable, her partner or significant others as well.
3. Further study should be conducted such as on the knowledge of mothers on Pregnancy Induced Hypertension.



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