THE DEGREE OF PREGNANCY-INDUCED HYPERTENSION OF MOTHERS IN SELECTED HOSPITALS: ITS RELATIONSHIP TO PREGNANCY OUTCOMES*

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Abstract: *This study determined the relationship between degree of pregnancy-induced hypertension (PIH) and pregnancy outcomes among 361 mothers admitted in two hospitals in Iloilo City. An analysis of hospital records showed that mothers with family history of hypertension were more likely to develop PIH than those with none. Moreover, the higher their degree of PIH, the more likely that their babies would get sick. When mode of delivery was controlled, the significant influence of PIH on the fetal condition was sustained, and its significant adverse effect on mother's condition which was absent in the zero order analysis, surfaced.*

INTRODUCTION

Pregnancy induced hypertension (PIH) remains a significant cause of maternal and perinatal mortality. In the Philippines, it is one of the country's top three leading causes of maternal deaths. The Philippine Obstetrical and Gynecological Society (POGS) also reported that 18.42% of maternal deaths in the country are due to PIH (Sumpaico, 1995).

Despite the risks of PIH on pregnant women, studies about it are still limited. Most studies on PIH focus on epidemiology and most statistical data are concentrated on perinatal deaths. This study was conducted to generate significant information on the influence of the degree of PIH to the pregnancy outcomes of mothers and fetus.

OBJECTIVES OF THE STUDY

This study aimed to determine the relationship between the degree of PIH and the pregnancy outcomes of mothers in selected hospitals in Iloilo City. Specifically, this investigation sought to determine whether there is a significant relationship between a) degree of PIH and selected variables namely: age, parity, adequacy of prenatal care and history of hypertension in the family; b) degree of PIH and mode of delivery; c) mode of delivery and pregnancy outcome (maternal and fetal); d) degree of PIH and pregnancy outcome (maternal and fetal); and e) degree of PIH and pregnancy outcome, controlling for mode of delivery.

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HYPOTHESES

1. Mothers' age, parity, occupation, protein intake, adequacy of prenatal care, and history of hypertension in the family, are significantly associated with degree of PIH among pregnant mothers.

2. Mothers with severe PIH tend to have poor pregnancy outcomes for both mothers and the fetus. The higher the PIH, the more likely that the mother and the baby will be sick.

THEORETICAL AND CONCEPTUAL FRAMEWORK

According to the "Theory of Disease Triangle" (Burdon and Williams, 1985) a disease is an interplay of three factors; agent, host and environment. The susceptibility of the host, the virulence of the agent and a favorable environment contribute to the severity of the disease or illness. In this study, the degree of PIH as the disease entity is hypothesized to be linked to certain characteristics of the pregnant women (the host) which may predispose them to PIH or prevent the disease from setting in. These characteristics, which include age, nutrition, occupation, genetic history of hypertension act as agents or environmental factors. They are treated as possible predictors of degree of PIH (independent variable) which is expected to affect the condition of the mother and infant before and after birth (dependent variable). The possible interplay of the variables of the study are reflected in Figure 1.

METHODOLOGY

This is a retrospective study of 361 pregnant mothers with PIH ,who were admitted in two hospital in Iloilo City from October 1, 1995

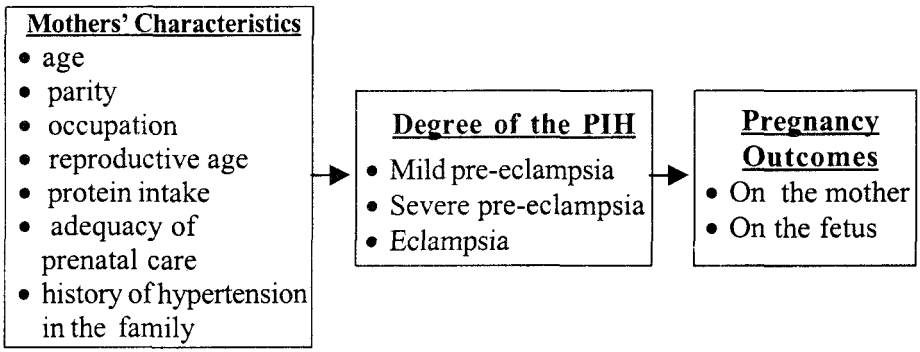

Figure 1. Schematic Flow of the Relationships of Variables

to October 31, 1997. With permission from the hospital directors, data on PIH level pregnancy outcomes and other relevant information needed to answer the study objectives were copied from the mothers' records. The data were categorized, computer-processed and analyzed using the SPSS software.

MAJOR FINDINGS OF THE STUDY

The majority of the pregnant mothers (63.43%) were 20 to 35 years old and belonged to the low-risk age group. Slightly more than one-third (36.6%) of the mothers belonged to the high-risk age group (Table 1). The average age of the mothers was 32.

Most of the mothers (50.7%) were *multiparas* or had given birth to 2 to 5 babies, 6.65% had more than five births or were *grand multiparas,* while 42.7% had given birth to only one baby (*primiparas*). Of the 361 pregnant mothers studied, half (50.1%) had history of hypertension in the family. The data indicate that regardless of a mother's number of deliveries or pregnancies, PIH can still develop. The data also suggest that with or without history of hypertension, any mother can develop PHI.

Prenatal Care

All of the 361 mothers studied received prenatal care at least once

Table 1. Distribution of Pregnant Mothers According to Age and Parity

Characteristics	f	%
Age		
Low risk (20-35 years)	229	63.4
High risk (< 20 years, > 35 years)	132	36.6
Total	361	100.0
Mean Age (in years)	32.0	
Parity		
Primipara (has borne one baby)	154	42.7
Multipara (has borne up to 5 babies)	183	50.7
Grand Multipara (has borne more than 5 babies)	24	6.6
Total	361	100.00
History of Hypertension		
Yes	181	50.1
No	180	49.9
Total	361	100.0

during their pregnancy. Less than half of the mothers, however, received "adequate" prenatal care throughout their pregnancy. Table 2 shows that during the first trimester, only 45.7 % had at least one prenatal visit, during the second trimester. Only 41.7% had received at least three prenatal care, while during the last trimester, only 36.1% had at least four prenatal visits. The data indicate that as the mothers' pregnancy progressed, their prenatal care compliance diminished.

Table 2. Distribution of Pregnant Mothers According to Prenatal Care

Period Care	Number (n=361)	%
Prenatal Care During the 1st Trimester		
Adequate (at least one prenatal care)	165	45.7
Inadequate	196	54.3
Prenatal Care During 2nd Trimester		
Adequate (at least three prenatal care)	149	41.3
Inadequate	212	58.7
Prenatal Care During 3rd Trimester		
Adequate (at least four prenatal care)	130	36.0
Inadequate	231	64.0

Incidence of PIH

Of the 361 mothers studied, 55.7% developed severe pre-eclampsia, 40.4 percent developed mild pre-eclampsia. In 3.9 % of the mothers, conditions progressed to eclampsia.

Mode of Delivery and Pregnancy Outcomes to Mothers and Fetus

The data also revealed that almost half (49.3%) of the pregnant mothers delivered via normal spontaneous vaginal delivery

Table 3. Distribution of Pregnant Mothers According to Degree of PIH

Degree of PIH	f	%
Mild Pre-eclampsia	146	40.4
Severe Pre-eclampsia	201	55.7
Eclampsia	41	3.9
Total	361	100.00

Relationship Between Degree of PIH and Selected Factors

A significant relationship was found between family history of hypertension and degree of PIH (Table 5). Mothers with history of hypertension tended to develop severe pre-eclampsia or eclampsia more than those who did not have family history of hypertension (Cramer's V=0.15).

Mode of delivery was also found to be significantly related to degree of PIH as indicated by a significant Cramer's V value of 0.13. There were more mothers who developed severe pre-eclampsia and eclampsia than those who only had mild eclampsia among those who delivered their babies through caesarean section.

Age of mothers, parity and adequacy of prenatal care, however, were not significantly associated with degree of PIH.

The findings indicate that family history of hypertension tended to predispose a mother to PIH and the higher the degree of PIH, the more likely that a mother cannot have normal delivery. On the other hand, age, parity and adequacy of prenatal care did not significantly contribute to the occurrence of PIH among the mothers.

Table 5. Relationship Between Selected Variables and Degree of Pregnancy Induced Hypertension (PHI)

Selected Variables	Cramer's V value
Age	0.04
Parity	0.09
Adequacy of Prenatal Care	
(1st tri)	0.06
(2nd tri)	0.08
(3rd tri)	0.09
History of Hypertension	0.15*
Mode of Delivery	0.13*

*Significant at 5 percent level

Mode of Delivery, Degree of PIH, and Maternal and Fetal Outcomes: Relational Analysis

This study further revealed was no significant relationship between mode of delivery and maternal outcome (Cramer's V=0.11). Table 6 shows that most of the mothers who had NSVD, CS, or forcep extraction did not suffer any complication during and shortly after delivery. On the contrary, mode of delivery was significantly related to fetal outcome. This means that babies delivered by CS or forcep extraction were more

likely to get sick compared to those who were delivered via NSVD.

When mode of delivery was controlled, the degree of association between degree of PIH and pregnancy outcome on the mother was further strengthened. The insignificant zero order Cramer's V of 0.11 between the two variables increased to 0.17 and became statistically significant. This means that mode of delivery tended to moderate the association between the degree of PIH and pregnancy outcome on the mother (Table 7).

The significant relationship between PIH and pregnancy outcome on the baby was sustained even when mode of delivery was controlled. The partial Cramer's V (0.24) was higher than the zero-order Cramer's V of 0.19. This means that mode of delivery tended to moderate the association between the degree of PIH and fetal outcome. The results support the hypothesis that mothers and infants are predisposed to greater risk and are likely to suffer from as degree of PIH of mothers increases.

Table 6. Relationship Between Mode of Delivery, Degree of PIH and Maternal and Fetal Outcome

Pregnancy Outcome	Mode of Delivery	Degree of PIH
Maternal Outcome	0.11	0.11
Fetal Outcome	0.19*	0.19*

*Significant at 5 % level

Table 7. Relationship Between Degree of PIH and Pregnancy Outcome Controlling for Mode of Delivery

Pregnancy Outcome	Partial Cramer's V
Maternal Outcome	0.17*
Fetal Outcome	0.24*

*Significant at 5 % level

CONCLUSIONS

PIH definitely increases the risk in the health and survival of the mother and infant. Although mothers with PIH may not suffer from serious complications after delivery, their infants are likely to be born premature, have low birth weight, sepsis or infection, hyperbilirubinemia and respiratory distress syndrome. Some could even die after delivery or inside their mother's uterus. The higher the mother's degree of PIH, the greater the infant's risk to be ill.

Mother's age, parity or mother's number of pregnancies, and adequacy of prenatal care do not significantly influence degree of PIH, but mothers with history of hypertension, are more prone to develop PIH.

Mode of delivery is not significantly related with mother's health condition after delivery, but it significantly affected fetal condition. Babies delivered by caesarean and forceps extraction are more likely to get sick compared to babies delivered via NSVD. Regardless of mode of delivery the fetal outcome is likely to be bad or worse if the mother has PIH.

RECOMMENDATIONS

1. Health care/services should be made more accessible to all women of reproductive age. Health service providers must be continuously trained to enable them to give proper intervention and health units must strengthen their referral system.
2. Women of reproductive age and their spouses should be educated on reproductive health, responsible parenthood and about the normal course of pregnancy and its possible complications;
3. Since history of hypertension in the family is significantly related to degree of PIH, there should regular screening and monitoring of patients with hypertension history;
4. Further studies be made on this problem to include other variables not covered in this study.

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