

Knowledge among Pregnant Women Regarding Pregnancy-Induced Hypertension at a Public Hospital in Malaysia

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ABSTRACT

Background: Pregnancy Induced Hypertension (PIH) is a significant contributor to various pregnancy complications. Therefore, an effective way to avoid possible fatal complications of the disease is to create awareness among pregnant women. Pregnant women who are aware of the danger signs of pregnancy will take responsibility for seeking medical attention if any complications arise. However, there is a lack of study done at public hospitals in Selangor regarding the knowledge level of PIH. **Aim:** To determine the level of knowledge regarding PIH among pregnant mothers. **Methods:** A cross-sectional design with systematic sampling was used. A total of 283 pregnant mothers who attended the antenatal clinic were recruited. All data were analysed using the Statistical Analysis Package for Social Sciences (SPSS) version 20. **Results:** The results showed that only 32.9% of the respondents had good knowledge of PIH, while 67.1% had poor knowledge regarding PIH. Most of them had a higher level of education, such as tertiary (62.9%), two-thirds were employed (68.2%), the majority were Malays (89.8%), had children between 2 and 4 years of age (36.4%), and 30.0% were currently pregnant for 16 to 20 weeks. Meanwhile, 53.0% of the respondents attended antenatal check-ups fewer than eight times. The result indicated a significant association between parity and level of knowledge on PIH ($\chi^2=7.848$; $p=0.049$). **Conclusion:** The majority of pregnant mothers have poor knowledge of PIH. Health education on PIH is needed to reduce the rate of delay in seeking treatment.

Keywords: Knowledge; Pregnancy-Induced; Hypertension; Pregnant Mothers

INTRODUCTION

Pregnancy-induced hypertension (PIH) is described as a complication of pregnancy that leads to hypertension being diagnosed, and it usually happens after 20 weeks of pregnancy in a woman who had previously been normotensive (Oyeyemi and Asaolu, 2015). PIH occurs in about 5 to 8% of all pregnancies worldwide. It contributes significantly to several pregnancy complications, namely premature delivery, fetal growth retardation, placental abruption, fetal death, maternal morbidity, mortality, and disability (Fadare, Akpor & Oziegbe, 2016).

Pregnancy and childbirth are considered normal physiological phenomena for most women. Nevertheless, some develop problems during their evolution, putting at stake the health of both mother and fetus. Hypertensive disorders complicate nearly 12 to 22% of all pregnancies, with PIH remaining a leading cause, having been found to affect up to 10% of pregnancies (Satpathy *et al.*, 2016). Usually, women who have edema (swelling), either have or do not have protein in the urine (proteinuria) and have high blood pressure is diagnosed with PIH (James, Mgbekem & Edem, 2009). PIH occurs most frequently during the 20th week of gestation or late in pregnancy, and it regresses after delivery in previously normotensive women. However, women with PIH are expected to return to normal after puerperium (Arshad *et al.*, 2011).

The incidence of PIH varies among different hospitals, as well as within states and countries. It contributes to nearly

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seven to 10% of all antenatal admissions and about 14% of maternal deaths in India (Muti *et al.*, 2015). Estimated 9.1% of maternal deaths in Africa because of hypertensive disorders of pregnancy (Muti *et al.*, 2015). It was revealed by The Zimbabwe Maternal and Perinatal mortality study in 2007, that the five leading causes of maternal mortality and the third most common reason for referral in labor was PIH (Muti *et al.*, 2015). The same article mentioned an increase in the referral from local authority health facilities to central hospitals on pregnant women because of PIH (from 20.7% in 2009 to 44% in 2011).

Based on the Confidential Enquiry of Maternal Deaths in Malaysia, between 2009 and 2011, 15.8% of maternal deaths were due to Hypertensive Disorder in Pregnancy (HDP) and its complications. It was reported that HDP is the third most common cause of maternal death after medically associated conditions (31.2%) and obstetric embolism (16.0%) (Rahman *et al.*, 2008). Another study in Malaysia reported, the hypertensive disorder among pregnant mother become the second highest adverse outcome among healthcare workers and most occurring to those who working shift and on call (Xavier, Ting & Hun, 2019).

In Malaysia, a study revealed that postponement in making the decision to search for care, delay in reaching a healthcare facility, and delay in receiving the proper treatment after reaching the healthcare facility were causes of delays in accessing obstetric care (Teng *et al.*, 2015). Problems concerning obstetric complications may arise if pregnant women lack knowledge of the signs and symptoms of PIH or the antenatal health risks. Due to this lack of knowledge, pregnant women may ignore the obstetric complications or disregard such a complication as an abnormal condition. Consequently, a lack of knowledge may lead to delayed decisions to seek care, risking the lives of the mother and fetus (Okour, *et al.*, 2012).

Women with hypertension during pregnancy should be informed of their disease to reduce the increasing mortality rate among them. Even though PIH itself cannot be prevented, it is pertinent to make the mothers aware that effective early prevention methods aim to avoid the possibly fatal complications of the disease. If the mothers participate in care, this ensures the prompt reporting of possible problems (Malhotra & Puri, 2012). This shows that health education during antenatal clinic will help to increase knowledge among pregnant women about preventing PIH (Maputle, Khoza & Lebeso, 2015).

According to reports from Malaysia, antenatal women receive antenatal education from healthcare providers such as trained doctors and nurses. In general, health education focuses on knowledge concerning nutrition, antenatal exercises, as well as the recognition and reporting of dangerous signs in pregnancy. One study outlined that women with good knowledge of PIH would immediately go to the hospital for prompt attention (Fadare, Akpor & Oziegbe, 2016). Similarly, findings from Malaysia revealed that having adequate knowledge about dangerous signs of pregnancy might alert women to seek timely care in cases of complications (Teng *et al.*, 2015). Nonetheless, studies in public hospitals have focused on the level of PIH knowledge among pregnant women. The present study examined the knowledge of PIH among pregnant women and the socio-demographic factors associated with this knowledge.

Aim

The study aimed to determine the level of PIH knowledge and the association between knowledge and socio-demographic factors among pregnant women.

METHODOLOGY

Design

This study relied on a quantitative approach (cross-sectional design) to describe the levels of knowledge among pregnant women related to pregnancy-induced hypertension in Malaysia.

Study population and sampling

The study's target population comprised 778 pregnant women who attended antenatal clinics at public hospitals in Malaysia. Krejcie & Morgan's (1970) calculation showed that the required sample size to represent the study population was 283. This study applied systematic sampling, a type of probability sampling, to select the participants. Therefore,

every fourth subject (778/283) in the sampling frame was chosen as a participant. The pregnant women who qualified through the inclusion criteria were at least 18 years old or older, understood English or Malay, attended antenatal care (ANC) follow-ups, and were mentally and emotionally stable.

Instrument

To assess the women's knowledge of PIH, this study used an adapted questionnaire that had originally been constructed in Nigeria (Fadare, Akpor & Oziegbe, 2016). The current researchers were granted written permission to adapt the questionnaire for this study. The questionnaire was translated into the local language (Bahasa Melayu). The questionnaire was divided into different sections. Section A contained six items about socio-demographic information (age, education status, occupation, race, parity, and gestational age). Section B had three items referring to whether the participants had heard of PIH before or received information about PIH. In Section C, 18 items assessed the participants' knowledge of the risk factors, signs and symptoms, complications, and prevention of PIH. The scales used to elicit responses were 'Yes', 'No', and 'Don't Know'. Overall, participants scoring 70% and above were considered to have good knowledge, while participants scoring below 70% were considered to have poor knowledge.

The questionnaire was modified according to the objectives of this study, and it was also checked by supervisors. It was validated by experts at the Department of Nursing to confirm that the questionnaire items were valid after undergoing face and content validity testing.

Additionally, the modified questionnaire was pretested among 28 pregnant women in the same setting. These pregnant women did not take part in the full-scale study. Upon analysis, the value of Cronbach's alpha, α was 0.80 for the knowledge scale, which indicated that the questionnaire items were reliable. This was because the value of Cronbach's alpha, α was above 0.7, which was sufficient evidence to demonstrate the internal consistency of the instrument (Lobiondo-wood & Haber, 2014).

Data collection

The hospital administrators granted permission for the study to be conducted among pregnant women at the ANC clinic. After systematic sampling, each participant was informed about the purpose of the study. The participants signed the consent form before they enrolled in the study. Data collection was undertaken from March to April 2018. The primary investigator distributed the questionnaire, and each participant completed it. The questionnaires were then collected, reviewed for completion, and sealed in an envelope.

Data analysis

The data was analysed using the Statistical Analysis Package for Social Sciences (SPSS) version 20.0. Descriptive statistics were used to determine the normality of the distribution of the data. Frequencies, means, and standard deviations were used to describe the socio-demographic characteristics of the participants. Besides that, the Pearson product-moment correlation coefficient and the chi-squared test were used to test the association between PIH knowledge and socio-demography, with a significance level of 0.05 ($p < 0.05$).

Ethical Consideration

Ethical Approval was taken from National Medical Research Registry (NMRR-17-2913-38780 (IIR) dated 8 February 2018.

RESULTS

The socio-demographic characteristics of participants

This study included 283 participants, all of whom were antenatal women. The response rate for this study was 100%. The results in Table 1 show that most participants were aged 21–30 years old (49.1%), and they had obtained a tertiary level of education (62.9%). Moreover, 68.2% of the participants were employed, and 89.8% of the participants were Malay. Most participants had between two and four children (36.4%), with the present gestational age being 16 to 20 weeks (30%). Although most participants had not been diagnosed with PIH (71.7%), 46.3% of them had heard about it

from healthcare providers.

Table 1: Socio-Demographic Factors of Antenatal Mothers

Variables	n=283	%	Mean ± SD
Age			31.1 ± 5.44
18-20	3	1.1	
21-30	139	49.1	
31-40	129	45.6	
41-45	12	4.2	
Educational Status			
Primary	5	1.8	
Secondary	97	34.3	
Tertiary	178	62.9	
Others	3	1.1	
Occupation			
Employed	193	68.2	
Unemployed	90	31.8	
Race			
Malay	254	89.8	
Chinese	10	3.5	
Indian	15	5.3	
Others	4	1.4	
Parity			
0 child	83	29.3	
1 child	78	27.6	
2-4 child	103	36.4	
>4 child	19	6.7	
Gestational Age			
16-20	85	30	
21-29	72	25.4	
30-34	70	24.7	
35-40	56	19.8	
Previous PIH			
Had PIH	81	28.3%	
Never had PIH	203	71.7%	
Information about PIH			
Heard about PIH	260	91.9%	
Never heard about PIH	23	8.1%	

Knowledge of Pregnancy Induced Hypertension

Overall, most participants demonstrated poor knowledge of PIH (67.1%), and only 32.9% had good knowledge of PIH.

Socio-demographic factors and levels of knowledge about pregnancy-induced hypertension

Tables 2 and 3 demonstrate the relationship between the socio-demographic variables and knowledge of PIH. The Pearson product-moment correlation coefficient showed a significant relationship between the age of the participants and their knowledge of PIH ($r = 0.172, p = 0.004$). The results from the chi-squared test also revealed a significant association between the levels of knowledge and the participants' parity ($\chi^2 = 7.848, p = 0.049$). In contrast, there was no significant association between the levels of knowledge and the participants' educational status ($\chi^2 = 3.922; p = 0.270$), occupation ($\chi^2 = 0.944, p = 0.331$), race ($\chi^2 = 0.452, p = 0.929$), or gestational age ($\chi^2 = 3.186, p = 0.364$).

Table 2: Relationship between Age and Knowledge of PIH

Demographic Variable		Age	Knowledge Score
Age	Pearson Correlation	1	0.172**
	Sig. (2-tailed)		0.004
	N	283	283

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

Table 3: Distribution of Association Between the Socio-Demographic Factors and Level of Knowledge

Variables	Level of Knowledge		χ^2	p
	Good n (%)	Poor n (%)		
Education:				
Primary	5 (1.8%)	0 (0%)	3.922	0.270
Secondary	69 (24.4%)	28 (9.9%)		
Tertiary	114 (40.3%)	64 (22.6%)		
Others	2 (0.7%)	1 (0.4%)		
Occupation:				
Employed	126 (44.5%)	67 (23.7%)	0.944	0.331
Unemployed	64 (22.6%)	26 (9.2%)		
Race:				
Malay	169 (59.7%)	85 (30%)	0.452	0.929
Chinese	7 (2.5%)	3 (1.1%)		
Indian	11 (3.9%)	4 (1.4%)		
Others	3 (1.1%)	1 (0.4%)		
Parity:				
0 child	65 (23%)	18 (6.4%)	7.848	0.049*
1 child	46 (16.3%)	32 (11.3%)		
2-4 child	68 (24%)	35 (12.4%)		
> 4 child	11 (3.9%)	8 (2.8%)		
Gestational age:				
16-20	62 (21.9%)	23 (8.1%)	3.186	0.364
21-29	47 (16.6%)	25 (8.8%)		
30-34	42 (14.8%)	28 (9.9%)		
35-40	39 (13.8%)	17 (6.0%)		

P<0.05* considered as statistically significant

DISCUSSION

The socio-demographic findings suggested that the majority of the participants were young and employed. They were also Malay. These findings are similar to those of previous studies, which found the majority of antenatal women to be young (Fadare, Akpor & Oziegbe, 2016; Satpathy *et al.*, 2016). The United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute of Statistics (2018) reported that the tertiary school enrolment for the Malaysian population increased by 36.87% to 44.12% from 2014 to 2016. These findings may be congruent with research by Malaysia Trading Economics (2018), which noted that the employment rate in Malaysia was high. A higher number of participants were Malay because there were fewer non-Malay participants compared to Malay participants (Department of Statistics Malaysia, 2014).

This study showed that 56.9% of the participants had either no children or one child. Meanwhile, 36.4% had between two and four children, and only 6.7% had more than four. The results correspond with the study in Nigeria, where most antenatal mothers (57.3%) had two or fewer children, compared to those having three to four children, who made up

24.4% (Adeloye, *et al.*, 2016). Only 8.3% of the participants in Nigeria had more than four children.

In this study, most of the participants had an idea about what PIH is. These findings contradict Okhae and Oyedunni's (2015) study, as well as Satpathy *et al.*, (2016), which found that antenatal women had not heard about PIH. Okhae and Oyedunni (2015) study discovered that the majority of the participants had never heard of PIH, while more than 80% of the participants in Satpathy *et al.*, (2016) study had no prior information about PIH. The parity may relate to the differences in the study contexts.

In terms of sources of information regarding PIH, many of the pregnant women had chosen healthcare providers as the principal source of information (46.3%); followed by the media, which accounted for 44.9%; and the family, which accounted for 42.4%. Other sources of information were friends and health talks, which accounted for 35.3% and 23.7%, respectively. The findings are almost identical to those of a previous study, in which the majority of the antenatal mothers remarked that the hospital was their primary source of information (41.7%), compared to only 10.0% from the media and 4.0% from health talks (Fadare, Akpor & Oziegbe, 2016). A study from Malaysia revealed the same findings, whereby antenatal mothers had chosen healthcare providers as the major source of information (68%), a far higher rate than the present study identified, followed by the mass media, which accounted for 39.9%, and the family or relatives, which contributed 38.8% (Teng *et al.*, 2015). Furthermore, 35.4% of the participants chose to find information from friends, and 3.9% of the participants chose to find it from others.

In the present study, most participants had poor knowledge of PIH. These findings contradict the findings of a previous study, which found that most participants had good knowledge of PIH (Fadare, Akpor & Oziegbe, 2016). The present findings suggest that most women have never experienced PIH. Antenatal women may be knowledgeable about PIH if they have had PIH or have inquired about it from healthcare providers. A Malaysian study has indicated that women's own past experiences of abnormal pregnancy or labor led to increased knowledge regarding the dangerous signs in pregnancy (Teng *et al.*, 2015). Another study done by Ibrahiem (2022) reported booklet distribution during the antenatal clinic will increase the knowledge among primi gravidae mothers. This study was focused on the lactation problem, but the nurses can implement this for PIH information, especially for primi gravidae mothers, and it may help to increase the mothers' knowledge (Ibrahiem *et al.*, 2022).

In this study, a mother's age was significantly related to her knowledge of PIH. Although there are limited studies related to these findings, it could be suggested that as mothers age, their knowledge of PIH may increase. In addition, the present study supported a previous finding, which indicated that a woman's parity had a significant association with her knowledge of PIH (Pacagnella *et al.*, 2012). This may be due to the older and multiparous women may have their own experiences with PIH, thus it increases their awareness on PIH.

Moreover, women's experience was an essential source of information because women who had experienced obstetric risks or complications in a previous pregnancy were more aware of the danger signs. Women who had experienced previous pregnancies were more likely to differentiate abnormalities and might have learned from their experience. This suggests that young women who are in their first pregnancy should be given priority when the healthcare provider plans to provide counselling and health education because they obviously have no experience (Pembe *et al.*, 2009). Having adequate knowledge of prenatal care and antenatal care will help the less-educated mother monitor their health status, and it can help them take early precautions for their pregnancy health status (Purnama & Herliana, 2019). Information on mothers' self-care and newborn care will increase knowledge among new mothers, and it also will help them increase their confidence level to monitor their health status during the antenatal and postnatal period (Amasha, Abdel-Haleem & Gamal, 2020). This is because improving the quality of care during the antenatal phase can help reduce the mother's health complications.

This study has several limitations. First, it was conducted only in a hospital. Consequently, the results cannot be generalized for all pregnant women throughout the country. Second, there might be a possibility of information bias as the study was conducted using a self-administered questionnaire, so there was a possibility that participants answered the questionnaire by asking other participants, discussing it with them, and copying the responses of others.

CONCLUSION

The study discovered that the majority of pregnant women had poor knowledge of PIH. There were also significant

associations between age, parity, and levels of PIH knowledge. Adequate information and counselling should focus on younger women and those with lower parity, as they have had no experience with obstetric problems. Midwives should plan health education according to the knowledge components that are lacking, especially the signs and symptoms of PIH among women at risk of developing PIH. Moreover, healthcare providers should advise antenatal women to obtain knowledge from various available sources.

Conflict of Interest

The authors declare that they have no conflict of interests.

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