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KNOWLEDGE OF PREECLAMPSIA AMONG ANTENATAL WOMEN IN A TERTIARY REFERRAL TEACHING HOSPITAL

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ABSTRACT

Each year around the world, about 76,000 pregnant women die from preeclampsia and related hypertensive disorders. Maternal death could be prevented if mothers are equipped with knowledge and by following preventive practices. The purpose of this study was to assess the knowledge about preeclampsia among antenatal women in a tertiary teaching hospital in Kelantan. The design selected for the study is cross-sectional design conducted on 76 antenatal mothers above 20 weeks of gestational age and attending antenatal clinical in Hospital Universiti Sains Malaysia, Kelantan. Non-probability purposive sampling technique was used. The tool included socio-demographic proforma and knowledge questionnaire on preeclampsia. The data was analysed in terms of both descriptive and inferential analysis. Data analysis regarding level of knowledge revealed that minority of mothers (18.4%) had adequate knowledge with a mean score of 53.46 (±26.42). Maternal age and receipt of information towards preeclampsia showed an association with knowledge scores at 0.05 level of significance. The study showed a need for awareness program and public education about preeclampsia among antenatal mothers.

Keywords: Preeclampsia, antenatal mothers, antenatal women

INTRODUCTION

Pregnancy is the time of physical and psychological preparation for birth and parenthood (Lowdermilk, 2013). Preeclampsia is one of the hypertensive disorders of pregnancy (HDP) (Sidani & Siddik-Sayyid, 2011), a systemic syndrome, which is characterized by new onset of hypertension and proteinuria during pregnancy, which can happen to antenatal mother after 20 weeks of gestational age (Hutcheon *et al.,* 2011). The severe forms of preeclampsia are often associated with complications such as hemolysis, elevated liver enzymes and low platelet count (HELLP) syndrome, placenta abruption, and eclampsia, which are life-threatening for mother and fetus (Minire *et al.*, 2013). It has been suggested that nearly one-half of the serious outcomes that occur as a result of preeclampsia may be prevented with good knowledge (Olayinka *et al.,* 2014). According to World Health Organization (WHO), preeclampsia is a major contributor to maternal and fetal mortality and morbidity (WHO, 2011).

Maternal and fetal mortality and morbidity are gradually increasing due to the complication from severe form of preeclampsia (Saidin & Siddik-Sayyid, 2011; Preeclampsia Foundation, 2013). Death caused by preeclampsia can be prevented during antenatal period through the provision of timely and effective care to the antenatal mothers presenting with these complications (WHO, 2011). The awareness of danger signs of obstetric complications will enable the antenatal mothers to accept obstetric and newborn care appropriately and timely (Pembe *et al.,* 2009). Early recognition and prompt treatment of preeclampsia are essential during prenatal care. However, antenatal mothers with preeclampsia should acquire the essential knowledge about complications and follow-up care. Nevertheless, the public health perspectives on early

and regular prenatal care found a lack of knowledge regarding preeclampsia among antenatal mothers (Olayinka *et al.,* 2014). This renders preeclampsia a cause for concern to public health and antenatal mothers in particular. During the period 1997 to 2000, preeclampsia was the cause of death in 4.1% cases in Malaysia (Ng, 2005).

In Malaysia, hypertensive disorders of pregnancy (HDP) is among the most common causes of maternal death (Kaur & Singh, 2011). As reported in a review of past trends of maternal mortality, HDP was accounted for 14.2% of the 966 maternal deaths between1997-2000 (maternal mortality rate was 28.1 per 100 000 live births in 2000). Preeclampsia was accounted for 4.1% cases in Malaysia (Ng, 2005). In the year 2007, HDP including preeclampsia had contributed to about 18.1% of maternal death in Malaysia (Kaur & Singh, 2011). A study conducted among Orang Asli women in Negeri Sembilan, Malaysia showed that the level of their knowledge regarding the importance of early antenatal care and complications of hypertension to fetus growth is poor (Rosalia & Muhamad, 2011). In Hospital USM Kubang Kerian, a total of 854 cases of preeclampsia occur between the year 2005 to 2013 (Unit Rekod Perubatan Hospital USM, 2014).

While the Millennium Development Goals (MDG5), is to address good maternal and fetal outcomes (Malaysia: The Millennium Development Goals, 2010), there is a paucity of data available in the published literature on the antenatal mothers' knowledge towards preeclampsia in Malaysia. Knowledge is a vital element to enable antenatal mothers to be aware of their obstetric health status and the importance of appropriate antenatal care. Hence the researchers feel that there is a need to assess the knowledge regarding preeclampsia.

AIM

To assess the knowledge about preeclampsia among antenatal women in a tertiary teaching hospital in Kelantan

METHODOLOGY

A cross-sectional design was conducted from December 2014 to February 2015 in Hospital Universiti Sains Malaysia (Hospital USM). The sample consisted of 76 antenatal mothers obtained through convenience sampling. In this study, the inclusion criteria were antenatal mothers who are above 20 weeks of gestational age and mentally and emotionally stable, be conversant with either English or Bahasa Malaysia; and willing to participate in this study.

The questionnaire was developed by the researchers based on the literature reviews. The questionnaire was translated to Bahasa Malaysia by the researcher for the purpose of better understanding among the local population. Back translation of the questionnaire was also performed by the researchers to improve the reliability and validity of the questionnaire and were further checked by the expert from the Language Center in Universiti Sains Malaysia. A self-administered questionnaire with dual language, English and the Bahasa Malaysia was used to assess the levels of antenatal mothers' knowledge towards preeclampsia.

Ethical approval to conduct the study was obtained from the Human Research Ethics Committee of the Universiti Sains Malaysia with the reference number of USM/JEPeM/14110414. A pilot study was carried out using 20 mothers in the Antenatal Wards with similar inclusion criteria not involved in the final sample. The aim is to ensure the clarity of the questionnaire items. The Cronbach alpha values obtained for the knowledge related to preeclampsia was 0.867 with slight modification to the item. Questionnaire consists of three section: Socio-demography (age, ethnicity, education, occupation, monthly income and parity), information about preeclampsia and knowledge on preeclampsia.

The questions on knowledge regarding preeclampsia had 15 closed ended dichotomous questions with a 'True' and 'False' criteria. The questions asked were about the meaning of preeclampsia, signs and symptoms associated with preeclampsia, risks and implications of preeclampsia, and the treatment to resolve preeclampsia. A scoring system was used for each component. Each correct answer was given one (1) score and zero (0) for each incorrect answer. The scores were ranged from 0 to 15. Minimum possible score was of zero (0), if the participants answered all the questions wrongly and maximum possible score of 15, if the participants answer all the questions correctly.The knowledge score was divided to three levels which are adequate knowledge, moderate and inadequate knowledge using the mean knowledge score as the cutoff point.

Data analysis was performed by using the Statistical Package for Social Science (SPSS) version 22.0 and Stata 11. Descriptive analysis was performed by using frequencies, percentages, means and standard deviations. Pearson Chi-Square test or Fisher's Exact test were used to determine the association between selected socio-demographic variables and preeclampsia knowledge level; and accessibility and availability of information sources about preeclampsia and preeclampsia knowledge level among the antenatal mothers. A P-value of equal or less than 0.05 was considered significant.

RESULTS

Table 1: Socio-demographic characteristics of participants in frequency, percentage, mean and standard deviation (SD) (n=76)

Variables	Frequency (%)	Mean (SD)
Age (years)		31.32 (5.15)
18-24	7 (9.2)	
25-29	24 (31.6)	
30-34	25 (32.9)	
35 and above	20 (26.3)	
Ethnicity		
Malay	74 (97.4)	
Chinese	2 (2.6)	
Educational Status		
Primary	1 (1.3)	
Secondary	32 (42.1)	
College	7 (9.2)	
Tertiary	36 (47.4)	
Employed		
Yes	40 (52.6)	
No	36 (47.4)	
Monthly Income		
<MYR 1000 (USD267.32)	41 (53.9)	
MYR1001-2000 (USD267.59 – 534.65)	11 (14.5)	
>MYR 2000 (>USD534.65)	24 (31.6)	
Parity		
Primigravida	21 (27.6)	
Multigravida	55 (72.4)	

Abbreviation: MYR, Malaysian Ringgit USD, United State Dollar

Table 1 summarises the socio-demographic characteristics of the antenatal mothers who participated in this study (n=76). The Malay form the majority (97.4%) with a mean age of 31.32 (± 5.15) years. Majority of the participants were multigravida (72.4%). Less than half of the participants surveyed have a tertiary educational level (47.4%) and were employed (52.6%). More than half (53.9%) of the antenatal mothers surveyed had a monthly income less than 1000 MYR (265.967 USD).

Table 2:Frequency and percentage on ever heard of preeclampsia (n=76)

Ever heard of preeclampsia	Frequency (%)
Yes	23 (30.3)
No	53 (69.7)

Table 2 shows that majority of the antenatal mothers have never heard of preeclampsia (69.7%).

Table 3:Frequency, percentage, mean and standard deviation of preeclampsia knowledge level among antenatal mothers (n=76)

Knowledge Level	Frequency(%)	Mean (SD)
Adequate (76% and above)	14 (18.4)	53.43 (26.42)
Moderate (41% - 75%)	37 (48.7)	
Inadequate (40% and below)	25 (32.9)	

Table 3 demonstrates the level of knowledge among the antenatal mothers about preeclampsia. Results revealed that only 18.4% of the antenatal mothers about preeclampsia with a mean preeclampsia knowledge of 53.46 (±26.44), which was within moderate knowledge level range.

Table 4: Association of antenatal mothers' socio-demographic variables and level of preeclampsia knowledge (n=76)

Variable	Knowledge Level, n (%)			X^2 value (df)	*p* value
	Adequate	Moderate	Inadequate		
Age (Year)					
18-24	0 (0)	6 (85.7)	1 (14.3)		0.046[b*]
25-29	5 (20.8)	8 (33.3)	11 (45.8)		
30-34	2 (8.0)	13 (52.0)	10 (40.0)		
35 and above	7 (35.0)	10(50.0)	3 (15.0)		
Ethnicity					1.000[b]
Malay	14 (18.9)	36 (48.7)	24 (32.4)		
Chinese	0 (0)	1 (50.0)	1 (50.0)		
Educational Status	0 (0)	0 (0)	1 (100.0)		0.322[b]
Primary	3 (9.4)	17 (53.1)	12 (37.5)		
Secondary	1 (14.3)	3 (42.9)	3 (42.9)		
College	10 (27.8)	17 (47.2)	9 (25.0)		
Tertiary					
Employed				1.002 (2)	0.606[a]
Yes	9 (22.5)	19 (47.5)	12 (30.0)		
No	5 (13.9)	18 (50.0)	13 (36.1)		
Monthly income					0.200[b]
<RM 1000	4(9.8)	21 (51.2)	16 (39.0)		
RM1001 - 2000	3 (27.3)	4 (36.4)	4 (36.4)		
>RM 2000	7(29.2)	12 (50.0)	5 (20.8)		
Parity				4.554 (2)	0.103[a]
Primigravida	5 (23.8)	13 (61.9)	3 (14.3)		
Multigravida	9 (16.4)	24 (43.6)	22 (40.0)		

[a] *Pearson Chi-square test*
[b] *Fisher's Exact test*
**A P-value of equal or less than 0.05 was considered significant*

Table 4 shows the association between socio-demographic characteristics of the antenatal mothers and their preeclampsia knowledge level. As demonstrated in the result, maternal age was significantly associated with preeclampsia knowledge level among antenatal mothers (p=0.046). There was no significant association between preeclampsia knowledge level and educational status (p=0.322), employed status (p=0.606), monthly income (p=0.200) and parity (p =0.103).

Table 5: Association between ever heard of preeclampsia and preeclampsia knowledge levels among antenatal mothers (n=76)

Variable	Knowledge Level, n (%)			x^2 value (df)	*P* value
	Adequate	Moderate	Inadequate		
Ever heard of Preeclampsia				15.280 (2)	<0.001[a]*
Yes	10 (43.5)	12 (52.2)	1 (4.3)		
No	6 (11.3)	25 (47.2)	22 (41.5)		

[a] *Pearson Chi-square test*
[*] *A p-value of equal or less than 0.05 was considered significant*

DISCUSSION AND NURSING IMPLICATIONS

This is the first survey on the knowledge on preeclampsia among antenatal mothers in Kota Bharu, Kelantan. However, this survey only examine on one hospital. Meanwhile, in terms of ethnicity, Malays form the majority in this study (97.4%). Although Malaysia has a multi-ethnic population of approximately 60% Malay, 30% Chinese, and 10% Indian and other ethnic minorities, we cannot ignore the fact that the number of non-Malay participants was small compared to the Malay. The demographics of Kelantan are represented by 95% Malay. Hence, the explanation in this ethnic race forms the largest community in this state (Department of Statistics Malaysia, 2010).

In terms of knowledge about preeclampsia, our study revealed that a substantial number of antenatal mothers exhibit a lack of adequate levels of knowledge regarding preeclampsia. This is probably due to their poor knowledge on the importance related to hypertension in pregnancy and complications. As was mentioned in Rosalia and Muhamad's (2011) study among the indigenous or the Orang Asli women population in Negeri Sembilan, Malaysia. Further, the majority of them failed to relate the preeclampsia to its associated warning signs and symptoms, including swelling in face and hands, vision change with weights increased 5 pounds (3.2kg) within a week. This finding was consistent with the results illustrated by studies from India (Jos *et al*., 2010; Joseph *et al*, 2013). Their survey revealed that the majority of the antenatal mothers had average knowledge towards preeclampsia. The lack of adequate knowledge on preeclampsia may be due to lack of planned preeclampsia educational or awareness program among antenatal mothers. Indeed, some studies revealed that the educational program is important to improve antenatal mothers' knowledge towards preeclampsia. The study of Kavitha *et al*., (2012) suggested that structured teaching program was significantly effective in improving the knowledge of pregnancy warning signs among antenatal mothers. In addition, Kim *et al*., (2010) revealed that the educational program consists of affirmative effect on pregnancy related to level of knowledge among the married women. Consequently, as knowledge is the base for practice, the education program regarding preeclampsia is needed.

The finding of the present study indicated that maternal age was significantly associated with the knowledge of antenatal mothers towards preeclampsia. Most of the mothers with maternal age equal or greater than 35 years old had adequate preeclampsia knowledge compared with the younger mothers. This was similar to the study result of Jos *et al* (2010), which stated that age was associated with the knowledge scores of antenatal mothers toward preeclampsia. Joseph *et al* (2013) study also revealed similar findings. The possible explanation might be mothers with advanced maternal age have higher risk perception toward the pregnancy complications. Advanced maternal age was likely to have adverse perinatal outcomes as well as increased risk of pregnancy complications (Lamminpää *et al*., 2012). There was evidence that the older maternal age (≥30 years) was significantly associated with higher odds of having preeclampsia (Bilano *et al*, 2014). This explains the fact that increased awareness among older women to access to the knowledge regarding pregnancy health.

Knowledge deficit is rectifiable, as several factors were found to be significantly associated with the preeclampsia knowledge among antenatal mothers. One of the factors was the receipt of information regarding preeclampsia from the clinician or other media sources. In the present study, ever heard about preeclampsia was found significantly associated with preeclampsia knowledge among antenatal mothers. The majority of the mothers who ever heard about

preeclampsia consist of adequate knowledge compared to those who never heard about preeclampsia. This finding was similar to the study from United States, which revealed that antenatal mothers' reception of information sources regarding preeclampsia was significantly associated with their understanding toward preeclampsia (You *et al*, 2012). This implies that the health promotion or media sources are crucial in information dissemination, which enhances the knowledge and awareness about preeclampsia among antenatal mothers. There are some evidences, that women access to the adequate information was important for them to recognize the warning signs and symptoms associated with preeclampsia (Jordan *et al*, 2013). Study of Bilano *et al*., (2014) also stated that there was necessity to improve the availability, accessibility and quality of maternal healthcare facilities and services in order to reduce the risk of preeclampsia during antenatal period. The present study showed that only 30.3% of the antenatal mothers ever heard about preeclampsia. This indicates that lack of media sources and health promotion, which as a result did not provide provide preeclampsia information to the people. Health care providers are the major sources of health information among the pregnant mothers. But, not all the obstetric clinicians will discuss about preeclampsia with their patients unless the antenatal mothers complain of having the preeclampsia associated symptoms. They are referred in particular when the information is needed. In addition, the less accessibility to preeclampsia information might be affected by the insufficient risk perception or attitude among the antenatal mothers. It can be supported by the study of Sarah *et al* (2013) which revealed that ignorance was the major barriers for pregnant women to use the health information sources. In this regards, it is suggested that the availability, accessibility and quality of pregnancy healthcare information system still need to be improved and the educational program regarding preeclampsia should be widely promoted among the antenatal mothers.

CONCLUSION

It can be concluded that most of the antenatal mothers have a lack of knowledge about preeclampsia. Therefore, patient education regarding preeclampsia in public or private healthcare organization and community is essential to address the deficit in knowledge. This is to create educated antenatal mothers who can take responsibilities of their own health upon noticing signs and symptoms, and can seek preventive measures.

LIMITATIONS AND RECOMMENDATIONS

While this study has contributed to a preliminary understanding of the antenatal mothers regarding their knowledge levels about preeclampsia; it has its strengths and limitations. The strength of this study was the Cronbach's alpha value of 0.867 indicated good internal consistency reliability of the test. In addition, the results is numerical (quantifiable), hence considered more 'objective'. This study had several limitations. The sample was small and restricted to one tertiary, referral hospital. Thus the results are difficult to generalize regarding all the antenatal mothers in Malaysia. Additionally, most of the antenatal mothers were Malay. Hence it is clearly not possible to compare the level of knowledge of the two groups. Finally, although the antenatal mothers' knowledge about preeclampsia can be measured, further research, qualitative and quantitative, will be beneficial in gaining a deeper understanding of these mothers' views about preeclampsia. Additionally, further investigation will be required to measure how best to educate these mothers and whether this education of preeclampsia can also decrease adverse outcomes associated with preeclampsia syndrome. However, this study may act as a preliminary survey due to the scarcity of published data regarding the knowledge level about preeclampsia among antenatal mothers.

REFERENCES

Bilano, V.L., Ota, E., Ganchimeg, T., Mori, R. & Souza, J.P. (2014) Risk Factors of Pre-Eclampsia/ Eclampsia and Its Adverse Outcomes in Low- and Middle- Income Countries: A WHO Secondary Analysis. PLOS ONE. 9(3), pp 1-9.

Department of Statistics Malaysia (2010). Population distribution and basic demographic characteristics.

Hutcheon, J., Lisonkova, S & Joseph, K.S. (2011) Epidemiology of preeclampsia and the other hypertensive disorders of pregnancy. Best Practice & Research Clinic Gynaecology. 25(4), pp 391-403.

Jordan, R.G., Engstron, J.L., Marfell, J.A. & Farley, C.L. (2013) Prenatal and Postnatal Care. Galveston: John Wiley & Sons.

Jos, N., Raddi, S., & Kharde, S (2010). Assess the Knowledge Regarding Preeclampsia and Its Self-care Measures among Antenatal Women Attending Antenatal Outpatient Department of KLES Dr Prabhakar Kore Hospital, Belgaum. Journal of South Asian Federation of Obstetrics and Gynecology. 2(2), pp 157-162.

Joseph, S.J., Nayak, S., Fernandes, P., & Suvarna, V (2013). Effectiveness of Antenatal Care Package on Knowledge of Pregnancy Induced Hypertension for Antenatal Mothers in Selected Hospitals of Mangalore. Nitte University Journal of Health Science. 3(1), pp 8-10.

Kavitha, P., Prasath, R.A. & Krishnaraj, P. (2012) A Study to Assess the Knwoledge of Antenatal Mothers Regarding Pregnancy-Induced Hypertension. International Journal of Pharmacy Practice & Drug Research. 2(1), pp 1-2.

Kim, E.H., Lee, E., Kim, M., Park, D.Y. & Lee, S.H. (2010). Effects of an Educational Program of Pregnancy and Delivery on Pregnancy related Knowledge, Newborn Care Knowledge, and Postpartum Care Self-efficacy of Marriage Immigrant Women. Journal of Korean Academic Nurses 40(1), pp 78-87.

Lamminpää, R., Vehviläinen-Julkunen, K., Gissler, M. & Heinonen, S (2012). Preeclampsia complicated by advanced maternal age: a registry-based study on primiparous women in Finland 1997-2008. BMC. Pregnancy and Childbirth. 12(47), pp 1-5.

Lowdermilk, D (2013). Nursing Care of the Family during Pregnancy. In: Deitra L, Shannon E, Mary C, eds. Maternity Nursing. US, Mosby: 190-237.

Malaysia: The Millennium Development Goals at 2010 (2011) Malaysia: United Nations Country Team.

Minire, A., Mirton, M., Imri, V., Lauren, M. & Aferdita, M (2013). Maternal Complications of Preeclampsia. Medical Archives. 67(5), pp 339-341.

Ng, K (2005). Report on the confidential enquiry into maternal deaths in Malaysia 1997-2000. Putrajaya: Ministry of Health Malaysia.

Olayinka, O., Achi, O., Amos, A. & Chideu, E. (2014) Awreness barriers to utilization of naternal heath care services among reproductive women in Amassoma community, Bayelsa State. Academic Journals 6 (1): 10-15.

Pembe, A., Urassa, D., Carlstedt, A., Lindmark, G., Nyström, L. & Darj, E (2009). Rural Tanzanian women's awareness of danger signs of obstetric complications. BMC Pregnancy and Childbirth. 9(12), pp 1-8.

Preeclampsia Foundation (2013). Preeclampsia Foundation Introduces Illustrated Education Tool. http://www.preeclampsia.org/component/content/article/44-press-releases/269-preeclampsiafoundationintroduceseducationtool.

Rosalia, A.M. & Muhammad, J.J. (2011). Knowledge, attitude and practices on antenatal care among orang asli women in Jrempel, Nigeria Sembelian. Malaysian. Journal of Public Health Medicine. 11(2), pp 13-21.

Sarah, E.A., Ayinla, O.T. & Olusegun, O.S (2013). Health Information Need and Information Sources of Pregnant Women in Ogbomoso Metropolis, Oyo State, Nigeria. http://digitalcommons.uni.edo/libphilprac/981.

Sidani, M & Siddik-Sayyid, S.M (2011). Preeclampsia, A New Perspective 2011. Middle East Journal of Anesthesiology. 21(2), pp 207-215.

WHO (2011) WHO recommendations for Prevention and treatment of preeclampsia and eclampsia. Switzerland: World Health Organization.

You, W., Wolf, M., & Bailey, S., Pandit, A.U., Waite, K.. R., Sobel, R. M. & Grobman ,W. (2012) Factors Associated with Patient Understanding of Preecampsia. Hyertension in Pregnancy. 31(3), pp 341-349.