www.jchr.org



JCHR (2023) 13(6), 373-378 | ISSN:2251-6727

Determinants of Knowledge on Maternal Safety in Pregnancy-Induced Hypertension

Alby Johnson¹, Sasi Vaithilingan^{2*}

¹Vinayaka Mission's Research Foundation, Deemed to be University, Salem, Tamil Nadu, India. ^{2*}Vinayaka Mission's College of Nursing, Puducherry, Vinayaka Mission's Research Foundation, Deemed to be University, Salem, Tamil Nadu, India.

*Corresponding Author: Dr. Sasi Vaithilingan

Professor, Vinayaka Mission's College of Nursing, Puducherry, Vinayaka Mission's Research Foundation, Deemed to be University, Salem, Tamil Nadu, India. Email:-sasicoumar@gmail.com

KEYWORDS:	ABSTRACT
Pregnancy, Safe	Introduction: Pregnancy-Induced Hypertension is one of the leading causes of maternal
motherhood,	morbidity and mortality. There is only supportive treatment available to manage
Pregnancy Induced	Pregnancy-Induced Hypertension. Timely treatment and appropriate support through
Hypertension,	education and counseling may reduce the morbidity and mortality rates. This study
antenatal mothers,	aimed to assess the knowledge regarding maternal safety in Pregnancy-Induced
pregnant women,	Hypertension and to find the determinants of knowledge among antenatal mothers with
maternal safety	Pregnancy Induced Hypertension.
	Methods: A total of 50 antenatal mothers with Pregnancy Induced Hypertension
	attending the antenatal clinic at a secondary care hospital in Cuddalore, Tamil Nadu
	were participated in the study. Socio-demographic data and knowledge about maternal
	safety in Pregnancy Induced Hypertension was assessed using a self-structured
	questionnaire. Collected data were analyzed using SPSS software version 28.
	Results: The mean age of the antenatal mother was 25.08. Out of 50 antenatal mothers,
	52% of them were in the age group of 20- 24 years. The majority 66% of them were
	primi antenatal mothers. Most of them (60%) possessed inadequate knowledge and only
	4% had adequate knowledge regarding maternal safety in Pregnancy Induced
	Hypertension.
	Conclusion: The study found that antenatal mothers lack the expected level of
	knowledge regarding maternal safety measures in Pregnancy Induced Hypertension.
	This drives the attention to organize intensive awareness programs on maternal safety
	for antenatal mothers who seek services from primary health centers and hospitals.

INTRODUCTION

Pregnancy and childbirth are normal physiological process which is essential for the existence of human life [1]. It often requires support from the health professional rather than treatment [2]. Pregnancy complications are the ones that develop during pregnancy or existing illness and may lead to maternal mortality or morbidity. High-resource and developed country like the United States has increased Maternal Mortality Rate (approximately 700 per year) since the 1990s [3,4]. The reported maternal deaths were related to hemorrhage, hypertensive disorders, thromboembolic events, and infections. This called for an urgent need to reduce the Maternal Mortality Rate (MMR) in the US and resulted in the formulation of the National Partner for Maternal Safety (NPMS) aimed to continually improve patient safety in women's health care. NPMS

created and implemented evidence-based safety bundles to accomplish their aim [5].

Maternal safety focuses on hospital-based care to enhance the quality and safety in maternity care. The concept of maternal safety primarily includes four Rdomains - Readiness, Recognition and prevention, Response, Reporting and system learning [6] and a newly added fifth domain was Respectful care [7]. Readiness means the preparation of setting like training of health care providers, maternal health risk assessment, availability and quick access to equipment and medications, in-situ drills, developing and adopting condition-specific protocols, for maternal events. Recognition involves the identification of risks and needs of every mother and to develop the systems to rule out Maternal Early Warning Signs (MEWS). Response concentrates on the setting of the maternity unit handled

www.jchr.org

JCHR (2023) 13(6), 373-378 | ISSN:2251-6727



by trained health care providers to implement the unit's protocol towards maternal events. Reporting and system's learning denote immediate reporting of maternal events and actions taken to improve the outcome [8]. Respectful care means identifying the patient's right to be educated, informed, and supported [7]. A number of maternal safety bundles were developed and disseminated to establish maternal safety in specific maternal events like obstetric hemorrhage, severe hypertension in pregnancy, safe reduction of primary cesarean sections, cardiac conditions in obstetrical care, care for pregnant and postpartum people with substance use disorder, perinatal mental health conditions, postpartum discharge transition and sepsis in obstetric care [9].

Hypertensive disorders of pregnancy are one of the leading causes of maternal mortality and morbidity in India. Globally 5- 8 % of pregnant mothers are affected with Pregnancy Induced Hypertension (PIH) and accounts for 14% of death [10]. In India maternal morbidity and mortality due to hypertensive disorders of pregnancy are 18.35 % and 0.96 % respectively [11]. One of the review stated that supportive treatment is the only choice to manage PIH [12]. Women who are aware about PIH are potential to report the symptoms and get the treatment at the earliest from health care providers [13]. Timely treatment and appropriate support through education and counseling may reduce morbidity and mortality rates.

On search globally numerous studies studied the knowledge and behavior of pregnant women on PIH. Many shreds of evidence show inadequate awareness, negative attitude and lack of preventive practice toward hypertensive disorders in pregnancy that results in complicated pregnancy [14]. Whereas, no one study specifically focused on maternal safety towards PIH. Concerned with an identified gap, the current study aimed to determine the knowledge on maternal safety in PIH and also to identify the determinants of the knowledge among antenatal mothers with PIH.

METHODS

Ethical Considerations

Ethical clearance (Ref no: VMCN PDY/IEC 2022/065) was obtained from Institutional Ethics Committee. The participant information sheet was explained and handed over to the antenatal mothers who were included in the study and consent was obtained from them.

Study design and setting

A cross-sectional study was conducted in the outpatient department of Obstetrics and Gynecology at a secondary care hospital at Cuddalore. The setting provides Ante Natal Care (ANC) services like pregnancy registration, regular monitoring, laboratory investigations, medications, vaccination and counselling services for the antenatal mothers. Also, it provides comprehensive emergency obstetric and newborn care services for intranatal and postnatal mothers.

Study population and sample

All the antenatal mothers with pregnancy induced hypertension comprises the study population. Antenatal mothers with pregnancy induced hypertension seek antenatal care service at outpatient department of Obstetrics and Gynecology, Government district hospital, Cuddalore from April to May 2022 becomes the samples. The antenatal mothers who are after 20 weeks of gestational age with pregnancy-induced hypertension, can understand and speak Tamil and willing to participate in the study were included for the study. Antenatal mothers with pregnancy-induced hypertension associated with any other illness were excluded from the study.

Sample size and sampling technique

The sample size for the present study was calculated based on the previous study finding [14]. From the previous study the proportion of pregnant women with adequate knowledge on PIH was 15.4%. Thus, using the Cochran formula

$$\mathbf{n}_0 = \frac{Z^2 pq}{e^2}$$

Where, ' n_0 ' is sample size; 'Z' is confidence level (at 95%; 1.96); 'p' is the proportion of the population with adequate knowledge on PIH (15.4%); 'q' is 1 – p; and 'e' is marginal error (10%), a sample size of 49 was obtained. For the current study the samples size was rounded to 50 antenatal mothers with PIH. The non-probability convenient sampling technique was used to select the samples for the present study.

Data collection Instruments and methods

The investigator developed Self-reported structured questionnaire which consists of two sections. Section A Demographic variables which include, age, occupation, income, socioeconomic status, religion, pregnancy trimester, gravida, age at marriage, and history of hypertension in the previous pregnancy. Section B – Knowledge on maternal safety in PIH which has 30 questions in five aspects- Overview on maternal safety (5 items), PIH (7 items), Diet for PIH (7 items), Anxiety in pregnancy (5 items) and Exercise (6 items). The correct option was given the score of 1. The total score was 30. The raw scores were transformed on a linear scale of 0-100 for better interpretation. The scores were arbitrarily interpretated as inadequate knowledge (<50), moderately adequate knowledge (50-75) and adequate (>75). knowledge The constructed

www.jchr.org

JCHR (2023) 13(6), 373-378 | ISSN:2251-6727



questionnaire was validated by experts and reliability r= 0.8 was obtained using Cronbach's Alpha.

Data Analysis

The collected data were entered using Epi Info and analyzed using SPSS version 28.0 The data were assessed for normal distribution. The categorical variables were described using frequency and percentage and the continuous variables were interpreted using Mean and Standard deviation. Since the data were normally distributed, Chi-square test was used to identify the association between knowledge and demographic variables.

RESULTS

Participants' demographic characteristics and obstetric history

Table 1 shows the demographic characteristics of antenatal mothers with PIH. The mean age of the mothers was found as 25.08. Those in the age group of 20-24 years constituted the largest proportion 26(52%). The majority of the respondents 40(80%) were married at 20-24 years of age. Participants who were graduates or postgraduates constituted 18 (36%), while 30 (60%) respondents were homemakers. The majority of the participants 30 (60%) fitted to upper-lower socioeconomic status. Most of the respondents 31 (62%) belonged to the Hindu religion.

Out of 50 antenatal mothers, 33 (66%) of them were primigravida and were in the third trimester of pregnancy and 45 (90%) of them had no history of hypertension (Table 2).

Mean, Standard Deviation and Level of Knowledge of participants

Table 3 depicts the mean and Standard Deviation (SD) of knowledge which includes an overview of maternal safety, PIH, diet for PIH, anxiety in pregnancy and exercise. From the findings it was identified that the highest mean score was constituted in the aspect of diet in PIH (55.145, SD ± 20.205). The total knowledge mean score was 44.60 with SD ± 18.454 .

From table 4 it was found that 38 (76%) antenatal mothers had adequate knowledge regarding exercise while 22 (44%) possessed moderate knowledge on diet for PIH and 9 (18%) had adequate knowledge on anxiety in pregnancy. Most of the antenatal mothers 30 (60%) had inadequate knowledge and only 2 (4%) had adequate knowledge regarding maternal safety in PIH. *Determinants of knowledge on maternal safety in PIH* The Chi- square analysis showed significant association between knowledge of antenatal mothers with variables

like education (p= 0.001, p<0.001), occupation (p= 0.036, p<0.05), income (p=0.039, p<0.05) and socioeconomic (p=0.001, p<0.001). Other demographic variables did not show the association with knowledge (Table 5).

Variables	Categories	Frequency (%)
Age	<20	04 (8)
	20-24	26 (52)
	25-29	14 (28)
	30-35	06 (12)
Age at marriage	<20	05 (10)
	20-24	40 (80)
	25-29	05 (10)
Education	Graduate/ Postgraduate	18 (36)
	Intermediate/ post-high school diploma	17 (34)
	High school certificate	08 (16)
	Middle school certificate	07 (14)
Occupation	Profession	4 (8)
	Semi-profession	1(2)
	Skilled worker	5 (10)
	Semi-skilled worker	5 (10)
	Unskilled worker	5 (10)
	Homemaker	30 (60)
Income	29,200 - 39,032	2 (4)
	19,516–29,199	22 (44)
	11,708–19,515	20 (40)
	3,908–11,707	6 (12)
Socioeconomic status	Upper middle	5 (10)
	Lower middle	15 (30)
	Upper lower	30 (60)

Table 1: Sociodemographic characteristics of antenatal mothers

www.jchr.org



JCHR (2023) 13(6), 373-378 | ISSN:2251-6727

Religion	Hindu	31(62)
	Muslim	09 (18)
	Christian	10 (20)

Table 2: Obstetrical History of antenatal mothers

	Categories	Frequency (%)
Variables		
Gravida	Primigravida	33 (66)
	Multigravida	17 (34)
Pregnancy trimester	Second trimester	17 (34)
	Third trimester	33 (66)
History of hypertension	Yes	05 (10)
	No	45 (90)

Table 3. Mean and Standard Deviation of Knowledge on maternal safety in PIH

Level of Knowledge	mean	SD	SE
Overview of maternal safety	32.00	24.244	3.429
Pregnancy-induced hypertension	45.43	25.765	3.644
Diet for pregnancy-induced hypertension	55.14	20.205	2.857
Anxiety in pregnancy	51.20	20.268	2.866
Exercise	35.67	23.087	3.265
Overall knowledge	44.60	2.610	18.454

Table 4. Level of Knowledge on maternal safety in PIH

Level of Knowledge	Inadequate (<50)	Moderately adequate (50-75)	Adequate (>75)
	Frequency(%)	Frequency(%)	Frequency(%)
Overview of maternal safety	37 (74)	10 (20)	03 (6)
Pregnancy-induced hypertension	29 (58)	15 (30)	06 (12)
Diet for pregnancy-induced hypertension	23 (46)	22 (44)	05 (10)
Anxiety in pregnancy	24 (48)	17 (34)	09 (18)
Exercise	38 (76)	11 (22)	01(2)
Overall knowledge	30 (60)	18 (36)	02 (4)

Table 5. Association of level of Knowledge with selected demographic variables

Demographic	Category	Level of Knowledge			Chi-	p-value
Variables		Inadequate	Moderately	Adequate	Square	_
		f (%)	adequate f(%)	f (%)	<i>x</i> ²	
Age	<20	03(10)	01 (5.6)	0		
	20-24	15(50)	11 (61.1)	0	5 224	0.514
	25-29	08 (26.7)	05 (27.8)	01(50)	5.234	0.314
	30-35	04(13.3)	01 (5.6)	01(50)		
Education	Graduate/ Postgraduate	03 (10)	13 (72.2)	02(100)		
	Intermediate/ post-high	12 (40)	05 (27.8)	0		0.001
	school diploma				25.672	0.001
	High school certificate	08 (26.7)	0	0		
	Middle school certificate	07 (23.3)	0	0		
Occupation	Profession	0	03 (16.7)	01(50)		
	Semi-profession	0	01 (5.6)	0		
	Clerical Skilled worker	03 (10)	02(11.1)	0	10 215	0.036
	Semi-skilled worker	01 (3.3)	04 (22.2)	0	19.515	
	Unskilled worker	05 (16.7)	0	0		
	Homemaker	21 (70)	08 (44.4)	01 (50)		
Income	29,200 - 39,032	0	02 (11.1)	0		
	19,516–29,199	09 (30)	12 (66.7)	01 (50)	12 222	0.039
	11,708–19,515	15 (50)	04 (22.2)	01 (50)	13.232	
	3,908–11,707	06 (20)	0	0		

www.jchr.org



JCHR (2023) 13(6), 373-378 | ISSN:2251-6727

Socioeconomic	Upper middle	0	04 (22.2)	01 (50)		0.001
status	Lower middle	06 (20)	09 (50)	0	18.037	0.001
	Upper lower	24 (80)	05 (27.8)	01 (50)		
Religion	Hindu	21 (70)	08 (44.4)	02 (100)		
-	Muslim	06 (20)	03 (16.7)	0	7.226	0.124
	Christian	03 (10)	07 (38.9)	0		
Pregnancy	Second trimester	10 (33.3)	07 (38.9)	0	1 228	0.541
trimester	Third trimester	20 (66.7)	11 (61.1)	02 (100)	1.220	0.541
Gravida	Primigravida	21 (70)	11 (61.1)	01 (50)	0.634	0.728
	Multigravida	09 (30)	07 (38.9)	01 (50)	0.034	0.728
Age at marriage	<20	04 (13.3)	01 (5.6)	0		
	20-24	22 (73.3)	17 (94.4)	01 (50)	7.083	0.132
	25-29	04 (13.3)	0	01 (50)		
History of	Yes	27 (90)	17 (94.4)	01 (50)		
hypertension in	No	3 (10)	01 (5.6)	01 (50)	3 051	0.130
the previous					5.751	0.139
pregnancy						

DISCUSSION

The burden of maternal mortality and morbidity rates are highly attributed to hypertensive disorders of pregnancy especially in developed and high-income countries [15]. A recent meta-analysis done in India showed that 1 out of 11 pregnant women is suffering from Hypertension [16]. Driven by the high prevalence rate of hypertensive disorders, the current study identified the level of knowledge on maternal safety in PIH among antenatal mothers and the determinants of the knowledge among antenatal mothers with PIH who attended the antenatal care clinic at a secondary care hospital. It was pertinent to understand the level of knowledge among pregnant women on maternal safety in PIH since the knowledge and awareness of healthrelated issues are the initiative for health-seeking behavior and impacts on positive health outcomes [14]. Most of the findings of the present study were similar to the existing literature. The present study found that the majority of antenatal mothers had inadequate knowledge on maternal safety. A similar study conducted in Chhattisgarh also found that pregnant women had poor knowledge regarding PIH [1]. Another study conducted in Ethiopia revealed the fact that the majority of pregnant women had poor awareness regarding PIH and its management. In the study [13] conducted by Evans KA, the participants' knowledge regarding hypertensive disorders of pregnancy was remarkably low [14]. However, the findings of the present study were quite bothersome as inadequate knowledge can result in mothers being prone to develop complications.

This study found that antenatal mothers with postgraduation or graduation had a better knowledge level. Likewise, a study conducted in Ethiopia found that mothers with college and above education level were 4.9 times more likely to be aware of PIH compared to the women who had no formal education [13]. It is a known fact that educated mothers may have better access to mass media communication and may gather information regarding maternal safety. Similarly, this study revealed that antenatal mothers who were professional workers had adequate knowledge regarding maternal safety. The findings were similar to a study conducted in Mangalore, India [17]. This could be due to the access to information and education from their peers in the organization.

The present study also showed adequate knowledge level among antenatal mothers with more income. The findings of this study were in line with a study conducted in Karnataka, India exposed pregnant women with low income were associated with low knowledge scores [18]. The reason might be pregnant women with less income may have less access to transportation, mass media, and poor health-seeking behavior compared to women with the highest wealth status. This may lead to lack of awareness regarding maternal safety. The present study found antenatal mothers in upper middle socioeconomic status had better knowledge than the mothers who were in the upper lower level. The reason is that education, occupation, and income are overlapping properties with socioeconomic status.

However, the study has few limitations. The research, conducted within a singular centre and with a limited sample size, possesses challenges in generalizing its results to broader populations or diverse settings. The exclusive focus on the knowledge component further restricts the study's applicability to a comprehensive understanding of the subject matter. The outcomes, while insightful within the studied context, may not be representative of wider scenarios.

CONCLUSION

The study concluded that antenatal mothers lack the expected level of knowledge regarding maternal safety measures in PIH. This drives the attention to organize an intensive education and awareness program on

www.jchr.org





maternal safety for antenatal mothers who seek services from primary health centers and hospitals.

REFERENCE

- 1. Symborian A., 2018. Knowledge of Antenatal Women regarding Pregnancy Induced Hypertension. Indian J Contin Nurs Educ. 19(1), 109–12.
- Zuleta-Tobón J.J., Pandales-Pérez H., Sánchez S., Vélez-Álvarez G.A., Velásquez-Penagos J.A., 2013. Errors in the treatment of hypertensive disorders of pregnancy and their impact on maternal mortality. Int J Gynecol Obstet. 121(1), 78–81.
- Banayan M., Scavone B.M., States U., 2017. National Partnership for Maternal Safety— Maternal Safety Bundles. Curr Anesthesiol Rep. 7(1), 67–75.
- Petersen E.E., Davis N.L., Goodman D., Cox S., Mayes N., Johnston E., Syverson C., Seed K., Shapiro-Mendoza C.K., Callaghan W.M., Barfield W., 2019. Vital Signs : Pregnancy-Related Deaths, United States, 2011 – 2015, and Strategies for Prevention, 13 States, 2013 – 2017. MMWR Morb Mortal Wkly Rep. 68(18), 423-429.
- Eichhorn J.H., Eichhorn J., Morell R., Greenberg S., 2020. "What Then?" and "What Now?". APSF Newsletter. 35(3), 69–108.
- Bernstein P.S., Martin J.N., Barton J.R., Shields L.E., Druzin M.L., Scavone B.M., Frost J., Morton C.H., Ruhl C., Slager J., Tsigas E.Z., Jaffer J., Menard M.K., 2017. National Partnership for Maternal Safety: Consensus Bundle on Severe Hypertension During Pregnancy and the Postpartum Period. Obstet Gynecol. 130(2), 347– 357.
- Improving health and health care. Applying a Diagnostic Safety Lens to Maternal Morbidity and Mortality Reduction. https://www.ihi.org/ insights/applying-diagnostic-safety-lensmaternal-morbidity-and-mortality-reduction. (Accessed October 3, 2023.
- Mahoney J., 2018. The Alliance for Innovation in Maternal Health Care: A Way Forward. Clin Obstet Gynecol. 61(2), 400–410.
- Patient Safety Primer: Maternal Safety. Agency for Healthcare Research and Quality, Rockville, MD. https://www.ahrq.gov/news/maternal-safetyprimer.html. (Accessed September 30, 2023)
- 10. Smith C.A., Tuson A., Thornton C., Dahlen H.G.,

2020. Complementary Therapies in Medicine The safety and effectiveness of mind body interventions for women with pregnancy induced hypertension and or preeclampsia : A systematic review and meta-analysis. Complement Ther Med. 52, 102469.

- 11. Dhinwa M., Gawande K., Jha N., Anjali M., Bhadoria A.S., Sinha S., 2012. Prevalence of hypertensive disorders of pregnancy in India: A systematic review and meta-analysis. J Med Evid. 2, 105–112.
- 12. Kattah A.G., and Garovic V.D., The management of hypertension in pregnancy. Adv Chronic Kidney Dis. 20(3), 229–39.
- Berhe A.K., Ilesanmi A.O., Aimakhu C.O., Bezabih A.M., 2020. Awareness of pregnancy induced hypertension among pregnant women in Tigray Regional State, Ethiopia. Pan Afr Med J. 35, 1–16.
- 14. Agbeno E.K., Osarfo J., Owusu G.B., Opoku Aninng D., Anane-Fenin B., Amponsah J.A., Ashong J.A., Amanfo A.O., Amoah S.K., Kudjonu H.T., Mohammed M., 2022. Knowledge of hypertensive disorders of pregnancy among pregnant women attending antenatal clinic at a tertiary hospital in Ghana. SAGE Open Med. 10, 1-10.
- 15. Nakimuli A., Nakubulwa S., Kakaire O., Osinde M.O., Mbalinda S.N., Kakande N., Nabirye R.C., Kaye D.K., 2016. The burden of maternal morbidity and mortality attributable to hypertensive disorders in pregnancy: А prospective cohort study from Uganda. BMC Pregnancy Childbirth. 16, 205.
- Dhinwa M., Gawande K., Jha N., Anjali M., Bhadoria A., Sinha S., 2021. Prevalence of hypertensive disorders of pregnancy in India: A systematic review and meta-analysis. J Med Evid. 2, 105–112.
- 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. J Heal Allied Sci NU. 3(1), 8–10.
- José N., Kharde S., 2010. Assess the Knowledge Regarding Pre-eclampsia and Its Self-care Measures among Antenatal Women Attending Antenatal Outpatient Department of KLES Dr Prabhakar Kore Hospital, Belgaum. J South Asian Fed Obstet Gynaecol. 2(2), 157–162.