

Factors Related to Pregnancy Induced Hypertension

Rokshana Parveen RN, MSN¹, Dipali Rani Mallick RN, MSN²,
Ela Rani Shom RN MSN³, Mosammet Khaleda Akter RN, PhD.⁴

¹. Senior Staff Nurse, Dhaka Medical College Hospital, Dhaka 1000, Bangladesh.

². Faculty of Women's Health and Midwifery Nursing, National Institute of Advanced Nursing Education and Research (NIANER) Mugda, Dhaka, Bangladesh.

³ Faculty of Women's Health and Midwifery Nursing, National Institute of Advanced Nursing Education and Research (NIANER) Mugda, Dhaka, Bangladesh.

⁴ Faculty of Mental Health and Psychiatric Nursing, National Institute of Advanced Nursing Education and Research (NIANER) Mugda, Dhaka, Bangladesh.

Corresponding Author-Rokshana Parveen

Abstract:

Background: Pregnancy induced Hypertension is a burning issue in globally. Hypertensive complicates are 5%--10% of all pregnancies, and is a leading cause of maternal morbidity and mortality, as well as fetal and neonatal complications. **Objectives:** There are the aim of this study is to explore the associated factors of pregnancy induced hypertension. **Methods:** A descriptive exploratory study design was used to conducted at specialized hospital in the Institute of child and Maternal Health, Matuail, Dhaka, Bangladesh. The study samples recruited 172, by using G power analysis. Convenient sampling technique were used to selected the eligible subjects and structured questionnaire was used for collect the data. Data was analyzed by descriptive and inferential statistics including, two sample t-test and Chi-square test to measure the study variables.

Results: The prevalence of the pregnancy induced hypertension was 36%. Demographic characteristics were significantly association between PIH which includes residence ($\chi^2 = 6.93$, $P < .008$), and working hours ($\chi^2 = 7.92$, $p < 0.048$). There was significant relationship between pregnancy related characteristics with PIH which were gestational age ($t = -3.92$, $p = .000$), ANC ($\chi^2 = 5.33$, $p = 0.021$), miscarriage ($\chi^2 = 11.50$, $p = .001$), induced abortion ($\chi^2 = 7.80$, $p = .005$), sign of pregnancy complication ($\chi^2 = 5.41$, $p = .020$), family history of hypertension ($\chi^2 = 62.55$, $p = .000$), dietary related characteristics which includes salty food ($\chi^2 = 39.75$, $p = .000$), and fatty food ($\chi^2 = 46.36$, $p = .000$). **Conclusion:** This study found some demographic characteristics such as residence and working hours, antenatal care and gestational age are associated with PIH. Family history, dietary behavior, bad obstetric history also associated with PIH. Nurses can play greater role to provide information regarding pregnancy induced hypertension for increase awareness and prevention of PIH pregnant women in Bangladesh.

Key Words: Pregnancy Induced Hypertension, Factor, Pregnant Women

Date of Submission: 11-09-2020

Date of Acceptance: 26-09-2020

I. Introduction:

Globally, maternal mortality rates are excessively high in developing countries. (World Health Organization [WHO], 2012). In year 2012, about 287,000 women died during pregnancy and childbirth with 99% of these deaths occurring in developing countries. In developed countries, 16% of maternal mortality occurs due to hypertension during pregnancy (Oshvandi et al., 2018). In the United States, preeclampsia for 15% to 17.6 % of maternal death. One study revealed in India 12% maternal death by pregnancy induced hypertension (Joseph, Nayak, Fernandes, & Suvarna, 2013).

A recent study conducted in Bangladesh the prevalence of pregnancy induced hypertension was 7.5%. (Shamima, Nazma, Luthy, Lobaba, Firoz, & Kausar, 2017). In a study found that hypertension complicates 10% of all pregnancies, pre-eclampsia and eclampsia are main causes of maternal and neonatal morbidity and mortality. (Ahmed, Shams, Arifeen, & Yasmari, 2011). Overall, 10–15% of direct maternal deaths are associated with pregnancy induced hypertension. 9.1% in Africa, 9.1% in Asia, and 25.7% in Latin America and the Caribbean, (Tessema, Tekeste, & Ayele, 2015). In Bangladesh, the fourth Health, Population, and Nutrition Sector Programmed (HPNSP) for 2017-2022 the aims at a reduce maternal mortality ratio (MMR) target of 121 per 100,000 live births by 2022. But the MMR estimate from the BMMS 2016 maternal death 196 per 100,000 live births (Streatfield, Arifeen, Al-Sabir, & Jamil, 2011; NM-E, ICDDR, 2011).

Pregnancy induced hypertension is defined as systolic blood pressure ≥ 130 mm Hg and diastolic pressure ≥ 90 mm Hg after 20 weeks in gestation without proteinuria and goes away after delivery (Ahmed et al., 2017; Berhe, Kassa, Fekadu, & Muche, 2018). Hypertensive disorders of pregnancy includes chronic hypertension, gestational hypertension, preeclampsia (PE), and chronic hypertension with superimposed preeclampsia (Subki, Algethami, Baabdullah, Alnefaie, & Alzanbagi et al., 2018). Chronic hypertension is high blood pressure that either leads pregnancy, is diagnosed within the first 20 weeks of gestation, or does not resolve by the 12-week postpartum checkup.

The exact etiology of these conditions is unknown. Hypertensive disorders are major causes of maternal and perinatal morbidities and mortalities (Ayele et al., 2016). One study reported that hypertensive disorders during pregnancy are associated with increased risk of adverse fetal and maternal outcomes. Study also found that pregnancy induced hypertension known as toxemia or preeclampsia is a system of high blood pressure in pregnancy. Pregnancy induced hypertension is the leading causes of maternal and perinatal mortality and can also lead to long-term health problems among pregnant women (Middendorp, Ten Asbroek, Bio, Edusei, Meijjer, & Newton et al., 2013). Pregnancy induced hypertension are main causes of pre-eclampsia and eclampsia, maternal and neonatal morbidity and mortality (Ahmed, Shams, Arifeen, & Yasmari, 2011). One study revealed that about 30% of pregnancy-related abnormalities are caused by chronic blood pressure and 70% of which begin during pregnancy (Oshvandi, Jadidi, Dehvan, Shobeiri, Cheraghi, & Sangestani, 2018).

Many study found that, the possible factors of pregnancy induced hypertension are socio-demographic characteristics including age, parity, residence, education and blood group, obstetric information (miscarriage, history of high blood pressure, gestational age) medical history (diabetes and hypertension), Previous study found that factors for PIH were including twin pregnancy, age of >35 years, overweight and obesity, primipara, history of hypertension as well as family history of hypertension and diabetes. The similar a study in Bangladesh found that indicated higher risk of PIH among women with, previous history of pregnancy induced hypertension, pre-existing diabetes, gestational diabetes mellitus, maternal age ≥ 40 years, multiple pregnancies, nulliparity, and pre-pregnant obesity, higher pre-pregnancy body mass index is associated with increased risk of gestational hypertension. (Ahmad et al., 2014; Anderson, Undeberg, & Bastianelli, 2013; Ali, Rayis, Abdallah, Abdullahi, & Adam, 2012; Singh & Srivastava, 2015).

Pregnancy induced hypertensive disorders are the most important medical complication of pregnancy (Maputte, Khoza, Shilubane, Lebese, & Netshikweta, 2013). According to Muti et al., (2015) state that a study conducted in Zimbabwe it was found that hypertensive disorders complications are associated with various risk of maternal complications are preeclampsia, eclampsia, abruption placenta, ante partum hemorrhage (APH), postpartum hemorrhages, cardiovascular disease, stroke and HELLP (hemolytic elevated liver enzymes and low platelets) syndrome, liver hemorrhage, pulmonary edema, acute renal failure and disseminated intravascular coagulation (DIC), coronary artery disease, heart failure, and end stage renal disease. Fetal and neonatal complications include intrauterine growth restriction (IUGR), Preterm birth, low birth weight, neonatal respiratory distress syndrome, perinatal death with increased maternal and fetal mortality and morbidity (Ahmad et al., 2017; Bastianelli et al., 2013; Muti, Tshimanga, Notion, Bangure, & Chonzi, 2015; Oshvandi, et al., 2018).

According to World Health Organization (WHO) estimates that, about 358,000 women die every year from pregnancy related complication (Kashyap, Kumar, Kumar, & Kanayamkandy, 2016). Almost 12% of the maternal deaths are associated with hypertensive disorders in pregnancy such as pregnancy induced hypertension (Ayele, Lemma, & Agedew, 2016; Middendorp et al., 2013). At least one woman dies every seven minutes from complications of hypertension in pregnancy (Susan, Bulbul, Ferdows, & Nayeem, 2017). Bastianelli et al, also found that one out of every ten complicates hypertension in pregnancy. Management of pregnancy induced hypertension depends on the gestational stage, severity of disease, and the condition of the women and fetus. Commonly used medications to manage blood pressure during pregnancy and induction of labor.

This study was conducted to identify the factors related to pregnancy induced hypertension (PIH), the prevalence of pregnancy induced hypertension as well as fetal and maternal outcomes and seeking maternity care in Bangladesh. Specifically want to recognize the characteristics of women with PIH. Assess case management of pregnant women with pregnancy-induced hypertension. Nurses can play a vital role in educating hypertensive clients to help them understand associated factors. Potential complications and how to improve their healthy lifestyle might be helpful in influencing the well pregnancy, outcomes and future case management positively. In our country, there is no available study in nursing discipline. Thus, this study will be helpful to identify the gap factors related knowledge. Therefore, the purpose of the study to determine the associated factors of pregnancy induced hypertension among pregnant women. The findings of this study will be important for the nursing personnel and nursing research to develop educational and interventional program that will be emphasized on pregnancy induced hypertensive mother regarding self-care.

II. Objectives

General Objective

To explore the significant factors related to pregnancy induced hypertension.

Specific objectives

1. To describe the socio-demographic, obstetrics and pregnancy related characteristics of pregnant mother.
2. To identify the prevalence of pregnancy induced hypertension.
3. To examine the relationship between significant factors and pregnancy induced hypertension.

Procedure methodology

This chapter describes the research methodology including study design, study participants, instruments, data collection methods and data analysis of the study.

Study design

Descriptive exploratory study design was used to identify factors related to pregnancy induced hypertension at specialized hospital

Study Participants

The participants of this study were pregnant women who attained outpatient department of Institute of Child and Mother Health, Matuail, Dhaka for their antenatal checkup from December 2018 to January 2019. A specialized hospital which is situated at the capital city of Bangladesh and a large number of pregnant women came to this hospital every day. Therefore, this hospital is presentative setting for eligible samples. A convenient sampling technique was used. Those who were met the following inclusion criteria: (1). Pregnant women after 20 weeks to 40 weeks (2) age between 15 to 49 years, (3) be able to speak and understand Bengali language, (4) be willing to participate in the study. The sample size of the study was calculated by using G power analysis. The accepted minimum level of significance (α) to estimate the number of the sample size was .05 with a power of (1- β) of .80 and the effect size was .30. Even through at least 143 samples were needed, investigator collected data from 172 samples in view of 20% attrition possibility of dropout from the missing data.

Instruments

The instrument is a set of structured questionnaires developed by the researcher based on literature review, (Jones et al., 2017). The instrument of this study consists of first seven items are related to demographic and six items are obstetrics related questionnaire. The Demographic data which includes age, religion, marital status, level of education, occupation, monthly income, gestational age. Healthy lifestyle and dietary behaviors related questionnaire.

Data Collection Method

After approval from Institutional Review Board (IRB) from NIANER and BSMMU. (IRB NO. Exp. NIA-S-2018-16). Permission was taken from executive Director of ICMH, head of the Gynae & Obstetric Department as well as participants. Data were collected by face to face interview through structured questionnaire from 8.00 am to 2.00 pm on each official day from the women who met this inclusion criterion. Data collection period were December 2018 to January 2019. After completing the questionnaire, the researcher thanked to the participants for spending time to participate in this study. Privacy, confidentiality and anonymity assured by the researcher. The participation of the participants was voluntary and the participants can withdraw from the study at any time without any penalty.

Data Analysis

Data were cleaned, entered and analyzed by using computer software program. Both descriptive as well as inferential statistics were used for analyzing the data. In descriptive statistics, data was presented by frequencies, percentages, mean and standard deviation to describe the participant's characteristics and inferential statistics such as chi-square test and two-sample t-test, were used for examining the relationship between study variables and Socio-Demographic characteristics of the respondent.

III. Results

In this chapter the study findings are presented in descriptive and inferential statistic. Table- 1. Shows the socio-demographic, obstetric and pregnancy related characteristics of participants:

The mean age of the participants was 25.80, (SD \pm 4.72) years. Almost all (97.1%) of them were Muslims. Majority (88.4%) of the participants have their family income between 6000-20000 BD takas. More than three-fourth (77.3%) of the participants were live in urban residence. Near two-third (63.4%) of the participants had completed primary level of education Most of the participants (84.9%) were housewife.

The mean gestational age of the participants was 29.87, and SD=3.71. More than half of the participants 59.9% were less four times attended at antenatal visit completed during this pregnancy period,

four/more times of the participants 40.1% received antenatal care. Two-third 66.0% of the participants were multiple gravida and 40.97% participants had only one child. First visit of the participants mean month was 4.80, SD= .83. Maternal and Family histories of 2.5%, 4.1%, and 1.7% of pregnant mother reported had history of miscarriages, Induced abortion and Preterm delivery respectively. Near one third (32.6 %) of the participants have known about hypertension. Among them 1.7% women had sign of pregnancy complications. The major predisposing factors, 30.8% had family history of Diabetes Mellitus, 23.8% of them had family history of chronic hypertension, 1.2% and 0.6% had family history of Renal and cardiac disease and 0.6% had family history of PIH commonly from women’s relatives. All of the participants did not smoke cigarette, but family members particularly their husbands who smoke cigarette 27.3%. More than half 63.4% of the participants have taken oral contraceptives, their mean years used of contraceptives were 3.34 years, SD=2.98 Nutrition and lifestyle related characteristic of the participants:

Approximately, 69.8% of the participants were 1-2 times eat fruits per weeks and only five (2.9%) never eat fruits. About 26.8% participants were three to four times eat fruits per week. More than three-four78.5% of the participants were eating vegetable more than five times, and 19.2% participants were eating vegetable 3-4 times per week. Nearly half of the participant 46.5% were servings 3-4 times Protein containing food per weeks. Nearly half of the participants 44.8% were more than five times serving’s protein per weeks. Among them more than half of the participants 54.7% preferred moderate salty food. Approximately, 21.5% participants preferred very salty food and9.3% of the participants were reported that they prefer very fatty food.

Table- I. Distribution of Socio-demographic, Obstetric and Pregnancy related Characteristics of participants N = 172

Variable	Category	n	(%)	M± (SD)
Age				25.80±4.72
	17-22	49	28.4	
	23-28	75	43.6	
	29-34	40	23.3	
	> 35	8	4.7	
Monthly income	6000-20000	152	88.4	
	21000-45000	19	11.0	
	>45000	1	0.6	
Religion	Muslim	167	97.1	
	Hindu	5	2.9	
Residence	Rural	39	22.7	
	Urban	133	77.3	
Marital status	Married	172	100.0	
Education	Primary	109	63.4	
	Secondary	23	13.3	
	> Higher secondary	40	23.3	
Occupation	House wife	14	84.9	
	Service	25	14.5	
	Student	1	0.6	
Working hours	2-3 hours	37	21.5	
	4 hours	97	56.4	
	6 hours	17	9.9	
	8 hours	21	12.2	

Factors Related to Pregnancy Induced Hypertension

Total ANC				
	< 4 visits	103	59.9	
	> 4 visits	69	40.1	
Gravida				
	Primi gravida	59	34.3	
	Multi gravida	113	65.7	
Gestational age				9.87±3.71
No of children				
	None	64	37.2	
	One	70	40.7	
	Two/ More two	38	22.1	
First ANC visits (month)				4.80±.83
H/O Miscarriage	Yes	9	5.2	
H/O Induced abortion	Yes	7	4.1	
H/O Preterm Deli	Yes	3	1.7	
Know about HTN	Yes	56	32.6	
H/O Preg Comp	Yes	3	1.7	
Family/H of Diabetes	Yes	53	30.8	
F/H of hypertension	Yes	41	23.8	
F/H of Renal disease	Yes	2	1.2	
F/H of Cardiac disease	Yes	1	0.6	
F/ H of PIH	Yes	1	0.6	
F/ H of smoking	Yes	47	27.3	
H/ O contraceptives	Yes	109	63.4	
Duration/of contraceptive (years)				3.34±2.98
Fruits eat per weeks				
	Almost never	5	2.9	
	1~2 servings	120	69.8	
	3~4 servings	46	26.7	
	> 5 servings	1	0.6	
Vegetables per week				
	1~2 servings	4	2.3	
	3~4 servings	33	19.2	
	> 5 servings	135	78.5	
Protein per week				
	Almost never	4	2.3	
	1~2 servings	11	6.4	
	3~4 servings	80	46.5	
	> 5 servings	77	44.8	
Prefer salty food per week				
	Very less salty	2	1.2	

Factors Related to Pregnancy Induced Hypertension

	Lass salty	38	22.10
	Moderate	94	54.7
	A little salty	1	0.6
	Very salty	37	21.5
Prefer fatty food per week			
	Very less fatty	1	0.6
	less fatty	113	65.7
	Moderate	36	20.9
	A little fatty	6	3.5
	Very fatty	16	9.3

Table 2. Shows which 36% participants represented the pregnancy induced hypertension
Table- 2: Prevalence of Pregnancy induced hypertension N = 172

PIH	n	%
Yes	62	36.0
No	110	64.0

Table 3: Relationship between socio-demographic, obstetrics and pregnancy related characteristics with Pregnancy induced hypertension:

Result showed that, there was a significant association between pregnancy induced hypertension with residence ($x^2 = 6.93, p = .00$) and working hours ($x^2 = 7.92, p = .04$). Gestational age and total antenatal visit have statistically significantly relation with pregnancy induced hypertension ($t = - 3.92, p = .00$) and total antenatal checkup has significantly positive relation between PIH ($x^2 = 18.28, p = .00$). There was a significant association between history of previous miscarriage ($x^2 = 11.50, p < 0.001$), induced abortion ($x^2 = 7.80, p = 0.005$) and signs of pregnancy complication ($x^2 = 5.41, p = 0.02$) with pregnancy induced hypertension. It was found that a family history of hypertension independently had a significant relationship with PIH ($x^2 = 7.80, p = .00$). Those who reported that salt and fat containing food were a major part of their diets were significantly associated with PIH ($x^2 = 39.75, p = .00$) and ($x^2 = 46.36, p = .00$).

Table- 3: Relationship between socio-demographic, obstetrics & gynecology and pregnancy characteristic with **Pregnancy induced Hypertension = 172**

Variable	Category	PIH	M ± SD	$x^2/t/(p)$
		Yes n (%)		
Age (Years)				9.99 (0.19)
	17-22	13 (26.5)		
	23-28	23 (30.7)		
	29-34	21 (52.5)		
	> 35	5 (62.5)		
Religion				1.28(.26)
	Muslim	59 (35.3)		
	Hindu	3 (60.0)		
Residence				6.93(.00)
	Rural	21 (53.8)		
	Urban	41 (30.8)		
Marital status	Married	1721 172 (100.0)		

Factors Related to Pregnancy Induced Hypertension

Level of education				3.02 (.22)
	Primary	35(32.1)		
	Secondary	8(34.80)		
	>Higher Secondary	19 (47.5)		
Occupation				5.51 (.06)
	House wife	48 (2.9)		
	Service holder	14 (56.0)		
	Student	0(0.0)		
Working hours				7.92(.05)
	2-3 hours	11(29.7)		
	4 hours			
	6 hours	4(23.5)		
	8 hours	13(61.9)		
Monthly Income				3.76 (.15)
	6000 to 20000	57(37.5)		
	21000 to 45000	4 (21.1)		
	> 45000	1(100.0)		
Gestational age weeks			31.13±2.47	-3.92 (.00)
Total ANC				
	< 4 visits	30(29.1)		5.334 (.02)
	> 4 visits	32(46.4)		
Gravida				.34 (.56)
	Primi gravida	23 (39.0)		
	Multi gravida	39 (34.5)		
No of children				2.62 (.27)
	None	28 (43.8)		
	One	22 (31.4)		
	Two or more	12 (31.6)		
Gestational age of 1st visit (month)			4.85 ±.649	-.75 (.44)
History/O Miscarriage	Yes	8 (88.9)		11.50 (.00)
Induced abortion	Yes	6 (85.7)		7.80 (.00)
Preterm delivery	Yes	2 (66.7)		1.24 (.26)
Known hypertension	Yes	16 (28.6)		2.01 (.16)
Signs of complications	Yes	3 (100.0)		5.41 (.02)
Use contraceptives	Yes	40 (36.7)		.05 (.81)
F/H of smoking	Yes	21 (44.7)		2.09 (.15)
F/H of Diabetes	Yes	23 (43)		1.79 (.18)
F/H of hypertension	Yes	36 (87.8)		62.55(.00)
F/H of Renal disease	Yes	1 (50.0)		.17 (.68)
Use contraceptives	Yes	40(36.7)	3.52 ± 3.17	-.58 (.56)
Fruits per weeks				3.09 (.38)
	Almost never	2(40.0)		
	1-2 Servings	39(32.5)		
	3-4 Servings	21 (45.7)		
Vegetable per week				2.85 (.24)
	3~4 servings	14 (42.4)		
	> 5 serves	48 (35.6)		

Protein per week		1.35 (.72)
	Almost never	1 (25.0)
	1-2 Servings	3 (27.3)
	3-4 Servings	27 (33.8)
	> 5 Servings	31 (40.3)
Prefer salty food		39.75 (.00)
	Very less	2 (100.0)
	Less salty	3 (7.9)
	Moderate	30 (31.9)
	very salty	27 (73.0)
Prefer fatty food		46.36 (.00)
	Less fatty	25(22.1)
	Moderate	22 (61.1)
	very fatty	15 (93.8)

IV. Discussion

The problem of pregnancy induced hypertension (PIH) is a public health concern affecting not only maternal and neonatal health but also reflects on the family and society. Pregnancy induced hypertension is the common complication of obstetric today. The purpose of this descriptive study was to explore the factors related to pregnancy induced hypertension.

Pregnancy Induced Hypertension (PIH) complicates many pregnancies, especially in the developing country. Hypertensive disorders of pregnancy are an important cause of morbidity, long-term disability and death among mothers and babies. (Tefaye, Tefera, & Sena, 2018). The cause of this condition is not clear. Several studies have therefore sought to evaluate the factors of PIH in different parts of the world. Some factors have been commonly reported in the developed countries while others are common to the developing countries. This study, therefore, sought to identify the factors of PIH in Bangladesh. Socio-demographic characteristics that can play a major role in determining pregnancy induced hypertension among pregnant women. As regard to socio-demographic characteristics of the studies among pregnant women with PIH was found. The findings of this study were the socio-demographic characteristics of pregnancy induced hypertensive mothers summarized in table 1. It was found that the Socio-demographic characteristic, Obstetrics and pregnancy related, family history and life style related Characteristics of the participants:

In this study, the prevalence of pregnancy induced hypertension 62(36%). These reflect that the morbidity and mortality of the mother and the fetus is high due to this disease condition. If appropriate preventive measures are not taken, the risk of pregnancy induced hypertension among pregnant women might be ranked as first cause of maternal mortality. In Bangladesh the previous study reported that the prevalence was 7.5% (Ahmed, et al 2017). The current study found little high (36%) prevalence of PIH. However, several studies showed prevalence rate from 5-19% respectively (Khosravi, Dabiran, Lotfi, & Asnavandy, 2014; Muti et al., 2015; Osungbade & Ige 2011; Tesfaye, Tefera, & Sena, 2018). The possible explanation for this difference might be different in data collection procedure, study design, sample size, study setting and health seeking behaviors of individual pregnant women, which most of them used longitudinal study design, sample size and study area. In addition to this, the gap might be due to current health policy of the country which was focused on implementation of antenatal care and expected service for maternal care might increase the health care seeking behavior of pregnant women which increases the detection of the pregnancy induced hypertension..

Near Two-third 63.4% of the participants were belongs primary level and 47.5% above higher secondary level of education. In the statistical test education didn't influence in PIH. Conversely education is an indicator of socio-economic status of a person and maternal education influence one's ability to access and use

health care limited access to health can prognosis of pregnancy induced hypertension. A low level of education limits a person's access to employment and maintained social status, which in turn limits her capacity to integrate within society and there by increases the risk of subsequent poverty. (Ahmed et al., 2017; Shah et al., 2014). This study finding revealed that in our country perspective most of them were Muslim and the women's 84.9% occupations were housewives. The socio-economic conditions of the women varied according to their family income. In study results revealed that more than three-fourth 88.4% of participants were in low monthly family income between 6000 to 20000 takes. Researcher assumed that low level of the participants may be due to lack of women's income because of housewife.

This study results revealed that, more than half of the participants 53.8% residence were in rural area. Similar study found that rural participants were more suffered with pregnancy induced hypertension than urban areas because rural people seek low health care facilities than the urban people, lack of knowledge and don't aware about PIH, consistent significantly associated was found between residence and pregnancy induced hypertension. (Jones et al 2016; Tesfaye, Tefera, & Sena, 2018), but inconsistent with the comparative cross-sectional study conducted in Ghana showed that pregnancy induced hypertension is common among urban than rural area (Wolde, Segni, & Woldie, 2011). Nearly Two-third 61.9% of the participants spend eight hours work per day. They have no enough time for rest and maintained schedule nap. Though working hours impact the risk of PIH. Hence, the working hours were significantly associated with PIH than the house wives. Similarly, study findings were consistent with this finding (Jones et al, 2016).

This study finding shows that more than one third (39.0%) of the participants were primigravida Susan et al (2016) observed that primigravida constituted (56%) of total PIH which is comparable with the current study. This study, revealed that the mean gestational age was 31.13 weeks. Though, the other variable associated with PIH in this study was gestational age there are significant association between PIH. Similar study conducted by Tesfaye A et al., 2018. Which showed that women with gestational age greater than 37 weeks were less likely to develop pregnancy induced hypertension than women with gestational age less than 37 weeks. However, this is consistent with this study. This study reported that, regular antenatal checkup received nearly half of the participant 46.4% however, 29.1% received less than four times attended to antenatal checkup. Antenatal checkups are statistically significant with pregnancy induced hypertension.

On the other hand, similarly the study was conducted by (Susan et al, 2016; Shah et al., 2014) showed that "no antenatal checkup" is a significant risk for PIH. Visits to antenatal care centers and receiving care may raise awareness of the participant essentials for skilled delivery care and their families' awareness with the health services available at health centers or the skilled service providers, thus empowering them to direct and receive necessary care when a crisis arises. Antenatal care visit is one of most effective intervention in avoiding adverse pregnancy outcomes and complications. When it is sought early in the pregnancy it is possible to detect reproductive health factors.

This study also revealed that factors associated with pregnancy induced hypertension; residence, positive family history of hypertension. This results with other epidemiological studies in which a family history of chronic hypertension was reported as an independent factor for PIH (Adam, Elhassan, Mohmmed, Salih, & Elbashir, 2011). Furthermore, history of previous preterm delivery and miscarriage were found to be a significant associated with PIH. Similar to this study finding. This current study finding also revealed that factors associated with pregnancy induced hypertension between salty and fatty foods.

Approximately, 73.0% of participants consumed very salty food and almost all 93.8% of participants took high fatty food. Hence, Dietary patterns characterized by consumption of high fatty and high salty foods were also found to be a factor in this study, which is persistent with the results of other similarly, studies in Ghana reported that there is a relation between PIH (Jones, et al.2017).

Another study reported by (Remig, Margolis, Kostas, Nece, & Street. 2010). They had shown that, the fatty acids increase the low-density lipoprotein (LDL) and cholesterol increase in the blood which pre-disposes them to cardiovascular diseases such as hypertension. While this relationship expects further illuminations, pregnant women are advised to follow their physicians suggested dietary patterns.

However, smoking cigarette is one of the factor pregnancies induced hypertension developed country, but the society of our country perspective the women don't smoke cigarette and this study proved that 100% participants were none smoker. As we know some diseases occur genetically from one generation to another generation. Similarly, that those who have family history of hypertension they are more vulnerable to be susceptible to the pregnancy induced hypertension (Berhe et al, 2018). In this study revealed that more than three-fourth 87.8% of participants' family history have hypertension This finding is constant with the similar study conducted in Ghana (Jones et al., 2017) showed that family history of hypertension had strong association with pregnancy induced hypertension. This study describes the factors contributing pregnancy induced hypertension, to all pregnant women. To prevent and detection early treatment can reduce the morbidity and mortality

V. Conclusion & recommendation

Conclusion:

Pregnancy induced hypertension is a leading cause of maternal and fetal mortality as well as short and long-term disability. This study identifying the significant factors that affects pregnant women. The prevalence of pregnancy induced hypertension among women attending Institute of Child and Maternal Health hospital is 36%. To reduce the prevalence, there is improved strength health care seeking behavior of women to ensure early diagnosis and management of Pregnancy Induced Hypertension and other medical conditions during pregnancy period. The study finding revealed that more significant results regarding family history of hypertension=.000, rural residence=.008, working hours=.048, gestational age =.000, bed obstetric history, $p=.001$, induced abortion, $p=.005$. Especially, there were significantly high intake of dietary behavior, fatty and salty food $p=.000$ & $p=.000$ respectively were the factors associated with pregnancy induced hypertension. In this regard, the result will be helpful for nurses. Nurse can play a vital role for providing quality care, gathered information to improve pregnant women's lifestyle and dietary behavior. Maternal mortality is the concern as the severity of the disease that subsequently reduced after delivery of the baby. Even regular antenatal care is not enough to overcome the disaster, but self-management and awareness about PIH and its impacts. It is a preventable disease if early detection and treatment will keep hypertensive disorder under control and reduce PIH. Proper antenatal care involvement can reduce the morbidity and mortality significantly.

There were several limitations in this study. These include setting might be limitation of this study for generalization. There was time limitation for data collection and sample size cannot be considered representative of all pregnant mothers in Bangladesh as well as lack of awareness. With the necessary explanation about the risk factors and their impact and treatment process.

2. Recommendation:

The investigator recommended that future study will be conducted with a large sample size and more setting thus result will be generalized. This study also recommended this information is effective to increased awareness of pregnant women about pregnancy complications especially, pregnancy induced hypertension through educational programs. Further studies are recommended to research about increasing awareness to factors and self-care management toward pregnancy induced hypertension and its effect on maternal and fetal health. There is need for more strengthen measures in investigating and screening of pregnant women with PIH by regular taking blood pressure and should be encouraged regular antenatal checkup. Special emphasis should be given for mother who have preexisting medical illness, old age and prime gravida to early recognition and reading for better management of pregnancy induced hypertension. Other interventional measures and programs to educate the mother during antenatal care especially on danger sign of pregnancy, information should be given to family members about factors of pregnancy induced hypertension and dietary habits that aggravate hypertension during pregnancy like excess intake of salt and fatty food. Hence, this study recommends that early detection and management of mothers with PIH. Finally, an experimental study is recommended for further research.

Acknowledgements:

First of all, I am grateful to almighty Allah who gives me the opportunity to complete my thesis paper. Then I am delighted to express my sincere gratitude and deep heartiest respect to my adviser respected Dipali Rani Mallick, Deputy Director of National Institute of Advanced Nursing Education and Research for giving me opportunity, direction, suggestion and support me to complete this study.

I would to express my gratitude and special thanks to Prof. Chung Yul Lee formal Director, NIANER who played crucial role in teaching statistics and success of this study and I also would like to special thanks to Prof. Tae Wha Lee mam for her special advised my thesis paper. I would like to express my great appreciations to my co-adviser Ela Rani Shom, National Institute of Advanced Nursing Education and Research.

I wish to acknowledge with thanks the IRB for granting approval of the thesis and the hospital management where the study was conducted. I am expressing my gratitude to all of my participants who spend their valuable time for providing data which was greatest support for me to complete this thesis..Finally, this thesis is dedicated to my family members for their supports and sacrificed a lot in their life to complete my MSN program.

REFERENCES:

- [1]. AL-Saffar, F. A. A., & Hussian, M. H. (2016). Self-Care Management of Pregnancy Induced Hypertension for Pregnant Women Attending Primary Health Care Centers at Kirkuk City. *kufa Journal for Nursing sciences*, 6(2), 185-193.
- [2]. Adam I, Elhassan E, Mohammed A, Salih M, Elbashir M. (2011). Malaria and Pre-eclampsia in an area with unstable malaria transmission in Central Sudan. *Malaria Journal*.
- [3]. Ahmed, S. S., Sultana, N., Begum, M. L., Lima, L. S., Abedin, M. F., & Hosen, M. K. (2017). Pregnancy Induced Hypertension and Associated Factors among Pregnant Women. *Journal of Gynecology and Women's Health Volume 2 Issue, 4*.

- [4]. Arshad, A., Pasha, W., Khattak, T. A., & Kiyani, R. B. (2011). Impact of pregnancy induced hypertension on birth weight of newborn at term. *Journal of Rawalpindi Medical College*, 15(2), 113-5.
- [5]. Anderson, N. R., Undeberg, M., & Bastianelli, K. M. (2013). Pregnancy-induced hypertension and preeclampsia: a review of current antihypertensive pharmacologic treatment options. *Austin Journal of Pharmacology & Therapeutics*, 1(1), 1-8.
- [6]. Ahmed, A. S. Shams, E.I. Arifeen, M. N. and Yasmari, H. (2011). Maternal Health and Care Seeking Behavior in Bangladesh. *Social Medical Journal*.
- [7]. Ayele, G., Lemma, S., & Agedew, E. (2016). Factors Associated with Hypertension during Pregnancy in Derashie Woreda South Ethiopia. Case Control. *Quality in Primary Care*, 24(5), 207-213.
- [8]. Ali, A. A. A., Rayis, D. A., Abdallah, T. M., Abdullahi, H., & Adam, I. (2012). Hypertensive disorders in pregnancy in Kassala Hospital, Eastern Sudan. *Khartoum Medical Journal*, 4(3).
- [9]. Abdelati, I. H., Ibrahim, S. S., & Farrag, J. M. (2016). Impact of an Educational Program about Pregnancy Induced Hypertension for Maternity Nurses on their performance and Pregnancy Outcomes for Mothers and Neonates. *Journal of Nursing and Health Science*, Volume 5, Issue 5.
- [10]. Alemnew Bayensagn, S., Lemmi, T., & Assefa, N. (2018). Prevalence and Associated Factors of Pregnancy Induced Hypertension Disorder among Women Delivered In Gelemso General Hospital, Oromia Regional State, Eastern Ethiopia (Doctoral dissertation, Haramaya University).
- [11]. Berhe, A. K., Kassa, G. M., Fekadu, G. A., & Mucbe, A. A. (2018). Prevalence of hypertensive disorders of pregnancy in Ethiopia: a systemic review and meta-analysis. *BioMed Central pregnancy and childbirth*, 18(1), 34.
- [12]. Berhan, Y., & Berhan, A. (2014). Causes of maternal mortality in Ethiopia: a significant decline in abortion related death. *Ethiopian journal of health sciences*, 24, 15-28.
- [13]. Gudeta, T. A., & Rgassa, T. M. (2017)". Prevalence of Pregnancy Induced Hypertension and Its Bad Birth Outcome among Women Attending Delivery Service in Ethiopia. *Journal Pregnancy and Child Health* 2017, 4: 5.
- [14]. Gandhi, M. R., Jani, P. S., Patel, U. M., Kakani, C. R., Thakor, N. C., & Gupta, N. (2015). Perinatal outcome in pregnancy induced hypertension cases at GMERS Medical College, Dharpur-Patan, North Gujarat region, India: a prospective study." *International Journal of Advanced Medicine*, 2 (2), 152-5
- [15]. Gudeta, T. A., & Regassa, T. M. (2019). Pregnancy Induced Hypertension and Associated Factors among Women Attending Delivery Service at Mizan-Tepi University Teaching Hospital, Tepi General Hospital and Gebretsadik Shawa Hospital, Southwest, Ethiopia. *Ethiopian journal of health sciences*, 29(1), 831.
- [16]. Imdad, A., Jabeen, A., & Bhutta, Z. A. (2011). Role of calcium supplementation during pregnancy in reducing risk of developing gestational hypertensive disorders: a meta-analysis of studies from developing countries. *Bio Med Central public health*, 11(3), S18.
- [17]. Jones L, Takramah W, Axame WK, Owusu R, Parbey PA, Tarkang E, Takase M, Adjuik M, Kweku M (2017) Risk Factors Associated with Pregnancy Induced Hypertension in the Hohoe Municipality of Ghana. *Journal of Preventive Medicine & Healthcare* 1(3): 1011prospective study. *Int J Adv Med*, 2(2), 152-5.
- [18]. James, P. R., & Nelson-Piercy, C. (2004). Management of hypertension before, during, and after pregnancy. *Heart*, 90(12), 1499-1504
- [19]. 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. *Journal of Health and Allied Sciences NU*, 3(01), 08-10.
- [20]. Kashyap, V., Kumar, M., Kumar, A., & Kanayamkandy, J. (2016). Trend and causes of maternal mortality in a tertiary care hospital in Jharkhand, India: a five years retrospective study. *International Journal of Community Medicine and Public Health*, 3(11), 3030-3032.
- [21]. Khosravi S, Dabiran S, Lotfi M, Asnavandy M (2014) Study of the Prevalence of Hypertension and Complications of Hypertensive Disorders in Pregnancy. *Open Journal of Preventive Medicine*4 (11):860-867.
- [22]. Legese, T., Abdulahi, M., & Dirar, A. (2016). Risk factors of maternal death in Jimma University specialized hospital: a matched case control study. *American Journal of Public Health Research*, 4(4), 120-7.
- [23]. Mekonnen, W., & Gebremariam, A. (2018). Causes of maternal death in Ethiopia between 1990 and 2016: systematic review with meta-analysis. *Ethiopian Journal of Health Development*, 32(4).
- [24]. Middendorp, D., Ten Asbroek, A., Bio, F. Y., Edusei, A., Meijjer, L., Newton, S., & Agyemang, C. (2013). Rural and urban differences in blood pressure and pregnancy-induced hypertension among pregnant women in Ghana. *Globalization and health*, 9(1), 59.
- [25]. Muti, M., Tshimanga, M., Notion, G. T., Bangure, D., & Chonzi, P. (2015). Prevalence of pregnancy induced hypertension and pregnancy outcomes among women seeking maternity services in Harare, Zimbabwe. *Bio Med Central cardiovascular disorders*, 15(1), 111.
- [26]. Mammaro, A., Carrara, S., Cavaliere, A., Ermito, S., Dinatale, A., Pappalardo, E. M., & Pedata, R. (2009). Hypertensive disorders of pregnancy. *Journal of prenatal medicine*, 3(1), 1.
- [27]. Maputle, S., Khoza, L., & Lebese, R. (2015). Knowledge towards Pregnancy-induced Hypertension among Pregnant Women in Vhembe District, Limpopo Province. *Journal of Human Ecology*, 51(1-2), 47-54.
- [28]. Mekbed, A.T. and Ketsela, K. (2011). Pre-eclampsia and eclampsia second most Common cause. Maternal mortality in Addis Ababa. Vol.68 (11):
- [29]. Mekonen L, Shiferaw Z, Wubshet E, Haile S (2018) Pregnancy Induced hypertension and Associated Factors among Pregnant Women in Karamara Hospital, Jijiga, Eastern Ethiopia, 2015. *Journal of Pregnancy and Child Health* 5: 379
- [30]. NM-E, ICDDR. (2011). Bangladesh, Maternal Mortality and Health Care Survey 2010; Preliminary Results. Chapel Hill, North Carolina USA: University of North Carolina.
- [31]. Osungbade KO, Ige OK (2011) Public Health Perspectives of Preeclampsia in Developing Countries. Implication for Health System Strengthening. *Journal of Pregnancy*.
- [32]. Oshvandi Kh, Jaidi A, Dehvan F, Shobeiri F, Cheraghi F, Sangestani G, et al. (2018) Relationship between Pregnancy-induced Hypertension with Neonatal and Maternal Complications. *International Journal of pediatric*; 6(11).
- [33]. Polit, D. and Beck, C. (2008). *Nursing Research: Principles and Methods in Nursing*. 7th Edition. Philadelphia: Lippincott and Williams. Qualitative Health Research.
- [34]. Parmar MT, Solanki HM, Gosalia VV. (2012). Study of Risk Factors of Perinatal Death in Pregnancy Induced Hypertension (PIH). *Netherland Journal of Community Medicine*. 3(4).
- [35]. Patel, R., Baria, H., Patel, H. R., & Nayak, S. (2017). A study on pregnancy induced hypertension and foetal outcome among patient with PIH at tertiary care hospital, Valsad. *International Journal of Community Medicine and Public Health*, 4(11), 4277-4281

- [36]. Rahimi, Z., Rahimi, Z., Mozafari, H., & Parsian, A. (2013). Preeclampsia and angiotensin converting enzyme (ACE) I/D and angiotensin II type-1 receptor (AT1R) A1166C polymorphisms: association with ACE I/D polymorphism. *Journal of the Renin-Angiotensin-Aldosterone System*, 14(2), 174-180.
- [37]. Subki, A. H., Algethami, M. R., Baabdullah, W. M., Alnefaie, M. N., Alzanbagi, M.A., Alsolami, R. M., & Abduljabbar, H. S. (2018). Prevalence, Risk Factors, and Fetal and Maternal Outcomes of Hypertensive Disorders of Pregnancy: A Retrospective Study in Western Saudi Arabia. *Oman medical journal*, 33(5), 409.
- [38]. Susan, Z. S., Bulbul, S., Ferdows, J. A., & Nayeem, A. (2016). Perinatal findings in pregnancy induced hypertension: A study in a Tertiary Teaching Hospital in Dhaka City. *Journal of National Institute of Neurosciences Bangladesh*, 2(1), 10-13.
- [39]. Singh, V. and Srivastava, M. (2015). Associated risk factors with pregnancy-induced hypertension: A hospital based KAP study. *International Journal of Medicine and Public Health*. Vol.5
- [40]. Shamima, A., Nazma, S., Most Luthy, B., & Lobaba Sultana, L. (2017). Pregnancy induced hypertension and associated factors among pregnant women. *J Gynecol Women's Health*. March, 3(4).
- [41]. Say, L., Chou, D., Gemmill, A., Tunçalp, Ö, Moller, A. B., Daniels, J. ...& Alkema, L. (2014). Global causes of maternal death: a WHO systematic analysis. *The Lancet Global Health*, 2(6).
- [42]. Shah, R., Mullany, L. C., Darmstadt, G. L., Mannan, I., Rahman, S. M., Talukder, R. R., ... & Baqui, A. H. (2014). Incidence and risk factors of preterm birth in a rural Bangladeshi cohort. *Bio Med Central pediatrics*, 14(1), 112.
- [43]. Streatfield, P. K., Arifeen, S. E., Al-Sabir, A., & Jamil, K. (2011). Bangladesh maternal mortality and health care survey 2010: summary of key findings and implications. *Dhaka, Bangladesh: National Institute of Population Research and Training (NIPORT)*.
- [44]. Tesfaye A G, Tefera B L, Sena B K. (2018) . Pregnancy Induced Hypertension and Associated Factors among Pregnant Women Receiving Antenatal Care Service at Jimma Town Public Health Facilities, South West Ethiopia. *Journal of Gynecological Women's Health*.: 10(3): 555792.
- [45]. Tessema, G. A., Tekeste, A., & Ayele, T. A. (2015). Preeclampsia and associated factors among pregnant women attending antenatal care in Dessie referral hospital, Northeast Ethiopia: a hospital-based study. *BMC pregnancy and childbirth*, 15(1), 73.
- [46]. Uddin, A. W., Nessa, S., Chowdhury, S., & Banu, M. (2012). Hypertensive disorders of pregnancy and its outcome in a tertiary care hospital. *Journal of Armed Forces Medical College, Bangladesh*, 9(2), 38-42.
- [47]. Umesawa M, Kobashi G. (2017) Epidemiology of hypertensive disorders in pregnancy: prevalence, risk factors, predictors and prognosis. *Hypertens Research* Mar; 40(3):213-220.
- [48]. WHO, (2014). *Trends in maternal mortality: 1990 to 2013*. World Health Organization planning guide. Geneva. WHO Bulletin.
- [49]. World Health Organization (WHO, 2012), WHO Expert Committee Sep-October, Problems related to PIH. Geneva 10-14
- [50]. Wolde Z, Segni H, Woldie M (2011) Hypertensive Disorders of Pregnancy in Jimma University Specialized Hospital. *Ethiopian Journal of Health Science*21(3): 147-154,
- [51]. You, F, Huo, K. and Wang, R. (2012). Maternal mortality in Henan Province, China: Changes between 1996 and 2011.
- [52]. Zhuang, C., Gao, J., Liu, J., Wang, X., He, J., Sun, J., ... & Liao, S. (2019). Risk factors and potential protective factors of pregnancy-induced hypertension in China: A cross-sectional study. *The Journal of Clinical Hypertension*.

Rokshana Parveen RN, MSN, et. al. "Factors Related to Pregnancy Induced Hypertension." *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, 9(5), 2020, pp. 16-27.