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Midwifery Students' Knowledge on Pregnancy Induced Hypertension at Two Selected Nursing College in Dhaka City

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Abstract:-

➢ ***Background:***

Pregnancy Induced Hypertension (PIH) is the most prevalent complication of pregnancy, the common causes of maternal death, and they also contribute to neonatal morbidity and mortality. *Aim:* The aim of the study was to assess the level of midwifery student's knowledge regarding pregnancy induced hypertension at two selected nursing college in Dhaka city.

➢ ***Methodology:***

A descriptive type of cross-sectional study was conducted among the midwifery students in Dhaka Nursing College and College of Nursing, Sher-E- Bangla, Dhaka. Total number of 70 sample were selected conveniently. Data was collected by using a structured questionnaire regarding Pregnancy Induced Hypertension (PIH). Data was analyzed by using descriptive statistics.

➢ ***Results:***

The study showed that, the mean age of the respondents were 22.04 years, among the total respondents 96% were unmarried and 91% were Muslim. The major findings showed that among all of the respondents about 55.71% respondents had excellent level of knowledge, 31.43% respondents had very good level of knowledge, 8.57% respondents had good level of knowledge where only 4.29% respondents had average level of knowledge on pregnancy induced hypertension.

➢ ***Conclusion:***

This study highlighted that majority (55.71%) of the respondents has excellent level of knowledge on pregnancy induced hypertension that will develop competent professional midwives which will contribute to manage complicated deliveries and meet the desire to reduce maternal and neonatal mortality as well as achieve the Sustainable Development Goals (SDGs).

Keywords:- *Midwifery Student, Knowledge, Pregnancy Induced Hypertension, Dhaka City.*

I. INTRODUCTION

A. Background of the Study:

Pregnancy Induced Hypertension (PIH) is the most prevalent complication of pregnancy, the common causes of maternal death, and they also contribute to neonatal morbidity and mortality. That influences approximately 10% of all pregnant women worldwide [5; 21]**.** Pregnancy induced hypertension (PIH) is defined as hypertension that appear at 20 weeks or more gestational age with or without proteinuria. Hypertension during pregnancy is defined as a sustained systolic BP>140mmHg or diastolic BP <90mmHg [24]. Pregnancy induced hypertension is a condition specific to pregnancy, is a syndrome of hypertension with or without proteinuria, with the clinical manifestation usually occurring during the 20th weeks of gestation or late in pregnancy and regressing after delivery [8].

According to World Health Organizations (WHO, 2018) systematic analysis, hypertensive disorder of pregnancy attributed to maternal mortality and it is second leading cause of maternal deaths after hemorrhage in sub-Saharan Africa which account for 16% of maternal morbidity [21;24]. WHO estimates shows that out of the 5,29,000 maternal deaths globally each year36,000 (25.7%) were contributed by India [23;24]. Another study in Geneva (Switzerland) revealed that 358,000 women died during or following pregnancy and chilled birth almost all of these deaths 99% occurred in developing countries (Tadele,2017). In India, about 7 – 15 percentage of all pregnancies are complicated by hypertension [11].

Pregnancy induced hypertension (PIH) occurs more frequently in young prime gravid, mothers from low socio-economic class, obese, age over -35 years, diabetics, and multiple pregnancies. PIH is characterized by hypertensions and proteinuria accompanied by edema. It develops only

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during pregnancy. Both mother and fetus are adversely affected by maternal hypertension [12]. Hypertension in pregnancy causes reduced blood flow to the placenta, which results in anoxia and a limited supply of nutrients to the growing fetus, leading to slow growth and premature separation of the placenta from the uterine walls, causing severe bleeding [20]. Null parity, age 40 years, pregnancy interval of more than 10 years, family history of pre-eclampsia, multiple pregnancy, body max Index of 35 kg/m2 or higher, gestational age 32 weeks at diagnosis, previous history of pre-eclampsia or gestational hypertension, pre-existing vascular disease, and pre- existing kidney disease are all risk factors. Pregnancy induced hypertension is a significant public health threat both in developed and developing countries contributing to high maternal and prenatal morbidity and mortality. [19; 24].

Midwives can help pregnant women identify risk factors and risk groups for pregnancy hypertension on the initial visit by taking a complete medical history as well as personal and family history [1]. Midwives are particularly important in informing pregnant women about the risks of PIH, this can happen throughout the second or third trimester of pregnancy. If the midwives observe pregnant women with PIH, the woman will be asked to come in more regularly to check her blood pressure and urine that helps in successful treatment. Providing health education to a pregnant woman with PIH is necessary for the care giver including elements related to nutritional therapy, physical activity, and periodic monitoring of blood pressure. [7; 13]. Midwives are directly involved in the care of pregnant women with PIH. Midwifery 3rd year students are future midwives. They should possess comprehensive knowledge and practices to develop and apply an appropriate care plan for patients during antenatal and intrapartum periods. Therefore, the improvement of the midwifery students' knowledge is important for improving maternal and neonatal health services outcome. For this reason, the study was undertaken with the objectives of assessing midwifery students' knowledge on pregnancy induced hypertension at two selected nursing college in Dhaka city.

B. Justification of the Study

Pregnancy induced hypertension is one of the common complications of pregnancy, contributing significantly to maternal and perinatal mortality and morbidity and it is a burden, particularly in low- and middle-income country. However, death due to PIH are few in developed countries than in developing countries like Bangladesh. In Bangladesh, death from hypertensive disorders mothers is a significant issue of public health. Almost 10% of all births are complicated by PIH and the frequency is greater if women are nulliparous. Even though the effects of these conditions have been minimized in developed countries by adequate prenatal care of the mothers and fetuses, it endangers the result of pregnancies in most developing countries [7;21]

Midwives are health professionals responsible for caring mothers and newborns around child birth. Caring of a women and newborn is challenging to any midwives. They work mainly in primary health care centers to provide care to the pregnant mothers including high risk and complicated pregnancies with hypertensive disorders like PIH, therefore it is needed for every midwife to have adequate knowledge on PIH. Midwives' keen observation, prompt decision -making -ability to use lifesaving procedures and referral to the right place, at the right time to save the mother and the baby to bring about desirable outcome. The improvement of the midwifery students' knowledge is important to improving maternal and neonatal health services among pregnant mothers in Dhaka city. [13; 22]. So, the study was conduct on midwifery student's knowledge regarding pregnancy induced hypertension. The finding of this study would lead to an organized intervention that provides good information about pregnancy induced hypertension. It would also assist in improving manual on pregnancy induced hypertension care system. Finally, the result of this study will serve as a base for further research.

C. Research Question

What is the level of midwifery students' knowledge regarding pregnancy induced hypertension at two selected nursing college in Dhaka city?

D. Research Aim

To assess the level of midwifery students' knowledge regarding pregnancy induced hypertension at two selected nursing college in Dhaka city.

E. Objectives

- To state the socio-demographic information of the respondents.
- To assess the level of respondents' knowledge regarding concept on pregnancy induced hypertension.
- To identify the level respondents of knowledge regarding management on pregnancy induced hypertension.
- To determine the level of respondents' knowledge regarding complications of pregnancy induced hypertension.
- To assess the level of respondents' knowledge regarding preventive measures of pregnancy induced hypertension.

F. Research Variables

➢ *Socio-Demographic Information*

- Age.
- Religion.
- Marital status.
- Entry background.
- Number of PIH cases that observed during clinical practice.
- Number of PIH cases that managed during clinical practice.
- Number of eclampsia cases that observed during clinical practices.
- Attendance at any PIH related seminar/workshop/conference.

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➢ *Knowledge Related Variable*

- Concept of pregnancy induced hypertension.
- Management of pregnancy induced hypertension.
- Complications related to pregnancy induced hypertension
- Prevention of pregnancy induced hypertension.

G. Operational Definition:

➢ *Midwifery Student*

- In this study, Midwifery student means respondents who is undertaking diploma in midwifery education and training program in Dhaka Nursing College and College of Nursing, Sher-E- Bangla Nagar, Dhaka and is recognized by Bangladesh Nursing and Midwifery Council.

➢ *Knowledge*

- In this study, knowledge refers to respondents understanding on pregnancy induced hypertension which includes the concept (meaning, definition, cause, risk factors, onset, clinical manifestation), complications, management and preventive measures of pregnancy induced hypertension.

II. LITERATURE REVIEW

This chapter covered comprehensive review of relevant literature on pregnancy induced hypertension. It covers definition, causes and categorization, as well as how it's identified through investigations and pregnant evaluation, and how pregnancy induced hypertensive patient are managed.

A. Concept of Pregnancy Induced Hypertension

Pregnancy-induced hypertension (PIH) is described as systolic blood pressure (SBP) greater than 140 mmHg and diastolic blood pressure (DBP) greater than 90 mmHg. It occurs in approximately 6–10% of pregnancies. It is divided into three levels: mild level when SBP measures 140-149 and DBP measures 90-99 mmHg, moderate level when measures of SBP are between 150 to 159 and DBP between 100 to 109 mmHg, and severe level when the measures result in SBP greater than 160 and DBP greater than 110 mmHg [10].

B. Definition of Pregnancy Induced Hypertension

Pregnancy induced hypertension is high blood pressure most commonly occurring after the 20th week of pregnancy [16]. Pregnancy induced hypertension is defined as a condition of high blood pressure during pregnancy. Pregnancy induced hypertension (PIH), also known as toxemia or gestational hypertension is a form of high blood pressure in pregnancy [24].

C. Classification of PIH

Pregnancy induced hypertension (PIH) are classified to preeclampsia, Eclampsia chronic hypertension, gestational hypertension. It is a hypertension condition that occurs during pregnancy [18].

D. Pathophysiology of Pregnancy Induced Hypertension

Increased cardiac output is common during pregnancy, and it can harm artery epithelial cells, reducing the vascular response to blood pressure, causing vasoconstriction and high blood pressure. Reduced uteroplacental perfusion occurs from abnormal invasion of cytotrophoblasts of the spiral arteries show to be beginning event in PIH. The maternal vascular endothelium is thought to be activated or dysfunctional as a result of placental ischemia, leading to elevated endothelin and thromboxane production, increased vascular sensitivity to angiotensin II, and decreased production of vasodilators such prostacyclin and nitric oxide. It is remained unknown the role of endothelial and humoral mechanisms in mediating the decrease in renal hemodynamic and excretory function, as well as the increase in arterial pressure during PIH [1]. Pregnancy induced hypertension occurs when blood pressure levels are equal to or higher than 140/90 for the first time after 20 weeks without proteinuria and any organ involvement in a nulliparous woman [16].

E. Risk Factors for Pregnancy Induced Hypertension Include

Many risk factors of pregnancy induced hypertension include: Obesity, Null parity, Over the age of 40, Teen age pregnancy, Gap more than ten years between two pregnancies, multi-fetal pregnancy, Family history of preeclampsia, Previous history of preeclampsia or gestational hypertension, Pre-existing kidney disease and Pre-existing vascular disease [9; 13].

F. Clinical Manifestation of Pregnancy Induced Hypertension

Vasospasm impedes blood flow to the mother's organs and placenta, leading to one or more of these signs: hypertension, proteinuria (protein in the urine), and edema, blurred vision, headache, reduced urinary output, sleep disturbance, PIH in severe stage can also affect the central nervous system, gastrointestinal system, liver, eyes, and blood clotting function [5;24].

G. Management of Pregnancy Induced Hypertension

Management of PIH is based on criteria such as blood pressure, gestational age, symptom severity, and risk factors. Women with pregnancy induced hypertension need to done a comprehensive assessment in the health care setting by a healthcare professional who is trained in the management of pregnancy induced hypertension to maintain a blood pressure range of systolic BP 110-140 and diastolic BP 85-90 mmHg [3].

Assessment of complete blood count test, renal and liver function tests as required and then weekly fetal assessment and monitoring fetal growth especially if maternal uric acid is high during antenatal visit. Perform fetal heart auscultation and ultrasound assessment of the fetus at the time of diagnosis, and re-assess every 2 weeks if severe hypertension continues [13].

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➢ *Non-Pharmacological Management:*

Pregnant women with mild to moderate PIH who do not meet the criteria for pharmacologic treatment might consider non-pharmacological treatment like lifestyle modification, complete bed rest, salt and cholesterol limitation [15].

➢ *Pharmacological Management:*

Methyldopa is regarded the medication of choice for women with severe PIH because of its effectiveness and lengthy track record of safety. Atenolol and metoprolol are considered effective and safe drug for late pregnancy. Due of perinatal side effects and a slower treatment response [10].

Oral labetalol, long-acting oral Nifedipine, clonidine, hydralazine, and thiazide diuretics are examples of antihypertensive medicines that can be considered second-line. Once a woman becomes pregnant, Angiotensin-converting enzyme ACE inhibitors and Angiotensin II receptor blockers (ARBs) should be avoided. Pregnant women on antihypertensive medication for chronic hypertension should aim for a DBP of 85 mm Hg [2].

H. Prevention of Pregnancy Induced Hypertension:

➢ *Primary Prevention:*

Primary prevention focuses on avoiding or preventing pregnancy in pregnant women at high risk for PIH. For these women, primary prevention includes modifying lifestyle, promoting women's healthy nutrient intake, reducing the stressors associated with pregnancy, and promoting mental health in women with high-risk pregnancy factors [6].

➢ *Secondary Prevention:*

Secondary prevention focused on high-risk women to provide a productive intervention as possible to help antenatal results promote management and attention when assessing proteinuria to avoid the major complications through the safe use of an automated strip reading device [14].

➢ *Tertiary Prevention:*

Tertiary prevention is based on making use of treatment for preeclampsia and reducing complications. As a result, clinical judgment-based care can result in fewer premature newborns and shorter hospital stays with higher costs for babies with low-birth-weight use of magnesium sulfate and antihypertensive drugs to prevent seizures. The rate of preeclampsia can be minimized by the use of magnesium sulfate [17].

I. Knowledge Regarding PIH:

A descriptive study that was designed to assess the knowledge of III-year GNM students regarding the management of pregnancy induced hypertension in selected College of Belgaum, Karnataka. The findings showed that 3.33% (1) student had good knowledge, 76.67% (23) students had average knowledge and 20% (6) students had poor knowledge about management of Pregnancy Induced Hypertension. Statistical analysis using Chi-square test to find out association between knowledge of III-year GNM students and selected socio demographic variables, revealed that the knowledge score and demographic variables are independent of each other at 0.05 level of significance [4].

A descriptive study that was designed to assess nurses' knowledge of pregnancy induced hypertension in p primary health care centers, the findings indicate that the nurses' knowledge is poor. Findings show that (75%) of nurses expressed a poor level of knowledge of measurement with regard to pregnancy-induced hypertension [15].

Another cross-sectional descriptive study was conducted to assess knowledge and practice of nurses working in gynecology emergency room towards pregnancy induced hypertension in selected government public hospital of Addis Abada, Ethiopia. A total of 78 study participants were included in the study. The mean age of the respondents was 25.62 years. Out of the total study participants, 54(67.9%) of them found to have adequate knowledge towards pregnancy induced hypertension. However, among the total 78 charts reviewed, 39(50%) of the charts had showed good practice towards pregnancy induced hypertension. Only training was significantly associated with knowledge towards pregnancy induced hypertension at $p<0.003$ but none of the variables were significantly associated with practice towards pregnancy induced hypertension [21].

Another study conducted to assess Nurses Knowledge regarding Nursing Care of Pregnancy Induced Hypertension at Kassala Saudi New Hospital, Kassala State. The study sample include (42) of nurses. Results showed that (45.2%) of the studied population had poor knowledge about gestational hypertension, (50.0%) of the studied population had poor knowledge [1].

III. RESEARCH METHODOLOGY

The research methodology describes the entire process of the study which was covers the areas of research design, study place, study population, study period and sample size, sampling technique, selection criteria for the study, research instruments, ethical considerations, pre-test and finalizing of the questionnaire, data collection procedures, data processing, analysis and presentation.

A. Study Design

A descriptive type of cross- sectional study design was done to assess the Midwifery Student's Knowledge on Pregnancy Induced Hypertension at Two Selected Nursing College in Dhaka city.

B. Study Period

The study period was conducted on July 2023 to June 2024.

C. Study Setting

This study was conducted at College of Nursing, Sher – E –Bangla Nagar, Dhaka, and Dhaka Nursing College, Dhaka. College of Nursing Sher –E -Bangla, Dhaka is a public nursing college attached to the Shaheed Suhrawardy Medical College Hospital. Dhaka nursing college (DNC) also

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is a public nursing college attached to the Dhaka Medical College Hospital. where have a big facility of clinical practices for Midwives. Both colleges are located in central of Dhaka and near to College of Nursing, Mohakhali, Dhaka. The Dhaka nursing college established on1947. Both colleges have B. Sc. in nursing for 4 years and Diploma in midwifery for 3 years' program. Both Nursing Colleges are educational center for preparing competent nurses and midwives to provide quality health services to the people of Bangladesh. These two colleges are selected due to closeness of the College of Nursing, Mohakhali and convenient to collect data at a given time of the research.

D. Study Population

The entire population of the selected study areas who were enrolled of Diploma in Midwifery program in Dhaka Nursing College (150) & College of Nursing, Sher-E-Bangla (75) were 225 midwifery students who enrolled in these two Nursing College. Accessible population were 75, particularly Midwifery 3rd year students' studying in these colleges.

E. Sample Size

A total number of 70 sample were selected based on specific criteria from the entire numbers of population. Where respondents are selected based on inclusion criteria for easiest to collect data.

F. Sampling Techniques

A non-probability type of convenient sampling technique was adopted for selecting the sample size of this study.

G. Selection Criteria

➢ *Inclusion Criteria*

- Respondent who enrolled in selected two nursing colleges.
- Respondent who was accessible during data collection period.
- Respondent who was voluntarily participated in this study.

➢ *Exclusion Criteria:*

Respondent who didn't meet the inclusion criteria.

H. Research Instruments

A structured questionnaire was developed on the basis of research objectives and variables after review of the relevant literatures by the researcher with consultation of respected guide teachers and subject teachers. The questionnaires are divided into two Parts.

- **Part I:** Socio demographic information of the respondents consist of seven (08) items. The questionnaire was designed to collect data about age, religion, marital status, entry background, number of observed and managed case of PIH, number of observed of eclampsia and special seminar or conference on PIH.
- **Part II:** Knowledge related questions regarding pregnancy induced hypertension (PIH) was consist of four dimensions; concept, management, complication and preventive measures for developing PIH.Total knowledge related questions were 20. Each question consists of multiple options (4 options) with one correct answer. Each correct answer carried out 5 marks and the total score were considered as 100% during analysis.

I. Validity of the Instruments

Validity of the questionnaire was assessed by three experts from related area. Necessary correction and lapse and gaps were checked. Then it was accepted for data collection.

J. Reliability of the Instruments

The reliability of the questionnaire was determined by pretesting on the same group of population. A pre-test was conducted on 10 (ten) 3rd year midwifery students in Nursing College, Mitford, Dhaka. The necessary corrections and omission were made on the basis of pre-testing findings.

K. Ethical Consideration

After approval of the academic research project proposal by the appropriate authority of the College of Nursing, Mohakhali, Dhaka and prior to start data collection procedures, a written permission letter was issued to the selected nursing colleges Dhaka by the principal, College of Nursing Mohakhali, Dhaka, **Memo no. P.F. 1-1/2003/CN/204/1(6)** and obtained permission from the concerned authority. Participants were informed about the objectives and method of study and a written consent was taken from the participants prior to start the data collection. The researchers were explained clearly about the purpose of the study, the procedure, the possible benefit, and ensured free from risk of the study of the participants. Subjects' autonomy and confidentially was strictly maintained by the researchers and ensured their willingness prior to participation. Participants were informed about their right to withdraw from the study without any repercussions.

L. Data Collection Procedure

Prior to data collection written permission was obtained from the Principal, College of Nursing, Mohakhali, Dhaka. After approval of the study proposal, permission taken from the Principal, Dhaka Nursing College and College of Nursing, Sher-E-Bangla Nagar, Dhaka. The investigator was explained the study purpose to the respondents prior to data collection. Data were collected conveniently through structured questionnaire within two days by a group of researchers with the help of Principal and teachers of two selected Nursing College.

M. Data Management

After collecting data, data were managed by organizing, categorizing, coding, summarizing the data on master chart and compilation of tally and array by the use of computer based on study objectives. All the data was collected for this study and was stored both as hardcopy and softcopy.

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N. Data Analysis, Interpretation and Presentation

The obtained data were analyzed by using descriptive statistics like measures of frequency, percentage and mean. Data were analyzed manually by using calculator and computer software (MS Excel). Analyzed data were shifted to the master chart for conceptualization, it at a glance, then it was inserted into the computer software program for converting into graphical form and all results was presented into the form of tables, pie chart.

Table 1: Grading Criteria

Knowledge Level	Grading Criteria
Excellent knowledge	90-100%
Very good knowledge	80-89%
Good knowledge	70-79%
Average knowledge	60-69%
Poor knowledge	< 60%

IV. RESULTS

This chapter contains a detailed description of socio-demographic and knowledge related results which is presented in different forms of tables, pie and column chart.

A. Part – I: Socio Demographic Information

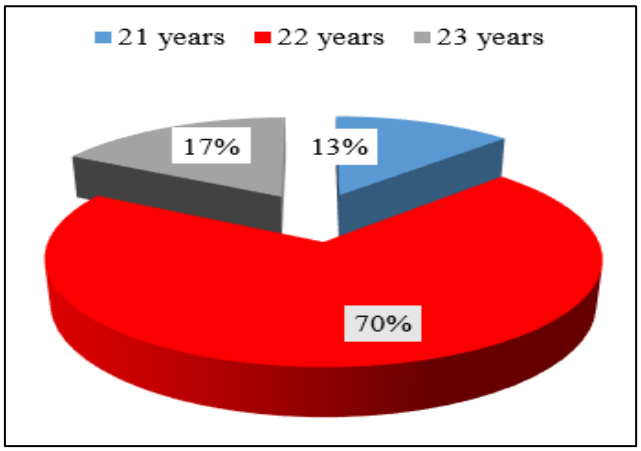

Fig 1: Distribution of the Respondents by Age
n=70
Mean age = 22.04 years

- **Description:** The pie chart 1. shows that the distribution of respondents by age, majority of the respondents (70%) were in the age group 22 years, 17% were in the age group 23 years, 13% age group was 21 years. The mean age of the respondents was 22.04 years.

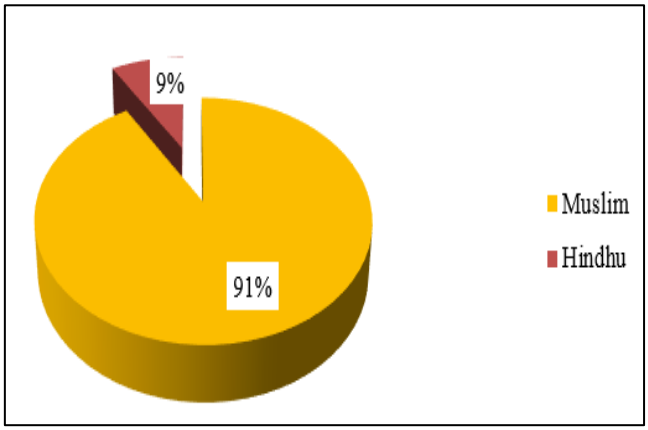

Fig 2: Distribution of Respondents by Religion
n=70

- **Description:** The pie chart 2, illustrates that most of the respondents (91%) were Muslim, only 9% were Hindu among the total number of respondents.

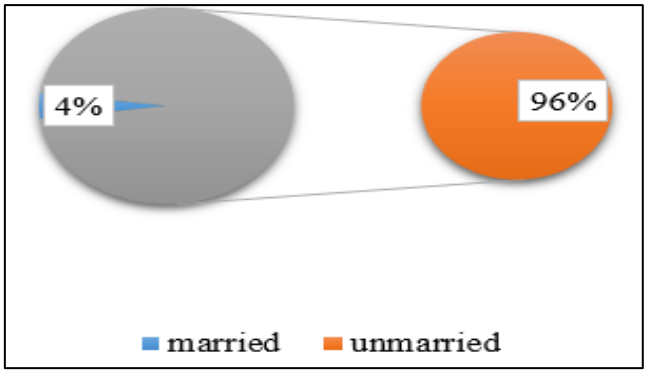

Fig 3: Distribution of Respondents by Marital Status
n=70

- **Description: The pie chart 3**. shows that most of the respondents 96% were unmarried; and 4% of respondents were married among total number of respondents.

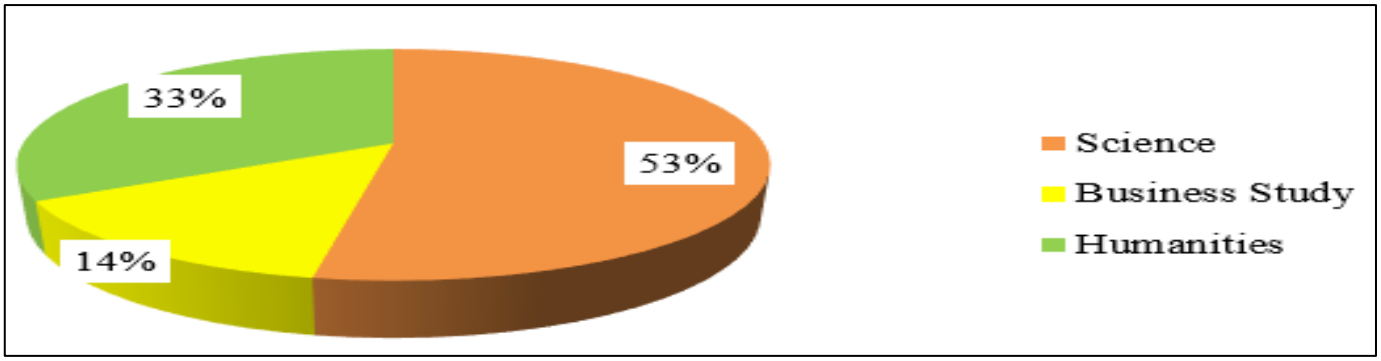

Fig 4: Distribution of Respondents by Entry background
n=70

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- **Description: The pie chart 4** shows that the distribution of respondents by entry background, where 53% of respondent were science background, 33% were humanities and only 14% of respondent were Business background.

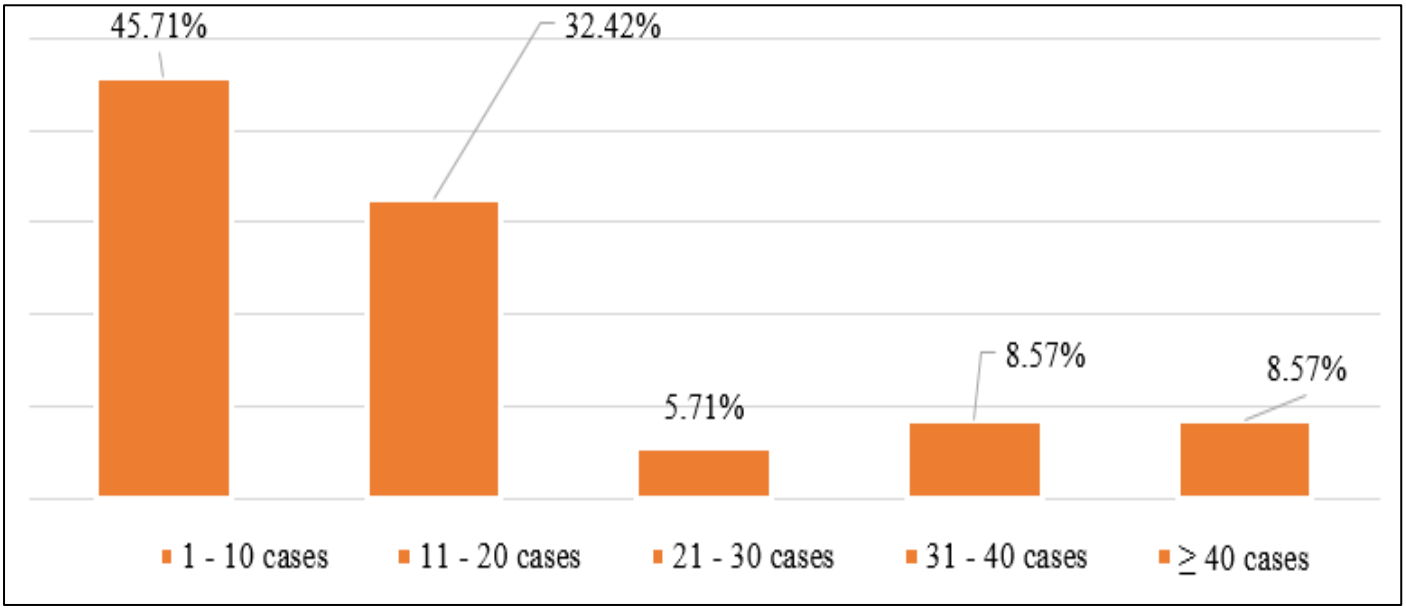

Fig 5: Distribution of Respondents by Observed Case of PIH
n=70

- **Description**: **The column 5**. present that 45.71% respondents observed 1 – 10 number cases with PIH, 32.42% respondents observed 11- 20 cases number cases with PIH, 5.71% respondents observed 21 – 30 number cases with PIH, cases, 8.57% respondents observed 31 – 40 number cases with PIH, and 8.57% respondents observed more than 40 number cases with PIH during the clinical practice.

Table 2: Distribution of Respondents by Managed the Case of PIH

Variables	Category of Variables	Frequency (*f*)	Percentage (%)
Number of PIH cases management	1-10 cases	55	79
	11- 20 cases	7	10
	21-30cases	3	4
	31-40 cases	4	6
	Above 40 cases	1	1

- **Description: Table 2. present** that most of the respondents (79%) managed 1 – 10 cases, 10% respondents managed 11- 20 cases, 4% respondents managed 21 – 30 cases, 6% respondents managed 31 - 40 and only 1% respondents managed more than 40 cases of PIH during the clinical practice of the respondents.

Table 3: Distribution of Respondents by Observed the Case of Eclampsia
n=70

Variables	Category of Variables	Frequency (*f*)	Percentage (%)
Number of Eclampsia cases observation	1-10 cases	32	46
	11- 20 cases	11	16
	21-30cases	16	23
	31-40 cases	3	4
	Above 40 cases	8	11
	Total	70	100

- Description: Table 3. presents that among all 46% respondents observed 1-10 number of cases with eclampsia, 16% respondents observed 11- 20 number of cases with eclampsia, 23% respondents observed 21 – 30 number of cases with eclampsia, 4% respondents observed 31 - 40 number of cases with eclampsia and 11% respondents observed above 40 number of cases with eclampsia during the clinical practice of the respondents.

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Table 4: Distribution of Respondents by Attend in PIH Related Seminar/ Conference
n=70

Variables	Category of variables	Frequency (*f*)	Percentage (%)
Attend in PIH related seminar/ conference	Yes	12	17
	No	58	83
	Total	70	100

- Description: Table 4. presents that the maximum number of respondents (83%) did not attend in PIH related seminar/ conference, whereas a few numbers of respondents (17%) attended among the total number of respondents.

B. PART-II: Knowledge Related Results

Table 5: Distribution of Knowledge Regarding Concept of PIH
N=70

Sl. No.	Variables	Correct Answer		Incorrect Answer	
		(f)	%	*(f)*	%
01.	PIH means high blood pressure during pregnancy above 140/90 mmm of Hg	70	100	-	-
02.	Normal blood pressure is 120/80 mm of Hg	70	100	-	-
03.	An absolute rise of BP at least 140/90 mm of Hg is considered as Hypertension	69	98.57	1	1.43
04.	Manual BP machine is the appropriate equipment to assess blood pressure during pregnancy.	59	84.3	11	15.7
05.	Onset of PIH occurs after 20 weeks of pregnancy.	62	88.6	8	11.4
06.	Severe headache is the clinical feature of PIH	63	90	7	10
07.	Obesity is the common cause of PIH	58	82.85	12	17.15
08.	PIH is more common in age less than 20 and more than 35	64	91.43	6	8.57
09.	Increased diastolic pressure value is more important to diagnosed PIH	64	91.43	6	8.57
10.	PIH with previous pregnancy is risk factors for PIH	66	94.29	4	5.71

- Description: Table 5. shows that knowledge of the concept part on pregnancy induced hypertension. A total 10 statement were used to collect information about the concept PIH. where 100% respondents encircle correct answer regarding means of PIH and Normal blood pressure,98.57% answered correctly regarding an absolute rise of BP at least 140/90 mm of Hg is considered as Hypertension, 84.3% answered correctly on the statement of manual BP machine is the appropriate equipment to assess blood pressure during pregnancy , 88.6% answered correctly in the area of onset of PIH occurs after 20 weeks of pregnancy, 90% answered correctly regarding severe headache is the clinical feature of PIH, 82.85% answered correctly in the area of obesity is the common cause of PIH. And 91.43% answered correctly in the area of PIH is more common in age less than 20 and more than 35, 91.43% answered correctly in the area of Increased diastolic pressure value is more important to diagnosed PIH, 94.29% answered correctly in the area of PIH with previous pregnancy is risk factors for PIH.

Table 6: Level of Knowledge Regarding Concept of PIH
n=70

Variables	Knowledge Level	Grading Criteria	*f*	*%*	Obtain Score	Mean Score
Concept of PIH	Excellent	90-100%	58	82.86	2785	48.02
	Very good	80-89%	5	7.14	200	40
	Good	70-79%	6	8.57	210	35
	Average	60-69%	1	1.43	60	60
	Poor	<60%	….	…	…	…

- **Description: Table 6. shows** that most of the 82.86% of respondents had excellent knowledge, 7.14% had very good, 8.57% had good knowledge whereas only 1.43% had average knowledge on concept about pregnancy induced hypertension among the total respondents.

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Table 7: Distribution of Respondent's Knowledge Regarding Management of PIH
n=70

Sl. No.	Variables	Correct Answer		Incorrect Answer	
		(f)	%	*(f)*	%
11.	The first line drug for PIH is Methyldopa	53	75.71	17	24.29
12.	Nifedipine should be given orally	38	54.29	32	45.71

- **Description: Table 7. Shows** that respondent's knowledge regarding the management of PIH. A total two (2) structured question used to collect information regarding management of PIH. where 75.71% respondents answered correctly regarding the first line drug for PIH is Methyldopa and 54.29% answered correctly regarding Nifedipine should be given orally.

Table 8: Level of Knowledge Regarding Management of PIH
n=70

Variables	Knowledge Level	Grading Criteria	*f*	%	Obtain Score	Mean Score
Management of PIH	Excellent	90-100%	28	40	280	10
	Very good	80-89%	…	…	…	…
	Good	70-79%	…	…	…	…
	Average	60-69%	…	…	…	…
	Poor	<60%	42	60	175	4.17

- **Description: Table 8. shows** that most of the 60% had poor level of knowledge and 40% of respondents had excellent level of knowledge on management of pregnancy induced hypertension.

Table 9: Distribution of Respondent's Knowledge Regarding Complication of PIH
n=70

Sl. No.	Variables	Correct Answer		Incorrect Answer	
		(f)	%	*(f)*	%
13.	PIH can lead to heart disease	50	71.4	20	28.6
14.	Pre-eclampsia is more common complication of PIH	41	58.57	29	48.43
15.	Fetal complication of PIH is IUGR	58	82.86	12	17.14
16.	Immediate complication of PIH is eclampsia	68	97.14	2	2.86
17.	Late complication of PIH is chronic hypertension	69	98.57	1	1.43

- Description: Table 9. shows that respondent's knowledge regarding complications of PIH. A total five (5) structured question used to collect information regarding complications of PIH. Where 71.4% respondents answered correctly regarding PIH can lead to heart disease, 58.57%answered correctly regarding Pre-eclampsia is more common complication of PIH, 82.86% answered correctly on the statement of Fetal complication of PIH is IUGR, 97.14% answered correctly in the area of Immediate complication of PIH is eclampsia, 98.57% answered correctly regarding late complication of PIH is chronic hypertension.

Table 10: Level of Knowledge Regarding Complications of PIH
n=70

Variables	Knowledge Level	Grading Criteria	*f*	%	Obtain Score	Mean Score
Complications of PIH	Excellent	90-100%	25	35.71	625	25
	Very good	80-89%	29	41.43	580	20
	Good	70-79%	…	…	…	…
	Average	60-69%	13	18.57	195	15
	Poor	<60%	3	4.29	30	10

- Description: **Table 10. shows** that 35.71% of respondents had excellent level of knowledge, 41.43% had very good level of knowledge, 18.57% had average level of knowledge and only 4.29% had poor level of knowledge regarding complications of pregnancy induced hypertension.

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Table 11: Distribution of Respondent's Knowledge Regarding Prevention of PIH
n=70

Sl. No.	Variables	Correct Answer		Incorrect Answer	
		(f)	%	*(f)*	%
18.	Hypertension can be prevented by avoiding extra salt	69	98.57	1	1.43
19.	Pre-eclampsia can be prevented by intake of high protein and low salt diet	66	94.29	4	5.71
20.	PIH can be prevented by regular antenatal check up	65	92.86	5	7.15

- **Description: Table 11. shows** that respondent's knowledge regarding the prevention of PIH. A total three (3) structured question used to assess knowledge regarding prevention of PIH. where 98.57% respondents answered correctly regarding hypertension can be prevented by avoiding extra salt, 94.29 % answered correctly regarding pre-eclampsia can be prevented by intake of high protein and low salt diet and 92.86% PIH can be prevented by regular antenatal checkup.

Table 12: Level of Knowledge Regarding Prevention of PIH
n=70

Variables	Knowledge Level	Grading Criteria	*f*	*%*	Obtain Score	Mean Score
Prevention of PIH	Excellent	90-100%	61	87.14	915	15
	Very good	80-89%	…	…	…	…
	Good	70-79%	…	…	…	…
	Average	60-69%	8	11.43	80	10
	Poor	<60%	1	1.43	5	5

- **Description: Table 12. shows** that most of the 87.14% of respondents had excellent knowledge, 11.43% had average knowledge and 1.43%had poor knowledge on prevention of pregnancy induced hypertension among the total respondents. Mean of total knowledge score was 14.29 in the area of prevention of PIH.

Table 13: Distribution of Respondents' Overall Level of Knowledge on PIH
n=70

Sl. No	Knowledge Level	Score	*f*	*%*	Obtain score	Mean score
01	Excellent	90-100%	39	55.71	3635	93.21
02	Very good	80-89%	22	31.43	1840	83.64
03	Good	70-79%	6	8.57	440	73.33
04	Average	60-69%	3	4.29	195	65
05	Below average/ poor	<60%	-	-	-	-
Total			70	100	6110	87.29

Mean of Overall Knowledge Score Regarding PIH is 87.29 which Indicate Very Good Level of Knowledge

- **Description: Table 13.** shows that overall level of knowledge regarding PIH. About 55.71% respondents had excellent level of knowledge, 31.43% respondents had very good level of knowledge, 8.57% respondents had good level of knowledge where only 4.29% respondents had average level of knowledge on pregnancy induced hypertension. Mean of overall knowledge score regarding PIH was 87.29 which indicate very good level of knowledge.

V. DISCUSSION

This chapter deals with the discussion of the results, obtained from statistics, analysis based on the data of the study, the reviewed literature, which was selected for the study. The present study was conducted to assess the knowledge on pregnancy induced hypertension among midwifery students at Dhaka Nursing College and College of Nursing, Sher – E- Bangla Nagor, Dhaka are discussed below. It was presented in the view of the objectives of the study.

A. Part – I: Socio-Demographic Information of the Respondents

The findings of the current study on socio-demographic information showed that the majority of the respondents (70%) were in the age group 22 years and 13% age group was 21 years old among the total respondents and mean age was 22.04 years. Near to similar a descriptive cross-sectional study showed that the mean age of their study participants was 25.62 years [21]. Among the total respondents,91% were Muslim. Most of the respondents (96%) were unmarried. Among all respondents 45.71% respondents observed 1 – 10 number cases with PIH,8.57% respondents observed more than 40 number cases with PIH where most of the respondents (79%) managed 1 – 10 cases and only 1% respondents managed more than 40 cases during the clinical practice of the respondents. Among all of the respondents 46% respondents observed 1-10 number of eclampsia cases and 4% respondents observed 31 -40 number of eclampsia cases. Among all respondents, the maximum number of respondents (83%) weren't attended in any PIH related seminar/conference.

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B. Part –II: Knowledge related information of the respondents

This study revealed all of the respondents had adequate knowledge on meaning of PIH. A relevant study revealed that nearly 65% of respondents has adequate knowledge regarding the meaning of PIH [11]. All of the respondents had had enough knowledge regarding the meaning of normal blood pressure all respondents. Most of the respondent (98.57%) had enough knowledge regarding an absolute rise of blood pressure considered as hypertension and 84.3% respondents had very good knowledge which is manual BP machine regarding an appropriate equipment to assess blood pressure. A relevant study revealed that 91% of respondents had adequate knowledge on these areas which is consistent to this study [21].

The current study found that 88.6% students' midwives had adequate knowledge regarding onset of PIH. In this study (90%) respondents had adequate knowledge about clinical features of PIH. 91.43% of respondents had adequate knowledge regarding common causes of PIH and the value of blood pressure. A study conducted by Munirathnamma & Lakshmamma among staff nurses to assess knowledge of staff nurses regarding management of PIH revealed that 84.74% had adequate knowledge on it [12].

All most (94.29%) students' midwives had enough knowledge regarding risk factors of PIH. 71.4% of respondents had adequate knowledge regarding PIH can lead to heart disease and more than half (58.57%) of respondents had adequate knowledge regarding more common complications of PIH. About 82.86% respondents had good knowledge regarding fetal the complications of PIH is IUGR. About 97.14%, to 98.57% respondents had adequate knowledge regarding maternal complication of PIH from immediate to chronic which are Eclampsia and chronic hypertension respectively. About 75.71% respondents had adequate knowledge regarding the first line drug of PIH is Methyldopa. A descriptive cross-sectional study revealed that 85.9% nurse midwives had adequate knowledge in this area which is consistent to the present study [21].

Current study found that 54.29% ,98.57% respondents had adequate knowledge regarding Nifedipine can be prescribed orally and prevent hypertension respectively. A study found that 62.9% respondents had adequate knowledge which near to similar to this study [9]. Nearly total respondents assessed excellent knowledge regarding and only 1.43% of respondents were poor knowledge regarding prevention of pre-eclampsia, 94.29%of respondents identified adequate knowledge regarding prevention of pre-eclampsia. Most of respondents (92.86%) respondents were assessed excellent knowledge regarding PIH prevention by regular antenatal check- up. A study conducted in 2016 by Stellenberg & Ngwekazi, on knowledge of midwives about hypertensive disorders during pregnancy in primary health care in South Africa, the study revealed that only 28.9% midwives had adequate knowledge regarding prevention of preeclampsia. this finding are mostly inconsistent with the current study [18].

The current study revealed that more than half of (55.71%) the respondents had excellent level of knowledge, 31.43% had very good, 8.57% had good knowledge where only 4.29 % had average level of knowledge on pregnancy induced hypertension among the total respondents. Another descriptive cross-sectional study revealed that 67.9% participants had adequate knowledge towards pregnancy induced hypertension which is similar to current study [21].

C. Limitation of the Study:

- The present study has several limitations that might have influenced the outcomes.
- As this study is conducted at two renowned govt. nursing college of the Dhaka City where adequate resource and clinical facilities are available. So that the findings of this study can't reflect the actual picture of the entire Bangladesh.
- The study sample size was relatively small and selected conveniently, so it does not necessarily represent the real picture of knowledge of all the midwifery students around the country.
- Insufficient number of national literatures related to the current topic.
- This study only focused on the assessment of knowledge level but not the attitude and practice. So, this study may not explore at all.

VI. CONCLUSION AND RECOMMENDATION

A. Conclusion

Pregnancy Induced Hypertension is a major, life threatening public health concern globally and remains the most common causes of maternal and neonatal death in Bangladesh. Midwives must need to have up to date knowledge regarding PIH. A descriptive type of cross-sectional study was carried out from July 2023 to June 2024 to assess the midwifery students' knowledge at two selected Nursing college in Dhaka city. The aim of the study was to assess the level of midwifery students' knowledge regarding pregnancy induced hypertension at two selected nursing college in Dhaka city. This study highlighted that majority (55.71%) of the respondents has excellent (93.21%) knowledge about pregnancy induced hypertension that helps to develop competent midwives which contributes to manage complicated deliveries and meet the desire to reduce maternal and neonatal mortality as well as achieve the Sustainable Development Goals (SDGs).

B. Recommendations

- As this study is conducted at two renowned govt. nursing college of the Dhaka City where adequate resource and clinical facilities are available. So that the findings of this study can't reflect the actual picture of the entire Bangladesh.
- To generalize the findings further studies should be carried out to determine practice with a large scale to ensure all 3rd year midwifery students have adequate knowledge of PIH management.

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- Organize continuing education program as conference, seminar, symposium and workshop and encourage midwifery students to participate.
- Further study on knowledge, attitude and practice regarding PIH can be conducted among midwifery Students.

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LIST OF ABBREVIATION

- PIH- Pregnancy Induced Hypertension.
- SDGS- Sustainable Development, Goal
- WHO -World Health Organization.
- MMR- Maternal Mortality Rate.
- BNMC - Bangladesh Nursing and Midwifery Council
- SBP Systolic Blood Pressure.
- DBP-Diastolic Blood Pressure
- BP- Blood Pressure
- ACE - Angiotensin Converting Enzyme.
- ARBS- Angiotensin 11 Receptor Blockers
- DNC - Dhaka Nursing College.
- BSC - Bachelor of science.
- IUGR-Intrauterine Growth Retardation

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