



## Factors Related to the Occurrence of Hypertension During Pregnancy

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**Abstract.** Based on a preliminary study conducted at the Mubune Health Center, data from January to May 2024 showed a total of 313 pregnant women, with 16 cases of hypertension in pregnancy. Hypertension in pregnancy is an increase in systolic blood pressure of 30 mmHg or diastolic blood pressure of 15 mmHg above baseline blood pressure. This study aims to determine the factors that influence the occurrence of hypertension in pregnancy based on knowledge, maternal age, and parity at the Mubune Health Center in 2024. The method used in this study was an analytical survey method with a cross-sectional approach. The number of samples in this study was 76 respondents. The data used were primary and secondary data, data collection using questionnaires given to respondents. Data analysis in this study used the chi-square test. The results of the study showed that 76 respondents aged <20 years were 8 people (10.5%), those aged 20-35 years were 50 people (65.8%), and those aged >35 years were 18 people (23.7%). Based on their knowledge level, 19 (25%) respondents met the criteria of insufficient knowledge, 37 (48.7%) met the criteria of sufficient knowledge, and 20 (26.3%) met the criteria of good knowledge. The test results showed that knowledge, age, and parity factors influence the occurrence of hypertension in pregnancy.

**Keywords:** Health Education; Maternal Age; Maternal Knowledge; Parity Factor; Pregnancy Hypertension

### 1. INTRODUCTION

Pregnancy is a natural process preceded by the union of an ovum and sperm, called fertilization, followed by nidation and implantation, until the fetus can survive and develop in the outside world.<sup>1</sup>

Each year, approximately 160 million women worldwide become pregnant. Most of these pregnancies proceed safely. However, approximately 15% suffer from serious complications, with a third of these complications threatening the mother's life. These complications result in the deaths of more than half a million mothers each year. Of these, an estimated 90% occur in Asia and sub-Saharan Africa, 10% in other developing countries, and less than 1% in developed countries. In some countries, the risk of maternal death is higher than 1 in 10 pregnancies, while in developed countries, this risk is less than 1 in 6,000.<sup>2</sup> It is estimated that for every woman who dies during pregnancy, childbirth, or the postpartum period, 16-17 mothers suffer from complications that affect their health, often permanently. The main causes of maternal death are hemorrhage, infection, hypertension in pregnancy, obstructed labor, and abortion. <sup>2</sup> Hypertension in pregnancy is an increase in systolic blood pressure of 30 mmHg or diastolic blood pressure of 15 mmHg above baseline. <sup>3</sup>

Based on a preliminary study conducted by researchers at the Mubune Community Health Center, data from January to May 2024 showed a total of 313 pregnant women, with 16 cases of hypertension in pregnancy. Based on maternal age, there were 9 pregnant women aged 20-35 years with hypertension in pregnancy, and 7 pregnant women aged >35 years with

hypertension in pregnancy. Based on parity, there were 2 pregnant women with hypertension in the P=1 group, 9 pregnant women with hypertension in the M=2-4 group, and 5 pregnant women with hypertension in the G=>4 group. The purpose of this study was to determine the factors associated with the occurrence of hypertension in pregnancy among pregnant women at the Mubune Community Health Center in 2024.

## 2. RESEARCH METHOD

Research is an effort to understand and solve problems scientifically, systematically, and logically. This study uses an analytical survey method with a "cross-sectional" approach, namely, data collected momentarily or data obtained at the moment. This method is done by conducting surveys, interviews, or by distributing questionnaires to research respondents. In this study, the independent variables studied were knowledge, age, and parity, while the dependent variable was cases of hypertension in pregnancy. The population in this study was all pregnant women in the Mubune Health Center working area from June to September 2024, totaling 313 pregnant women. The sampling technique was accidental sampling, carried out by taking cases or respondents who happened to be present or available in a place according to the research context. The number of samples was 76. Data analysis used the chi-square test.

## 3. RESULTS AND DISCUSSION

### Knowledge

**Table 1.** Frequency Distribution of Respondents Based on Knowledge Factor.

Knowledge	Total	Percentage(%)
Good	20	26,3
Enough	37	48,7
Insufficient	19	25
Total	76	100

Based on Table 1, the majority of respondents (19 respondents) had insufficient knowledge. 37 respondents (48.7%) had sufficient knowledge. 20 respondents (26.3%) had good knowledge.

### Age

**Table 2.** Frequency Distribution of Respondents by Age.

Age (years)	Total	Percentage(%)
<20	8	10,5
20-35	50	65,8
>35	18	23,7
Total	76	100

Based on Table 2, the majority of respondents were in the 20-35 age group (50 respondents (65.8%)), while 8 respondents (10.5%) were in the <20 age group. And 18 respondents (23.7%) were in the >35 age group.

### Parity

**Table 3.** Frequency Distribution of Respondents Based on Parity Factor.

Parity	Total	Percentage(%)
P = 1	20	26,3
M = 2-4	45	59,2
G = >4	11	14,5
Total	76	100

Based on Table 3, the highest parity factor was found in multigravida (2-4) with 47 respondents (59.2%). Meanwhile, in grandemultiva (>4) with a total of 11 respondents, hypertension occurred (14.5%), and in primigravida with 20 respondents (26.3%).

### The Influence of Knowledge on the Incidence of Hypertension in Pregnancy

**Table 4.** The Influence of Knowledge on the Incidence of Hypertension.

Knowledge	Hypertension				Total	P Value
	Yes		No			
	n	%	n	%		
Good	2	10	18	90	20	0,029
Enough	6	16,2	31	83,8	37	
Insufficient	8	42	11	58	19	
Jumlah	16		60		76	

Based on the data in Table 4, there were 2 respondents with hypertension in the good knowledge group, 6 respondents with hypertension in the sufficient knowledge group, and 8 respondents with hypertension in the poor knowledge group. The chi-square test yielded a p-value of  $0.029 < 0.1$ . Therefore,  $H_0$  was rejected and  $H_a$  was accepted, indicating a relationship between knowledge and the occurrence of hypertension cases at the Mubune Community Health Center in 2024.

### The Effect of Age on the Incidence of Hypertension in Pregnancy

**Table 5.** The Effect of Age on the Incidence of Hypertension.

Age	Hypertension				Total	P Value
	Yes		No			
	n	%	n	%		
<20	0	0	8	100	8	0,053
20-35	9	18	41	82	50	
>35	7	39	11	61	18	
Total	16		60		76	

Based on the data in Table 5, 12 respondents in the 20-35 age group had hypertension, while none in the <20 age group had hypertension, and 4 respondents in the >35 age group had hypertension.

The chi-square calculation yielded a p-value of 0.053 <0.1. Therefore, Ho is rejected and Ha is accepted, indicating a relationship between age and the occurrence of hypertension cases at the Mubune Community Health Center in 2024.

**The Effect of Parity on Hypertension Incidence**

**Table 6.** The Effect of Parity on Hypertension Incidence.

Parity	Hypertension				Total	P Value
	Ya		Tidak			
	n	%	n	%		
P= 1	2	10	18	90	20	0,065
M= 2-4	9	20	36	80	45	
G= >4	5	45,5	6	54,5	11	
Total	16		60		76	

From the data in table 6 in the primi parity group = 1, there were 2 respondents with hypertension, while the multi parity group = 2-4, there were 9 respondents with hypertension, and in the grande parity = > 4 there were 5 respondents with hypertension. From the results of the chi-square calculation, the p-value was 0.065 < 0.1. So Ho was rejected and Ha was accepted, meaning there was a relationship between parity and the occurrence of hypertension cases at the Mubune Health Center in 2024.

**4. DISCUSSION**

**Knowledge of Basic Immunization**

Fifty-two respondents (57.1%) had a good level of knowledge, as shown in Table 2. Knowledge is the collection of information that enables a person to know something through experience or from birth.

This aligns with research (Undarti et al., 2013), which found that age, education, and occupation are some of the factors influencing a person's level of knowledge. Age is a factor that influences respondents' good knowledge. A person's level of maturity and strength increases with age.

This finding is also consistent with the theory of measuring knowledge, attitudes, and behavior (Wawan & M, 2011), which states that a person's comprehension and mindset can be influenced by age. A person's comprehension and mindset improve with age, thus enhancing the knowledge gained (Putra & Podo, 2017).

This is also in line with research (Astuti, Yudiernawati, & Maemunah, 2016), which shows that the majority of people aged 17 to 25 have a greater level of knowledge, and with age, a person's knowledge increases. Some respondents were in their mature years, which is the age when comprehension and reasoning skills improve, thus enhancing their knowledge.

With age, a person becomes more mature in their thinking and work. According to (Faot, Sulastri, & Widayati, 2018), more mature people are more trusted by society than less mature people. Education can also influence knowledge. Information is more easily accessible with a higher level of education (Rahmah, Ambardini, 2016).

Changes in the attitudes and behavior of an individual or group, as well as efforts to mature individuals through training and teaching, are known as education. According to (Bagaskoro, 2019), a higher level of education and the amount of training attended will undoubtedly influence the breadth of a person's knowledge. Everyday life involves education. A person's level of education impacts their cognitive abilities. Research results show that respondents with higher education have better knowledge. Education increases knowledge about diseases (Ermalynda & Nia, 2019). According to research conducted by Fadlilah and Rahil (2019), respondents from universities had a better understanding of futsal compared to respondents from secondary schools. According to Nursalam (2017), education is directly related to a person's knowledge, so it is expected that higher education can increase a person's knowledge. It is expected that someone with higher education will apply their knowledge, especially when family members need assistance. Mass media, electronic media, manuals, health workers, etc. are some common sources of knowledge.

A person's brain performance and ability to store (memory) increases or improves when used frequently, such as in jobs that require frequent brain activity (Putra & Podo, 2017). The work environment can provide a person with direct and indirect experience and knowledge (Faot et al., 2018). This research aligns with research by Karina & Warsito (2012) that found that most mothers had good knowledge about immunization.

Therefore, according to the researchers, occupation can also influence knowledge. A person's knowledge and experience can be influenced by their occupation. Unemployed mothers have more time to learn about immunization, so they understand it better. Mothers who are knowledgeable about vaccination have obtained this information from various sources, including mass media, electronic media, and health workers.

### **Perceptions of Basic Immunization**

The results showed that the majority of parents who responded had positive perceptions of basic immunization.

The survey also found that parents with negative perceptions agreed that basic immunization can cause additional illnesses, such as fever in infants after vaccination. Furthermore, parents believed that immunized and unimmunized infants were no different. Parents who believed that their babies were not sick and did not need vaccinations also

preferred to give their children medicine when they were sick rather than prevent them from receiving basic vaccinations. Negative perceptions of immunization are also influenced by information from those around them. Perceptions about immunization are influenced by the dominant party. Seeing himself as the dominant party, a husband forbade his wife from immunizing their baby. He did this because he did not want to be disturbed by the baby's constant crying after the immunization (Etni, 2020).

The results of this study align with the theory (Kusumaningrum et al., 2022) which states that perception is one of the factors influencing parents' decision to vaccinate. According to the survey results, respondents with positive perceptions agreed that vaccination can prevent infectious diseases. Parents had been well-informed by health workers, both toddler health post (Posyandu) cadres and local community health center (Puskesmas) staff, as immunization is considered important for building immunity in infants.

Therefore, parents who participated in the study also saw the benefits of basic immunization, believing that immunized infants are less likely to get sick. Parents also believed that, even if they were not in an environment prone to infection, they should still receive basic immunizations to prevent unwanted diseases. Parents also disagreed about whether vaccination causes disabilities.

### **Immunization Compliance**

The results showed that the majority of respondents (78 respondents) were compliant with immunizations.

According to Lolong (2017), this study found a relationship between maternal education and maternal compliance with basic immunizations at the Tongkaina Community Health Center, Bunaken District, Manado City. This study also found a relationship between family support, maternal motivation, maternal attitudes, knowledge level, maternal actions, and health services with maternal compliance with basic immunization. Furthermore, there was a relationship between family support and maternal motivation. Although many other factors play a role, this study suggests that knowledge plays a role in determining compliance. However, this study did not consider the extent to which knowledge contributes to compliance.

The results of this study are objectively consistent with the findings of Momomuat et al. (2014) regarding the relationship between maternal knowledge level about the importance of measles vaccination and their compliance with it at the Kawangkoan Community Health Center. However, this study only covered measles immunization and cannot be generalized to basic immunization as a whole. This study also offers an opportunity to explore the contribution of knowledge and compliance levels.

The results of this study align with research conducted by Rizani et al. (2019), which examined the relationship between maternal knowledge, attitudes, and behavior during the administration of hepatitis B immunization for 0-7 days in Banjarmasin City. The study found that mothers with no knowledge were 5.96 times more likely to engage in inappropriate behavior during hepatitis B immunization compared to mothers with good knowledge. Furthermore, negative maternal attitudes also posed a risk. Mothers' behavior during the 7-day period following hepatitis B vaccination was associated with their knowledge and education level. However, this study did not quantify this behavior as compliance. Therefore, it can be concluded that mothers' knowledge and perceptions contribute to their compliance with vaccination.

The results of this study align with those of Astinah et al. (2013), who examined the relationship between education, knowledge, attitudes, and the practice of administering basic immunizations to infants at the Teratai Integrated Health Post (Posyandu) at the Tamamaung Community Health Center in Makassar. The study found a relationship between education, knowledge, attitudes, and practices related to immunization. Furthermore, this study showed that education and knowledge had the most significant influence on immunization administration. The extent of their contribution to shaping behavior and compliance remains unclear.

Given the importance of immunization for children, researchers estimated that respondents had participated in immunization sessions. The study above shows that many variables play a role in maternal compliance with immunization. However, among these variables, knowledge appears to be the most prominent factor in determining maternal compliance with immunization.

### **The Relationship Between Knowledge and Compliance**

There is a relationship between maternal knowledge about basic immunizations and infant compliance with immunizations, according to statistical test results, with a p-value of 0.000 ( $p < 0.05$ ).

This aligns with research conducted by Lolong (2017), which analyzed variables related to maternal compliance with basic immunizations. The study showed a relationship between maternal knowledge and compliance with basic immunizations. The higher the level of education, the better the mother's knowledge, making it easier to change behavior to provide basic immunizations to infants.

According to Anggraini's research, there is a significant correlation between maternal knowledge about implementing complete basic immunizations and child compliance with

complete basic immunizations ( $p=0.017$ ). The mother's level of knowledge is related to the child's compliance with complete basic immunizations.

Researchers assume that maternal knowledge about immunizations significantly influences maternal compliance. This is due to parents' awareness of the importance of vaccinating their children, which in turn contributes to their compliance.

Parents play a crucial role in health promotion campaigns, especially in vaccinating infants. Knowledge largely influences a person's actions. Behavior based on knowledge will be more lasting than behavior without it. Mothers who understand the purpose and benefits of immunization will be more likely to complete basic immunizations. Therefore, every mother is expected to understand the importance of immunization for their children so that they will be healthy in the future.

### **Relationship Between Perception and Compliance**

Based on the results of the research, data showed a relationship between mothers' perceptions about basic immunization and infant compliance with basic immunizations. Statistical tests showed a p-value of 0.001 ( $p < 0.05$ ). This means the p-value obtained is less than 0.005.

According to Ajzen's theory of planned behavior (2020), perceptions control behavior, or the behavior observed can help someone perform a behavior. One of the three factors that can influence the intention to perform a behavior is perception.

This aligns with research conducted by Dariah Elis Deti (2015), which found a relationship between parental perceptions of immunization compliance and their perceptions of basic immunizations for infants. Respondents in the previous study overwhelmingly held positive opinions.

According to the researchers, those with positive perceptions who did not complete their infants' basic immunizations were largely influenced by several factors, such as prohibitions from their husbands, friends' opinions that immunizations would make babies sick, and many who said that not immunizing wouldn't be a problem, or even that immunizations would weaken the child. These views and thoughts contributed to mothers or parents' tendency to choose not to immunize their infants. A mother's decision to take her child for basic immunizations was also heavily influenced by the role and support of the father. Although community health center staff had provided sufficient information and some respondents were aware of the benefits of immunization, due to a lack of support from those around them, they did not complete their infants' immunizations. Therefore, parents who have completed their children's basic immunizations have a positive perception of basic immunization.

## 5. CONCLUSION

Based on the research results, it can be concluded that the highest level of knowledge about basic immunization was in the good category, with 52 respondents (57.1%). Perceptions about basic immunization were mostly in the positive category, with 76 respondents (83.5%). The highest level of compliance with basic immunization was in the compliant category, with 78 respondents (85.3%). There was a correlation between the level of knowledge about basic immunization and compliance with basic immunization for infants in the Wairoro Community Health Center, South Weda District, with a p-value of 0.000. Furthermore, perceptions about basic immunization and compliance with basic immunization for infants in the Wairoro Community Health Center, South Weda District, with a p-value of 0.000.

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