



# The Related Factors with Occurrences of Hypertension Disease in Work Area of Puskesmas Pertiwi Makassar

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**Abstract.** Hypertension or high blood pressure is a condition when blood vessels continue to experience increased pressure. The higher pressure, the stronger heart pumps blood (WHO 2015). The greater the prevalence of hypertension patients the more one is exposed to large risk of cardiovascular diseases. While the incident hypertension in the work area of Puskesmas Pertiwi Makassar from year to year is increasing. The number of new patients hypertension in the work area Puskesmas showed the increase in every year. In 2015 recorded there are 1291 cases of hypertension, while on 2016 scene hypertension increased to 1551 cases and in 2017 happen again increasing cases of hypertension be 1810 cases. The purpose of this study is To know the factors that deals with occurrences of a disease hypertension in the work area of Puskesmas Pertiwi Makassar. And this research method using quantitative method with descriptive approach. Large a sample of 43 control patients cases of hypertension. Thus the Results of this study based on the chi-square test of variable associated with occurrences of disease hypertension is education level ( $p = 0,000$ ) and that work ( $p = 0,000$ ). While variable which does not deals is a habit of smoking ( $p = 0,345$ ). Then it can be deduced that the related Factors other than a fuel that deals with occurrences of disease hypertension in the work area Puskesmas Pertiwi Makassar is education and occupation.

**Keywords:** Education · Occupation · Smoking Habit · Hypertension

## 1 Introduction

According to data from the World Health Organization (WHO) predicts that by 2025, around 29% or about 1 billion people in the world will suffer from hypertension. The greater the prevalence of hypertension sufferers, the greater the risk of developing cardiovascular disease (WHO 2015).

While data obtained from the Center for Disease Control and Prevention (CDC) in 2016 cases of hypertension in men were 34.1% and in women 32.7%. The higher the age group, the greater the prevalence of hypertension. This is because as you age, the ability of organ function will decrease (CDC 2016).

Based on the results of Research (Riskesdas) in 2013, the prevalence of hypertension in Indonesia aged 18 years and over was 25.8% or around 65,016,000 people from the total population of Indonesia in 2013 amounted to 252,000,000 people and there has been an increase every year. Meanwhile, according to the 2016 National Health Indicators Survey (Sirkesnas), the prevalence of hypertension increased to 32.4% or around 84,596,400 people from the total population in Indonesia in 2016 which was 261.1 million people.

Based on the Ministry of Health of South Sulawesi in 2015, the prevalence rate of PTM for hypertension was the highest compared to other PTM diseases, namely 28.8% (2,453,848 people), Diabetes mellitus 5.3% (451,576 people), Coronary heart disease prevalence 4.2% (357,852 people), heart failure 0.8% (68,162 people), stroke 2.9% (247,088 people) and cancer 0.22% (187,447 people), of the total population in South Sulawesi that year was 8,520,304 Soul.

According to the research results of Muh. Anwar Halid (2015), that there is a relationship between lifestyle and the prevalence of hypertension in the working area of the Kassi-Kassi Public Health Center, Bantaeng Regency with a sample of 30 respondents, shows that a lifestyle that is not good is less than 24 people (80%) are affected by hypertension and a bad lifestyle. Both 6 people (20%) were affected by hypertension. So it can be concluded that a person's lifestyle affects the incidence of hypertension.

Meanwhile, the incidence of hypertension in the working area of the Pertiwi Makassar Health Center has also increased from year to year. The number of new hypertension patients in the working area of the Puskesmas shows an increase every year. In 2015 there were 1291 cases of hypertension, while in 2016 the incidence of hypertension increased to 1551 cases and in 2017 there was another increase in hypertension cases to 1810 cases. The increase in hypertension cases that occur in the work area of the Pertiwi Makassar Health Center needs serious attention. With this phenomenon the authors are interested in conducting research on "factors related to the incidence of hypertension in the working area of Pertiwi Health Center Makassar".

The purpose of this study was to determine the factors associated with the incidence of hypertension in the working area of the Pertiwi Health Center Makassar which consisted of education, occupation, and smoking habits.

This research is expected to contribute and increase knowledge, especially in the health sector about the factors associated with the incidence of hypertension. And it can be an input for the Pertiwi Makassar Health Center to evaluate health promotion regarding hypertension in the community, especially the community in the Pertiwi Makassar Health Center work area.

## 2 Methods

The design in this study used a quantitative method with a descriptive approach. The population in this study were hypertensive patients in the Pertiwi Makassar Health Center working area in 2017 which amounted to 1810 cases. The sample in this study was set as many as 43 respondents from the total population by determining the sample size formula. And the samples used in this study were hypertension control patients at Pertiwi Health Center Makassar.

In this study, researchers used data collection techniques in the form of distributing questionnaires and interviews (interviews). The distribution of questionnaires is done by giving a set of questions and written statements to be answered to those who are willing to be respondents at the time of the study. This questionnaire contains the respondent's code, date of data collection, instructions for filling out, demographic data consisting of 5 questions including age, gender, education, occupation, smoking habits, and level of knowledge. Tentang hipertensi terdiri dari 15 pernyataan. Meanwhile, interviews were conducted by direct interviews with respondents to obtain additional information. In the interview process there were 8 questions posed to respondents when the results of the questionnaire could not be fulfilled in the data collection process.

Univariate analysis to determine the proportion and frequency distribution of each variable from the research results. In this study, the univariate analysis technique used statistical frequency tests to determine the number of proportions and frequency distributions of variables such as age group, gender, education, occupation, smoking habits and hypertension case control patients.

Bivariate analysis was used to analyze the relationship between the independent variable and the dependent variable. In this study, the bivariate analysis technique used the chi-square test to determine whether there was a relationship between the level of education, occupation and smoking habits with the incidence of hypertension in the work area of the Pertiwi Health Center Makassar.

### 3 Results and Discussion

#### A. Univariate Analysis

In this univariate analysis, a statistical frequency test was used to present factors related to the incidence of hypertension in the Pertiwi Health Center Makassar work area. The respondents of this study were hypertension sufferers in the work area of the Pertiwi Makassar Health Center 2017 who were still in control.

##### 1) Age Group

From Table 1. The above shows that from 43 respondents with hypertension according to the results of data collection, the highest prevalence based on the age group is 55–64 years, there are 15 people (34.9%), in the 45–54 year age group there are 13 people (30.2%), There are 9 people in the 65–74 year age group (20.9%), 4 people in the 35–44 age group (9.3%), 2 people in the 25–34 age group (4.7%) and the 18-year age group. 24 was not found in this study.

##### 1) Gender.

From Table 2. The above shows that 43 respondents with hypertension are divided into two sexes, female and male. According to the results of data collection, the highest frequency based on gender was found in men, namely 25 people (58.1%) while only 18 women (41.9%).

**Table 1.** Frequency Distribution by Age Group

Kelompok Umur	Responden Hipertensi	
	Jumlah	%
18–24	0	0
25–34	2	4,7
35–44	4	9,3
45–54	13	30,2
55–64	15	34,9
65–74	9	20,9
<b>Total</b>	<b>43</b>	<b>100</b>

Source: Data Primer, 2018

**Table 2.** Frequency Distribution by Gender

Jenis Kelamin	Responden Hipertensi	
	Jumlah	%
Laki-laki	25	58,1
Perempuan	18	41,9
<b>Total</b>	<b>43</b>	<b>100</b>

Source: Data Primer, 2018

**Table 3.** Frequency Distribution by Education

Pendidikan	Responden Hipertensi	
	Jumlah	%
SD	7	16,3
SMP	6	14
SMA	14	32,6
Perguruan tinggi	16	37,2
<b>Total</b>	<b>43</b>	<b>100</b>

Source: Data Primer, 20

### 1) Education

From Table 3 above, it shows that from 43 respondents with hypertension according to the results of data collection, the average last education of the respondents was college, there were 16 people (37.2%), high school were 14 people (32.6%), while junior high school there were 6 people ( 14%) and SD 7 people (16.3%).

**Table 4.** Frequency Distribution by Occupation

Pekerjaan	Responden Hipertensi	
	Jumlah	%
Ibu rumah tangga (IRT)	8	18,6
Supir	2	4,7
Buruh	4	9,3
Wiraswasta	3	7
Pegawai Negeri	13	30,2
Pegawai Swasta	2	4,7
Lainya	11	25,6
<b>Total</b>	<b>43</b>	<b>100</b>

Source: Data Primer, 2018

**Table 5.** Frequency Distribution Based on Smoking Habits

Kebiasaan Merokok	Responden Hipertensi	
	Jumlah	%
Merokok $\leq$ 10 batang	4	9,3
Merokok $\leq$ 15 batang	8	18,6
Merokok $\leq$ 20 batang	2	4,7
Tidak merokok	29	67,4
<b>Total</b>	<b>43</b>	<b>100</b>

Source: Data Primer, 2018

#### 1) Job.

Table 4 above shows that from 43 respondents with hypertension according to the results of data collection, those who have the highest prevalence are civil servants 13 people (30.2%), unemployed and unable to work (others) 11 people (25.6%), mothers households (IRT) 8 people (18.6%), laborers 4 people (9.3%), entrepreneurs 3 people (7%), drivers and private employees only 2 people (4.7%).

#### 1) Smoking Habits.

From Table 5 above shows that of 43 respondents with hypertension according to the results of data collection who smoked based on the operational criteria of the study who smoked 10 cigarettes per day there were 4 people (9.3%), 15 cigarettes there were also 8 people (18.6%), 20 stems there are 2 people (4.7%) so there are 14 people (32.6%) and all of them are gender laki-laki of 25 men who became respondents. While there are 29 people who don't smoke (67.4%) of which there are 18 women and 11 men.

**Table 6.** Frequency Distribution of Hypertension Case Control Patients

Pasien Kontrol	Jumlah Kasus	
	Jumlah	%
JKN	10	23,3
BPJS	33	76,7
<b>Total</b>	<b>43</b>	<b>100</b>

Source: Data Primer, 2018

**Table 7.** Frequency Distribution between Occupation and Hypertension Incidence

Pekerjaan	Kejadian Hipertensi						Nilai p
	JKN		BPJS		Jumlah		
	n	%	n	%	n	%	
IRT	0	0	8	18,6	8	18,6	<b>0,000</b>
Supir	0	0	2	4,7	2	4,7	
Buruh	0	0	4	9,3	4	9,3	
Wiraswasta	0	0	3	7	3	7	
Pegawai Negeri	10	23,3	3	7	13	30,2	
Pegawai Swasta	0	0	2	4,7	2	4,7	
Lainya	0	0	11	25,6	11	25,6	
<b>Total</b>	<b>10</b>	<b>23,3</b>	<b>33</b>	<b>76,7</b>	<b>43</b>	<b>100</b>	

Source: Data Primer, 2018

**Table 8.** Frequency Distribution between Education and Hypertension Incidence

Pendidikan	Kejadian Hipertensi						Nilai p
	JKN		BPJS		Jumlah		
	n	%	n	%	n	%	
SD	0	0	7	16,3	7	16,3	<b>0,000</b>
SMP	0	0	6	14	6	14	
SMA	0	0	14	32,6	14	32,6	
Perguruan Tinggi	10	23,3	6	14	16	37,2	
<b>Total</b>	<b>10</b>	<b>23,3</b>	<b>33</b>	<b>76,7</b>	<b>43</b>	<b>100</b>	

Source: Data Primer, 2018

## 1) The incidence of hypertension.

Table 7 shows that the control patients of hypertension cases in the work area of the Pertiwi Health Center Makassar during the study period there were 43 control patients consisting of 10 JKN patients and 33 BPJS patients.

**Table 9.** Frequency Distribution between Smoking Habits and Hypertension Incidence

Kebiasaan Merokok	Kejadian Hipertensi						Nilai p
	JKN		BPJS		Jumlah		
	n	%	n	%	n	%	
≤ 10 batang	0	0	4	9,3	4	9,3	<b>0,345</b>
≤ 15 batang	1	2,3	7	16,3	8	18,6	
≤ 20 batang	0	0	2	4,7	2	4,7	
Tidak merokok	9	20,9	20	46,5	29	76,4	
<b>Total</b>	<b>10</b>	<b>23,3</b>	<b>33</b>	<b>76,7</b>	<b>43</b>	<b>100</b>	

Source: Primary Data, 2018

1) The Relationship between Education and the Incidence of Hypertension.

From Table 8 above, it can be seen that the relationship between education and the incidence of hypertension in the work area of the Pertiwi Health Center Makassar obtained a p value of  $0.000 < (0.05)$  which indicates that  $H_0$  is rejected ( $H_a$  is accepted), meaning that there is a relationship between education and the incidence of hypertension in the working area of the Pertiwi Health Center Makassar.

1) The Relationship between Occupation and the Incidence of Hypertension.

From Table 8, it can be seen that the relationship between work and the incidence of hypertension in the work area of the Pertiwi Health Center Makassar gets a p value of  $0.000 < (0.05)$  which indicates that  $H_0$  is rejected ( $H_a$  is accepted), meaning that there is a relationship between work and The incidence of hypertension in the work area of the Pertiwi Health Center Makassar.

1) The relationship between smoking habits and the incidence of hypertension.

From Table 9 , it can be seen that the relationship between smoking habits and the incidence of hypertension in the work area of the Pertiwi Makassar Health Center obtained a p value of  $0.345 > (0.05)$  which indicates that  $H_0$  is accepted ( $H_a$  is rejected), meaning that there is no relationship between smoking habits with the incidence of hypertension in the work area of the Pertiwi Health Center Makassar.

The relationship between education and the incidence of hypertension.

The results of this study were obtained through the chi-square test with p value =  $0.00 < 0.05$ , which means  $H_a$  is accepted, indicating that there is a significant relationship between education and the incidence of hypertension in the working area of Pertiwi Health Center Makassar, both JKN and BPJS control patients. This shows that of the 43 hypertension control patients who were used as respondents, the most recent education was tertiary education, there were 16 people (37.2%), high school students were 14 (32.6%), while junior high school had 6 people (14%) and elementary school 7 people (16.3%). This is in line with Sefriami’s research (2015), that in the study the majority

of them had undergraduate education, namely 24 people (46.2%). Along with the high education of a person, the demands of the role that exist in a person are also high so that the stress level increases which results in an increase in blood pressure. If this goes on for a long time and continuously then the increase in blood pressure will persist. So from the results of this study, hypertension was the most common in respondents who had the highest level of education. And the research of Fika Kharisyanti (2016), is also in line with this study that based on the square-test showed that there was a significant relationship between education level and the incidence of hypertension in Bojonegoro with  $p = 0.005$  with  $\alpha = 0.05$  meaning  $p < \alpha$  ( $H_a$  accepted). However, it is different from the results of Lisandy Yunita Nababan's (2018) research that there is no relationship between education and the incidence of hypertension in Sibolga City in 2017 as evidenced by the  $p$  value = 0.391 with a value of  $\alpha = 0.05$  meaning  $p > \alpha$  ( $H_0$  is accepted). This is because the place of research and the number of respondents or the characteristics of the respondents are different so that the results obtained are also different.

So it can be concluded that although the level of higher education cannot reduce the incidence of hypertension because education is different from knowledge, even if education is low, if you have a high level of knowledge about hypertension, there is prevention for not getting hypertension and can improve the health status of the community.

The relationship between work and the incidence of hypertension.

The results of this study were obtained through the chi-square test with  $p$  value = 0.000 < 0.05, which means  $H_a$  is accepted, indicating that there is a significant relationship between work and the incidence of hypertension in the work area of Pertiwi Health Center Makassar, both JKN and BPJS control patients. This shows that of the 43 hypertension control patients who are respondents who have the most jobs, 13 are civil servants (30.2%), unemployed and unable to work (others) 11 people (25.6%), housewives (IRT) 8 people (18.6%), workers 4.

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Contributing people (9.3%), entrepreneurs 3 people (7%), drivers and private employees only amounted to 2 people (4.7%).

Work is a field that a person engages in to earn an income. Length of work can affect performance and job satisfaction, so that the person will enjoy his work without regard to the interests of his health. This is evidenced from this study that more people who work are affected by hypertension than those who do not work. Like a civil servant in this study, he was more at risk of developing hypertension than other workers. This may be due to lack of physical activity. The lower the level of physical activity, the higher the risk of stress that can raise blood pressure. This is in line with the research of Besral and Winne Widiyanti (2015), that the level of stress that occurs among civil servants of the Ministry of Health of the Republic of Indonesia is quite high (79%) compared to other studies in Indonesia. The high prevalence of stress is related to a high workload or excessive working hours so that the incidence of stress increases among employees and is at risk for non-communicable diseases such as hypertension. And Rina Andriani Harahap's research (2017), is also in line with this study that work is related to the incidence of hypertension in the Bromo Medan Public Health Center with a  $p$  value = 0.01 at a real level = 0.05 Likewise with the research of M. Hasan Azhari (2017), also



in line with the results of this study that there is a relationship between work and the incidence of hypertension in Palembang through bivariate analysis obtained  $p = 0.006$  with a value of  $= 0.05$   $p < (H_0 \text{ rejected})$ . That means that respondents who work are more at risk of developing hypertension than respondents who do not work.

So it can be concluded that work can cause hypertension, because people who work have their respective activities in their work so that their health interests are neglected. This is what causes more people who work to have hypertension than those who do not work.

The relationship between smoking habits and the incidence of hypertension.

The results of this study were obtained through the chi-square test with  $p$  value  $= 0.345 > 0.05$ , which means  $H_0$  is accepted, meaning that there is no relationship between smoking habits and the incidence of hypertension in the Pertiwi Makassar Health Center work area, both JKN and BPJS control patients. The results showed that from 43 respondents there were 14 people who smoked, all of them were male and 29 of them did not smoke, 11 were men and 18 were women. It is proven that there is no relationship between the respondent's smoking habit and the incidence of hypertension, although the average male respondent is a smoker.

According to dr. Dyah Novita Angraini, hypertension is a disease that can be prevented by changing lifestyle. One of the lifestyles that affect the incidence of hypertension is smoking. Smoking is an activity that can damage organs and become one of the main factors causing dangerous diseases such as lung cancer and TB, heart disease, stroke, hypertension, diabetes and others. Smoking causes an immediate spike in blood pressure, and can increase systolic blood pressure by as much as four mmHg. Although smoking habits can cause hypertension, in the results of this study it is not the main factor but is caused by age, gender, education level, and occupation. This study is in line with the research of Yashita Octavian Gita Setyanda (2015), that there is no relationship between the number of cigarettes smoked per day and the incidence of hypertension in Padang ( $p = 0.412$ ). Likewise, the degree of smokers with the incidence of hypertension also showed that there was no significant relationship ( $p = 0.226$ ). And the research of Sandy K. Mamuya (2017), is also in line with this study that based on the results of statistical tests there is no relationship between smoking habits and the incidence of hypertension in Minahasa Regency with a probability value of  $0.238 > 0.05$ . Likewise with the research of Hazellarissa Valda Asari (2017), that from the results of the analysis of the study using the chi-square test, the  $p$  value  $= 0.287$  means that there is no relationship between smoking habits in men and the incidence of hypertension in the work area of the PB Selayang II Health Center.

So it can be concluded that smoking is not the main factor causing hypertension in the Pertiwi Health Center Makassar because there is a strong interaction between education and work on the incidence of hypertension so that it can affect the results of the analysis.

#### **4 Conclusions and Suggestions**

Based on the results of research and discussion of factors related to the incidence of hypertension in the work area of the Pertiwi Health Center Makassar, it can be concluded that:

1. There is a significant relationship between education and the incidence of hypertension in the work area of the Pertiwi Health Center Makassar, as evidenced by the value of  $p = 0.000 < 0.05$  through the chi-square test.
2. There is a significant relationship between work and the incidence of hypertension in the work area of the Pertiwi Health Center Makassar, as evidenced by the value of  $p = 0.000 < 0.05$  through the chi-square test.
3. There is no significant relationship between smoking habit and the incidence of hypertension in the work area of the Pertiwi Health Center Makassar, as evidenced by the  $p$  value  $= 0.345 > 0.05$ . Through the chi-square test.

Based on the results of research and discussion of factors related to the incidence of hypertension in the working area of the Pertiwi Health Center Makassar, it can be suggested that:

#### 1. For Hypertension Patients

It is hoped that hypertensive patients are more concerned with health than work that drains the mind a lot which can cause stress so that blood pressure increases and further complications occur.

#### 2. For Pertiwi Makassar Health Center Officers

It is hoped that the Pertiwi Makassar Health Center officers will further improve the prevention of hypertension such as providing health promotion or health education about hypertension, especially to people who come for treatment at the Puskesmas. And counseling should be carried out routinely and continuously in order to reduce the incidence of hypertension in the Makassar Pertiwi Public Health Center area.

#### 3. For Researchers

For further researchers, the results obtained can be used as basic data that supports further research and adds knowledge about hypertension. And it is hoped that this research can be continued for further research with a larger sample size by using another research design because in this study there was no relationship between smoking habits and the incidence of hypertension, even though based on some theories or research results, smoking is one of the factors causing the increase in blood pressure.

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