



## Relationship between Smoking and Hereditary with Hypertension

Suprpto✉, Trimaya Cahya Mulat, Nur Syamsi Norma Lalla

Department of Nursing Politeknik Sandi Karsa Makassar South Sulawesi, Indonesia

### Article Info

#### Article History:

Submitted May 2020

Accepted February 2021

Published July 2021

#### Keywords:

Smoking, Heredity, Hypertension

#### DOI

<https://doi.org/10.15294/kemas.v17i1.24548>

### Abstract

Smoking describes overt behavior where smokers inhale tobacco. High blood pressure describes the condition of systolic blood pressure  $\geq 140$  mmHg and diastolic  $\geq 90$  mmHg at 2 times checking blood pressure measurements within 5 minutes duration in calm conditions. This type of research is an observational analytic method with a cross-sectional approach that held in 2019. Sampling using is a purposive sampling method. Data were analyzed by Chi-Square Test. Results, using Chi-Square test analysis prove p-value = 0.016 which is less than the significance value (0.05), proves that there is an important relationship between smoking habits with high blood events and there is a relationship between the generation aspect and high blood events and by using the Chi-Square test proves p-value = 0.023 were less than the significance value (0.05). Conclusion, there is a link between smoking and the history of generation to the hypertension event in the area of the Makassar City Health Center of Barombong. It can be applied by respondents and families in helping to lower blood pressure in an efficient and efficient way by avoiding aspects that can be replaced.

### Introduction

High blood pressure describes the condition when systolic blood pressure  $\geq 140$  mmHg and diastolic pressure  $\geq 90$  mmHg at 2 times checking blood pressure measurement within 5 minutes duration with a relaxed condition. In general, people with high blood pressure do not feel complaints and the typical indications are many people who do not know if you have high blood pressure (Ningsih, 2017). Armalina et al (2020), argues that aging is one factor that decreases protection in the heart and increases the risk of heart failure damage. Consider examining other organs that can affect the cause of heart abnormalities in the elderly and are expected to increase awareness of the importance of maintaining blood pressure. Based on data prove that the habit of the disease does not spread to face an increase when compared with Basic Health Research data in 2013. Hypertension, diabetes mellitus, cancer, stroke, severe kidney disease is an illustration of a non-widespread disease that faces an increase

every year. From the information contained in hypertension sufferers inhabit the second queue of the disease that is often encountered. The number of hypertension sufferers from 2018 to 2019 faced an increase, with the number of hypertension sufferers in 2018 totaling 1.065 patients and in 2019 it became 1.174 patients. From this information it can be concluded that hypertension sufferers face an increase every year (Kemenkes, 2018).

Hypertension in pregnancy may be an independent risk factor for subsequent diagnoses of hypertension and stroke (Garovic et al., 2010). Kim et al (2003), argues that systolic and diastolic blood pressures were significantly higher in the cold-exposed group, and body core temperature was significantly lower in the cold-exposed group. Cold exposure was a risk factor for hypertension, and risk factors affecting hypertension in cold exposed workers were age, cold exposure severity, and milk intake. Therefore, cold exposed workers should minimize cold exposure time as much

✉ Correspondence Address:  
Department of Nursing Politeknik Sandi Karsa Makassar South Sulawesi, Indonesia  
Email : atoenurse@gmail.com

as possible, and ingest foods containing calcium such as milk. In particular, old workers working in cold areas should check their blood pressure and electrocardiogram periodically. Arterial Hypertension is part of the group of cardiovascular diseases that represent the highest proportion of death causes by diseases thus highlighting the need to evaluate the risk factors that contribute to this clinical situation and its high prevalence. It was observed that the development of several studies are important to contribute to the public health policies and actions, by providing indications to combat the increasing prevalence of Arterial Hypertension and risk factors, in order to be better control this disease (Pinto and Martins, 2017).

Increasing awareness, willingness and ability to live a healthy life for everyone are optimal degree of public health which can be achieved through the creation of the nation's people and the Indonesian state, the population lives in a healthy environment and behavior and has a fair and equitable quality of health. Family care should use a systematic approach to identifying health problems appropriately and increasing information provided by health workers to improve family and community understanding of an illness and health problems related to people's lives, through prevention, and health promotion (Asmi and Husaeni, 2019). Patients with essential hypertension had significantly higher homocysteine concentration compared to the control group. No correlation was observed between homocysteine levels and age, diastolic, systolic blood pressure in subjects with essential hypertension. In healthy volunteers, only a correlation between age and homocysteine concentration was found (Korzeniowska et al., 2015).

## Methods

The research method was an analytic observational cross-sectional technique with primary data. This research was conducted in the working area of Makassar City Barombong Health Center 2019. Inclusion criteria: patients who come for treatment at the public health centers, Patients aged 30 years to 70 years come for treatment at the public health centers, Patients who come to the public health centers

for at least 2 times blood pressure checks with different distances in a state of blood pressure more than 140/90 mmHg, can read and communicate properly and correctly, hypertensive patients who are willing to sign an informed consent and fill out a questionnaire. Exclusion criteria: hypertensive patients come to the health center with unconsciousness and Patients with secondary hypertension. Sample data is a portion of the population, namely patients with hypertension in the working area of the public health centers. Then the sample size is determined using the purposive sampling method with the Slovin formula.

## Results and Discussion

Table 1 shows characteristics based on age, the results showed that the sample numbered 88 respondents, had an average age of 47.57 years old with a young age of 30 years old and the oldest 70 years old. Based on smoking habits, the results of the study showed that the majority of respondents were not smoking as many as 46 people (52.3%). Based on Gender, the results showed that most respondents were female as many as 47 people (53.4%). Based on heredity, the results of the study showed that most of the respondents had hypertension as many as 59 people (67.0%). Based on the incidence of hypertension, the majority of respondents experienced hypertension as many as 65 people (73.9%).

Table 2 results analysis using a bivariate statistical analysis experiment is known from 42 respondents who have the habit of smoking, some of them face hypertension by 36 people (85.7%). Similarly, of the 46 respondents who did not have the habit of smoking, a large number faced hypertension by 29 people (63.0%). Using the Chi-Square experiment proves  $p\text{-value} = 0.016$  where the significance value is less than 5% (0.05), it proves that there is an important bond between the routine of smoking and the incidence of hypertension. From the above analysis,  $OR = 3.51$  is obtained which proves that the respondents' smoking risk is 3.3 times for dealing with hypertension. Analysis using statistical analysis experiments using Chi Square experiments prove  $p\text{-value} = 0.023$  in which the significance value is less than 5% 0.05, it proves that there is an important

## Results and Discussion

**Table 1.** Demographics of Research Subjects

Demographics Variables	Percentage	Frequency
<b>Smoking habit</b>		
Do not smoke	46	52.3
Smoke	42	47.7
<b>Total</b>	<b>88</b>	<b>100</b>
<b>Gender</b>		
	<b>Amount</b>	<b>Percentage</b>
Male	47	53.4
Female	41	46.6
<b>Amount</b>	<b>88</b>	<b>100</b>
<b>Heredity Factor</b>		
	<b>Percentage</b>	<b>Frequency</b>
There is no	33.0	29
There is	67.0	59
Total	100	88
<b>Heredity Factor</b>		
	<b>Frequency</b>	<b>Percentage</b>
No hypertension	23	26.1
Hypertension	65	73.9
Total	88	100

Source: primary data, (2019)

**Table 2.** Analysis Relationship of Smoking Habit and Heredity with the Occurrence of Hypertension

Smoking Habit	Occurrence of Hypertension				Total	%	p-value	OR (CI9)
	No Hypertension		Hypertension					
	n	%	n	%				
Yes	17	37.0	29	63.0	46	100	0.016	3.51 (1.22-10.0)
No	6	14.3	36	85.7	42	100		
<b>Total</b>	<b>23</b>	<b>26.1</b>	<b>65</b>	<b>73.9</b>	<b>88</b>	<b>100</b>		
<b>Heredity Factors</b>								
Yes	12	41.4	17	58.6	29	100	0.023	3.08 (1.14-8.27)
No	11	18.6	48	81.4	59	100		
<b>Total</b>	<b>23</b>	<b>26.1</b>	<b>65</b>	<b>73.9</b>	<b>88</b>	<b>100</b>		

Source: primary data, (2019)

bond between aspects of generation with hypertension. From the analysis above we get the OR = 3.08 which proves that aspects of the generation of respondents are at risk 3.08 times for dealing with hypertension.

Different from the results of the study prove the number  $p = 0,571$  ( $p < 0.05$ ). There is no connection between smoking routine with the hypertension event in the Health Center Activities of Molompar Bercak Area in Bercak District in 2018 (Uguy, et al., 2019). (Sofiana and Rahmawati, 2019) argues that shows a statistically and biologically significant

correlation between hypertension and diabetes mellitus with the incidence of stroke. Efforts to improve health promotion programs to increase public awareness about the incidence of stroke are suggested to improve the quality of life of stroke patients. Stroke is one of the leading causes of death and neurological disability in Indonesia. The risk of stroke increases with the number of risk factors. Stroke is the leading cause of death for inpatients at General Hospital of Panembahan Senopati in Bantul.

The results of the study are in line with the research that there is a link between the

smoking routine and hypertension which is influenced by the duration of smoking and the type of cigarette, but there is no correlation between the number of cigarettes and the incidence of hypertension ( $p = 0,412$ ). Because smoking routines increase the risk of hypertension, health counseling regarding the risk of an increase in blood pressure point for people with hypertension who have smoking disorders must be tried. This is needed so that there is a reduction in the points of hypertension (Setyanda,etal, 2015).

The results of the study prove that there is a bond between the routine of smoking and consuming alcohol with the occurrence of hypertension with a strong relationship with a positive direction. Hypertension describes a non-widespread disease that has become a serious problem at this time. The incidence of hypertension will continue to increase, 29% of people throughout the earth are predicted to face hypertension in 2025. Smoking and alcohol consumption are aspects of the risk of hypertension that can be replaced (Memah, Kandou and Nelwan, 2019). The results of study (Anggara and Prayitno, 2013) if respondents who suffer from hypertension k are (30, 7%), the opposite is true for respondents whose blood pressure is reasonable (69, 3%). Pubic type in this research is not related to statistical methods with emphasis. Conversely, age, learning, profession, BMI, smoking, alcohol consumption, exercise routine, sodium consumption, and potassium consumption are related to statistical methods with blood pressure points. To reduce the problem of hypertension, there needs to be a method to contain it, such as: giving counseling to residents about hypertension and carrying out blood pressure checks on a regular basis. (Buntaa,etal, 2018) argues that the age variable with the incidence of hypertension in fishermen has a relationship ( $p = 0.005$ ), the family history variable with hypertension ( $p = 0,000$ ) and there is no relationship between smoking habits and the incidence of hypertension in fishermen with a p-value ( $p = 0.539$ ). The results of this study that the age and family history variables are associated with the incidence of hypertension while for the smoking habit variable is not related to the incidence of hypertension.

(Novian, 2013) argues that there was

a significant correlation between the levels of education, the level of knowledge, the role of the family, the role of health workers with dietary obedience of hypertension patients and there was no correlation among age, gender, and occupation with dietary obedience of hypertension patients. Based on the results of his research that the salt intake habits of the elderly are mostly included in the frequent category, the consumption habits of fatty foods for the elderly hypertensive are mostly included in the frequent category, the smoking habits of the elderly are mostly non-smokers, the sports habits of the elderly hypertensive are mostly included in the unfavorable category. The four factors studied were related to the incidence of hypertension in the elderly at the mobile health center in Village Klumpit UPT of public health center Gribig (Arif, Rusnoto and Hartinah, 2013).

The results of the study prove that there is a bond between high blood pressure with aspects of generation with, there is a bond with eating patterns with, there is a bond with the smoking aspect with, and there is a bond with the alcohol factor, there is no bond between sports activities and there is no bond with body weight. Related to the deterrence action, it is hoped that health services will distribute health counseling to avoid high blood pressure (Situmorang, 2015). Supported by research results prove that there is an important bond between the history of generation, obesity and physical activity with hypertension, conversely smoking and sodium consumption are not important ties. The most powerful aspects of risk are the history of generations, obesity and physical activities (Fitriana,etal, 2012).

In accordance with the results of the study there is a connection between middle-aged, genital type, generation, profession, and sports with hypertension in Public Health Center of Makrayu, Palembang. The health apparatus in the Public Health Center of Makrayu can increase health advertence or special health counseling for people with hypertension who arrive for treatment (Azhari, 2017). Proving there is no bond between smoking routines, sports activities as well as there is a bond between family history and hypertension events. Question answered, but from the residents

do not all know for early discovery about hypertension. Other efforts that can be tried are deterrence of hypertension in a comprehensive manner, through primordial deterrence, health advertence, special protection, increased citizen impulse for early assessment (screening, check-up checking), healing right (quickly obtaining a complete cure and early causal complaints), rehabilitation (efforts to correct due to further hypertension that cannot be overcome) (Suprihatin, 2016).

Increasing prevalence of hypertension (HTN) in children and adolescents has become a significant public health issue driving a considerable amount of research. Aspects discussed in this document include advances in the definition of HTN in 16 year or older, clinical significance of isolated systolic HTN in youth, the importance of out of office and central blood pressure measurement, new risk factors for HTN, methods to assess vascular phenotypes, clustering of cardiovascular risk factors and treatment strategies among others (Lurbe et al., 2016). The aspects of heredity, obesity and sodium consumption are aspects of the risk of hypertension in early young children. Hypertension is one of the highest mortality of cardiovascular disease associated with hypertension were obesity and tense (Korneliani and Meida, 2012).

Based on the results of the study (Abdullahi and Amzat, 2011) showed that some staff members showed a relatively high level of knowledge about complications related to hypertension but knowledge of risk factors and attitudes towards the disease was still low. However, the level of education significantly influences awareness of complications (at 0.05) and knowledge of risk factors (at 0.05) that hypertension and its complications are a major health problem not only in Nigeria but also throughout the world. Thus, this study examined awareness about risk factors and complications associated with hypertension at the University of Ibadan, Nigeria. The questionnaire instrument was used to collect data from 556 randomly selected subjects that were selected in all faculties, departments and sectional units of the University. Workplace screening and educational programs are a fundamental way to increase knowledge about

hypertension in the workplace.

Mule et al., (2015) argues that in essential hypertension, short-term BP variability is independently associated with early renal abnormalities. Based on the results of the study prove that 49, 4% of respondents have a generation of hypertension disease, 51, 3% of adult respondents  $\geq$  43 years and 48, 6% of respondents are overweight. The bond between the aspects of generation with the event of hypertension obtained a probability of 0, 000 (p-value 0, 05) (Dedullah,etal, 2015). Elevated serum ferritin level was independently associated with the incidental risk for hypertension in Korean men. This finding suggests the value of elevated ferritin level as an early predictor of hypertension (Ryoo et al., 2015).

### Conclusion

Sourced from research results to be concluded; there is a close relationship between smoking routine with hypertension. From the analysis proves that smoking routine is at risk 3. 51 times can face hypertension events and there is an important bond between aspects of generation with hypertension events, the results prove that generation aspects are at risk 3. 08 times can face hypertension events. Escalation of hypertension travel can take place influenced by lifestyle and consumption of food. Aspects that can affect hypertension are broken down into 2 groups of aspects that cannot be controlled such as age, gender, genetic, ethnicity, as well as aspects that can be controlled such as diet, smoking, smoking, excessive salt consumption, lack of activity, lifestyle, patterns, patterns sleep, and stressful thoughts full of emotions

### Acknowledgment

Research and Community Service Institute of Nursing of Politeknik Sandi Karsa.

### References

- Abdullahi, A.A., & Amzat, J., 2011. Knowledge of Hypertension Among the Staff of University of Ibadan, Nigeria. *Journal of Public Health and Epidemiology*, 3(5), pp.204–209.
- Anggara, F.H.D., & Prayitno, N., 2013. Factors Related to Blood Pressure at the Telaga Murni Health Center, West Cikarang in 2012. *Scientific Journal of Health*, 5(1), pp.20–25.



- Arif, D., Rusnoto, R., & Hartinah, D., 2013. Factors Associated with the Incidence of Hypertension in the Elderly in Pusling Desa Klumpit Upt Puskesmas Gribig, Kudus Regency. *Jurnal Ilmu Keperawatan dan Kebidanan*, 4(2).
- Armalina, D., Witjahjo, B., Susilaningsih, N., Purnawati, R.D., Ismail, A., & Saktini, F., 2020. Screening for Hypertension and Electrocardiography (ECG) for Cardiovascular Diseases Risk. *KEMAS: Jurnal Kesehatan Masyarakat*, 15(3).
- Asmi, A.S., & Husaeni, H., 2019. Nursing Home Care in Families with Problems Hypertension Health. *Jurnal Ilmiah Kesehatan Sandi Husada*, 10(2), pp.32–38.
- Azhari, M.H., 2017. Factors Related to the Incidence of Hypertension in Makrayu Health Center, Ilir Barat II District, Palembang. *Aisha Journal: Journal of Health Sciences*, 2(1), pp.23–30.
- Buntaa, J.N., Ratag, B.T., & Nelwan, J.E., 2018. Faktor-faktor Risiko Kejadian Hipertensi Nelayan di Desa Mala dan Mala Timur Kecamatan Melonguane Kabupaten Kepulauan Talaud. *KESMAS*, 7(4).
- Dedullah, R.F., Malonda, N.S., & Joseph, W.B.S., 2015. The Relationship between Risk Factors for Hypertension and the Incidence of Hypertension in the Community in the Small Motoboi Kelurahan Kotamobagu Selatan Subdistrict Kotamobagu City. *Journal of Public Health*, 1(3), pp.155–163.
- Fitriana, R., Lipoeto, N.I., & Triana, V., 2012. Risk Factors for the Incidence of Hypertension in Adolescents in the Working Area of Sidomulyo Inpatients at Pekanbaru City. *Andalas Community Health Journal*, 7(1), pp.10–15.
- Garovic, V.D., Bailey, K.R., Boerwinkle, E., Hunt, S.C., Weder, A.B., Curb, D., Mosley Jr, T.H., Wiste, H.J., Turner, S.T., 2010. Hypertension in Pregnancy as a Risk Factor for Cardiovascular Disease Later in Life. *Journal of Hypertension*, 28(4), pp.826.
- Kemenkes, R.I., 2018. Main Results of RISKESDAS 2018.
- Kim, J., Jung, K., Hong, Y., Kim, J., Jang, T., Kim, J., 2003. The Relationship Between Cold Exposure and Hypertension. *Journal of Occupational Health*, 45(5), pp.300–306.
- Korneliani, K. and Meida, D. (2012) 'Hubungan Obesitas dan Stress dengan kejadian Hipertensi Guru SD Wanita', *KEMAS: Jurnal Kesehatan Masyarakat*. State University of Semarang, 7(2), p. 25316.
- Korzeniowska, K., Ciešlewicz, A., Chmara, E., & Jabłeczka, A., 2015. Homocysteine–relation to Hypertension, Age and Smoking in Patients with Newly Diagnosed Essential Hypertension. *Journal of Medical Science*, 84(2), pp.90–96.
- Lurbe, E., Agabiti-Rosei, E., Cruickshank, J.K., Dominiczak, A., Erdine, S., Hirth, A., Invitti, C., Litwin, M., Mancia, G., Pall, D., Rascher, W., Redon, J., Schaefer, F., Seeman, T., Sinha, M., Stabouli, S., Webb, N.J., Wühl, E., Zanchetti, A., 2016. 2016 European Society of Hypertension Guidelines for the Management of High Blood Pressure in Children and Adolescents. *Journal of Hypertension*, 34(10), pp.1887–1920.
- Memah, M., Kandou, G.D., & Nelwan, J.E., 2019. The Relationship Between Smoking Habits and Alcohol Consumption with the Incidence of Hypertension in the Kombi Health Center, Kombi District, Minahasa Regency. *Kesmas*, 8(1).
- Mule, G., Calcaterra, I., Costanzo, M., Geraci, G., Guarino, L., Foraci, A.C., Vario, M.G., Cerasola, G., Cottone, S., 2015. Relationship between Short-term Blood Pressure Variability and Subclinical Renal Damage in Essential Hypertensive Patients. *The Journal of Clinical Hypertension*, 17(6), pp.473–480.
- Ningsih, I.Y., 2017. Relationship between Sleep Quality with Blood Pressure on Primary Hypertension Patients in Sleman Public Health Center. *STIKES Jenderal Achmad Yani Yogyakarta*.
- Novian, A., 2013. Kepatuhan Diit Pasien Hipertensi. *KEMAS: Jurnal Kesehatan Masyarakat*, 9(1), pp.100–105.
- Pinto, I.C., & Martins, D., 2017. Prevalence and Risk Factors of Arterial Hypertension: A Literature Review. *Journal of Cardiovascular Medicine and Therapeutics*, 1(2), pp.1–7.
- Ryoo, J.-H., Kim, S.Y., Oh, C.M., Park, S.K., Kim, E., Park, S.J., Yu, J.I., Kim, M.G., Choi, Y.S., Ko, T.R.S., 2015. The Incidental Relationship Between Serum Ferritin Levels and Hypertension. *International Journal of Cardiology*, 183, pp.258–262.
- Setyanda, Y.O.G., Sulastri, D., & Lestari, Y., 2015. The Relationship of Smoking to the Incidence of Hypertension in Men Aged 35-65 Years in the City of Padang. *Jurnal Kesehatan Andalas*, 4(2).
- Situmorang, P.R., 2015. Factors Related to the Incidence of Hypertension in Inpatients at Sari Mutiara General Hospital, Medan in 2014. *Jurnal Ilmiah Keperawatan Imelda*,

- 1(1), pp.71–74.
- Sofiana, L., & Rahmawati, D.D., 2019. Hypertension and Diabetes Mellitus Increase the Risk of Stroke. *KEMAS: Jurnal Kesehatan Masyarakat*, 15(2).
- Suprihatin, A., 2016. The Relationship Between Smoking Habits, Physical Activity, Family History and the Occurrence of Hypertension in the Work Area of Nguter Health Center. Universitas Muhammadiyah Surakarta.
- Uguy, J.M., Nelwan, J.E., & Sekeon, S.A.S., 2019. Smoking Habits and Occurrence of Hypertension in the Work Area of Molompar Belang Health Center, Belang District, Southeast Minahasa Regency in 2018. *KESMAS*, 8(1).