Community Medicine & Education Journal
Journal Homepage:
https://hmpublisher.com/index.php/CMEJ

Cardiometabolic and Blood Glucose Factors in Merdeka, Gandus, Sei Selincah and Basuki Rahmat Palembang Health Centers

Dhanty Mukhlisa[1*], Jason Liando[1], Helen[1], Wahyu Arfina Juwita[1]

[1] Medical Education Study Program, Faculty of Medicine, Universitas Sriwijaya, Palembang, Indonesia

ARTICLE INFO

Keywords:
Hypertension
Diabetes mellitus
Hypercholeterolemia
Body mass index
Metabolic syndrome

Corresponding author:
Dhanty Mukhlisa

E-mail address:
dhantymukhlisa@gmail.com

All authors have reviewed and approved the final version of the manuscript.

https://doi.org/10.37275/cmej.v2i2.117

ABSTRACT

Indonesia is the fourth most populous country in the world. One third of all deaths in Indonesia are caused by cardiovascular and cardiometabolic diseases. We estimate this is related to gender, specific age and vascular risk factors and other modifiable risk factors, such as smoking, hypertension, diabetes, increased total cholesterol and overweight. This research is a cross sectional study. The study was conducted in four Palembang City Health Centers namely Sei Selincah Health Center, Merdeka Health Center, Basuki Rahmat Health Center and Gandus Health Center. The study data was taken consecutively for each adult patient who came for treatment at the puskesmas, met the inclusion criteria and agreed to participate in the study. The data that has been collected is then analyzed using SPSS 18.0 for Windows. In this study obtained cases of hypertension, diabetes mellitus, hypercholesterolemia in the four health centers period 30 October - 25 November 2017 as many as 200 respondents. Obtained cases of hypertension as many as 152 respondents (76%), cases of diabetes melitus as many as 73 respondents (36.5%) and hypercholesterolemia as many as 39 respondents (19.5%). In this study no association was found between Diabetes mellitus and hypertension and hypercholesterolemia. risk factors for sex, age, BMI and smokers are risk factors that influence hypertension, while risk factors for diabetes mellitus are, gender, age, and BMI. As for hypercholesterolemia, the only risk factor that influences education level.

1. Introduction

Indonesia is the fourth most populous country with a population of 250 million and has experienced significant economic development in recent decades.[1]

With improved health financing, increased social mobilization, community empowerment, and priority of primary health facilities, Indonesia has shown tangible achievements in terms of health. For example, life expectancy continues to increase from 62 to 69 and 65 to 73 years for men and women and infant and maternal mortality rates have decreased significantly, in line with development goals in Indonesia.[1]

As a consequence of the accelerated development that took place, Indonesia experienced a rapid epidemiological transition. Roughly, one-third of all deaths in Indonesia are caused by cardiovascular disease (CVD), with stroke and coronary heart disease being the cause.[2-5]

We estimate this to be related to gender, specific age and vascular risk factors and other modifiable risk factors, such as smoking, hypertension, diabetes, increased total cholesterol, and being overweight. Similar to the situation in most developing countries in the Asia Pacific region, the

prevalence of cardiovascular risk factors, including overweight, diabetes, and high blood pressure, has increased in Indonesia's population.[6-7]

The importance of getting data at primary health facilities regarding characteristics and risk factors in the population will illustrate the real situation in the community. Prevention is a major milestone to prevent risk factors for cardiovascular disease, especially modifiable risk factors. Thus, our study aims to obtain data on cardiometabolic and blood glucose risk factors in adult patients at the Merdeka, Basuki Rahmat, barren and Sei Selincah Puskesmas in Palembang.

2. Methods

The study was a cross sectional descriptive study. The study was conducted at four puskesmas, Sei Selincah Puskesmas, Gandus Puskesmas, Merdeka Puskesmas and Basuki Rahmat Puskesmas Palembang City. The study was conducted from 1 November to 25 November 2017.The population in this study were adult patients who came for treatment at the Sei Selincah Health Center, Gandus Health Center, and Merdeka Health Center and Palembang Basuki Rahmat Health Center from November 1 to November 25, 2017. The sample in this study was all adult patients who came for treatment.The data used in this study are primary data collected consecutively of all adult patients who come for treatment at Sei Selincah Health Center, Gandus Health Center, Merdeka Health Center and Basuki Rahmat Health Center in Palembang City. Data were analyzed using SPSS 18.0 for windows.

3. Results and discussion

In this study obtained cases of hypertension, diabetes mellitus, hypercholesterolemia in the four health centers period 30 October to 25 November 2017 as many as 200 respondents. Obtained cases of hypertension as many as 152 respondents (76%), cases of Diabetes Melitus as many as 73 respondents (36.5%) and Hyperkolesteronemia as many as 39 respondents (19.5%).

Age

In this study it was found that most of the respondents were in the age range 46-55 years (35%), while the 56-64 age group was 32.5% as the second most. details are presented in table 1.

Table 1. Age subjects of research subjects

Age Groups	Respondent	Percentage
Late Teens (17-25 years old)	2 people	1.0%
Early adulthood (26-35 years old)	9 people	4.5%
Late adulthood (36-45 years old)	20 people	10.0%
Early elderly (46-55 years old)	70 people	35.0%
Late elderly (56-64 years old)	65 people	32.5%
Elderly (≥65 years old)	34 people	17.0%
Total	200 people	100%

Gender

Most of the study respondents were women with a percentage of 56% while men 44%. More is presented in table 2.

Table 2. Gender research subjects

Gender	Respondent	Percentage
Male	88 people	44%
Female	112 people	56%
Total	200 people	100%

Last education

Most of the research respondents were high school graduates at 38.5% while the last D3 graduates were only 7.5%. More is presented in table 3.

Table 3. Latest education research subjects

Latest Education	Respondent	Percentage
SD	30 people	15.0%
SMP	51 people	25.5%
SMA	77 people	38.5%
D3	15 people	7.5%
S1/D4	27 people	13.5%
Total	200 people	100%

Profession

In this study, the work was divided into 5 large groups namely PNS, Private, BHL, IRT and Pensioners. Found the most jobs from respondents is IRT by 40%. More is presented in table 4.

Table 4. Research subject work groups

Work Groups	Respondent	Percentage
IRT	80 people	40.0%
PNS	25 people	12.5%
Private	57 people	28.5%
BHL	21 people	10.5%
Pensioner	17 people	8.5%
Total	200 people	100%

BMI

BMI data in this study were obtained from formulas with height in meters. Based on WHO criteria, the BMI category is divided into 5 categories: poor, normal, overweight, obese I, obese II. From the results of the study obtained the most respondents with BMI 25-29.9 of 37%. More is presented in table 5.

Table 5. BMI group research subjects

BMI Groups	Respondent	Percentage
Less (< 18.5)	12 people	6.0%
Normal (18.5-24.9)	72 people	36.0%
Overweight (2324.9)	34 people	17.0%
Obese I (25-29.9)	74 people	37.0%
ObeseII (>30)	8 people	4.0%
Total	200 people	100%

Smoker

In this study, 27% were active smokers, while 19.5% were passive smokers and the remaining 53.5% were non-active and passive smokers.

Table 6. Smokers group research subjects

Smokers Groups	Respondent	Percentage
Active Smokers	54 people	27.0%
Passive Smokers	39 people	19.5%
Non-Active and Passive Smokers	107 people	53.5%
Total	200 people	100%

Hypertension

In this study found a significant relationship between sex, age, BMI, active smokers and passive smokers on the incidence of hypertension. Gender is one of the risk factors with p 0.018 with the most respondents being women as much as 56%, this is in accordance with research conducted by M. Akhtar Hussein in Indonesia in 2016 with p <0.001 with the most respondents in women. Age and BMI greatly influenced the incidence of hypertension in this study with a value of p = 0.001, as well as research conducted by Suman et al in 2014 which said there was a significant relationship between age and hypertension (r = 0.21, P <0.01), and BMI with hypertension (P <0.01).[8]

Cigarettes increase the risk of hypertension, in this study there is a relationship between active smokers (p = 0.002) and passive smokers (p = 0.001) with the incidence of hypertension. According to previous research conducted by Thuy AB there was a significant trend to increase the prevalence of hypertension with increasing years (P = 0.05) and

smoking packs (P = 0.03) after adjusting for age, BMI, and alcohol intake.[9]

Diabetes mellitus

From the results of this study found a significant relationship between sex with the incidence of diabetes in respondents (p = 0.018), the results of this study are not in accordance with the results of research conducted by Karamatollah et al in which no relationship was found between sex and the incidence of diabetes (11.1 % for men and 12.1% for women).

In the age category also obtained significant results with p 0.001, the results of this study are similar to the study of Karamatollah et al. Where diabetes is more common in old age or ≥ 60 years old. In the category of body mass index also showed significant results with p 0.001 where the higher BMI can also increase the risk for diabetes mellitus, this result is supported by the study of Qianping Zhao et al. Who said the higher BMI number would increase insulin resistance and reduce insulin sensitivity in parents.[10,11]

Hypercholeterolemia

In this study there was no relationship between sex and age with the incidence of hypercholesterolemia, these results contradicted research conducted by Shervin Assari et al conducted in Iran with a sample of 120 people saying there was a significant relationship between sex (p = 0.004) and age (0.048) with hypercholesterolemia.

The difference in this study is probably caused by differences in the number of samples and research sites. In this study there was no relationship between education and hypercolesterolemia with p = 0.011 in accordance with previous research by Karen Broekhuizen in 2012.[12,13]

Table 7. Relationship between risk factors with hypertension, diabetes mellitus, hypercholesterolemia

Comparison	***p* Hypertension**	***p* Diabetes Melitus**	***p* Hypercholeterolemia**
Gender	0.018	0.035	0.954
Age	0.000	0.000	0.564
BMI	0.023	0.000	0.063
Profession	0.129	0.061	0.065
Education	0.196	0.463	0.011
Passive Smokers	0.002	0.163	0.859
Active Smokers	0.000	0.370	0.850

The relationship of diabetes to hypretence and hypercholesterolemia

Nearly 60-80% of people suffering from diabetes die from cardiovascular complications, and 75% of them are caused by increased blood pressure (hypertension). In a study conducted by Yohanes Silih suggested that there is a statistically significant relationship between diabetes and the incidence of hypertension (p <0.004), these results are not in line with this study where no significant relationship was found between hypertension and the incidence of diabetes mellitus (p = 0.546) .14 whereas for hypercholesterolaemia there was no association with diabetes mellitus, this study was similar to the results of a study conducted by Nida Najibah in 2013 with p = 0.991.[15]

Table 8. The relationship of diabetes to hypertension and hypercholesterolemia

Variables	Respondent	Percentage	*p*
H**ypertension**	32 people	66,7 %	0,546
H**ypercholesterolemia**	101 people	63,5 %	0,763

5. Conclusions

In this study no association was found between Diabetes mellitus and hypertension with hypercholesterolemia.

6. References

1. World Bank. Indonesia Economic Quarterly, December 2014: Delivering Change. Washington, DC: The World Bank; 2014
2. Ministry of Health Republic of Indonesia. Indonesia Health Profile 2013. Jakarta, Indonesia. 2014.
3. Global burden disease profiles: Indonesia Seattle, WA, USA: Institute of Health Metrics and Evaluation; 2013 [cited 2017 22 November]. Available from: http://www.healthdata.org/sites/default/files/files/country_profiles/GBD/ihme_gbd_country_report_ indonesia.pdf.
4. World Bank. Indonesia: facing up to the double burden of malnutrition. Indonesia Health Sector Review: policy and discussion note. Washinton, DC: World Bank; 2012; 5.
5. World Health Organization. Noncommunicable Diseases (NCD) Country Profiles, 20142014 4 March 2015 [cited 2015 4 March]. Available from: http://www.who.int/nmh/countries/idn_en.pdf?ua=1.
6. World Health Organization. Global health observaroty data, Indonesia country profile 2015 [updated January 2015; cited 2015 March 26]. Available from: http://www.who.int/gho/countries/idn/country_profiles/en/.
7. Hoy DG, Rao C, Hoa NP, Suhardi S, Lwin AM. Stroke mortality variations in South-East Asia: empirical evidence from the field. Int J Stroke. 2013; 8 Suppl A100: 21–7.
8. Dua S, et al. Body Mass Index Relates to Blood Pressure Among Adults. 2014 Feb; 6(2): 89–95. Diakses pada tanggal 30 November 2017 : https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3968571/
9. AB Thuy, et al. The association between smoking and hypertension in a population-based sample of Vietnamese men. 2010 Feb;28(2):245-50. Diakses pada tanggal 30 November 2017 : https://www.ncbi.nlm.nih.gov/pubmed/19829145
10. Zhao Q, Laukkanen JA, et al. Body Mass Index is Associated with Type 2 Diabetes Mellitus in Chinese Elderly. 2017;12:745-752.
11. Rahmanian K, Shohaei M, et al. Relation of Type 2 Diabetes Mellitus with Gender, Education, and Marital Status in an Iranian

Urban Population. 2013;1(2):64-68

12. Assari S, et al. Gender Differences in the Association between Lipid Profile and Sexual Function among Patients with Coronary Artery Disease. 2014; 8(1):9-14. Diakses pada tanggal 30 November 2017 : https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3987459/
13. Broekhuizen K, et al. Can Multiple Lifestyle Behaviours Be Improved in People with Familial Hypercholesterolemia? Results of a Parallel Randomised Controlled Trial. 2012; 7(12). Diakses pada tanggal 30 November 2017: http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0050032
14. Silih Yohanes. Hubungan antara diabetes mellitus dengan kejadian hipertensi di kecamatan Pontianak selatan. Skripsi. Fakultas Kedokteran, Universitas Tanjungpura. 2012.
15. Najibah Nida. Hubungan kadar Glukosa darah puasa dengan profil lipid pada pasien diabetes melitus tipe II di RSUD kota Cilegon periode Januari-April 2013.fakultas Kedokteran UIN Syarif Hidayatullah Jakarta. 2013.