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Checking Blood Sugar Levels at Once, Total Cholesterol and Uric Acid in Health Cadres of Mojowuku Village, Kedamean District

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ABSTRACT

Currently, Indonesia is struggling with the double burden of infectious diseases and non-communicable diseases. One way to control non-communicable diseases is to reduce and control risk factors through early detection (screening). This study aims to determine the picture of the levels of temporary blood sugar, total cholesterol, and uric acid in the Mojowuku Village community. The type of research used was a survey with a Cross Sectional design conducted in Kedamean District, Gresik Regency, East Java Province in July 2023. The sample of this study were 27 respondents with details of the time of checking blood sugar levels, 21 respondents checked total cholesterol levels, 22 respondents and checking uric acid levels, 24 respondents. Sampling using accidental sampling technique with instruments such as lancet pen, alcohol swabs, GCU meter branded Easy Touch, and glucose, cholesterol, and uric acid strips. This study uses Univariate Analysis with Descriptive test and Compare Means One Sample T Test. Based on the results of the study, the average blood sugar level in the Mojowuku Village community was in the normal category at 119.5 mg/dL, the total cholesterol level was 157.6 mg/dL and the uric acid level in the normal category reached 6.0 mg/dL. Local health centers can activate Posbindu cadres and conduct early detection so that risk factors for non-communicable diseases can be controlled.

INTRODUCTION

The prevalence of non-communicable diseases is increasing every year, equivalent to 71% of deaths globally (World Health Organization, 2021). The World Health Organization (WHO) (2021) states that every year more than 15 million people die from non-communicable diseases in the age range of 30-69 years in low- and middle-income countries.

Some of the factors that cause a person to suffer from non-communicable diseases are controllable factors and uncontrollable factors (Ministry of Health of the Republic of Indonesia, 2019b). Based on the guidebook for the management of non-communicable diseases issued by the Directorate General of Disease Prevention and Control, the factors that cannot be controlled are gender, age and genetics (keturunan). Meanwhile, factors that can be controlled are diet, physical activity, alcohol and tobacco consumption (smoking) and a healthy lifestyle (Ministry of Health of the Republic of Indonesia, 2019b).

One way to control non-communicable diseases is to reduce and control risk factors through early detection (screening) (World Health Organization, 2021). Early detection or screening aims to monitor disease risk factors so that they can be known as early as possible and can be followed up (Ministry of Health of the Republic of Indonesia, 2019b). Checking blood sugar, cholesterol and uric acid levels is one

of the efforts to detect non-communicable diseases such as diabetes mellitus, cardiovascular and other non-communicable diseases (Lima et al., 2020).

Based on the Central Statistics Agency (BPS) of Gresik Regency (2022), Kedamean sub-district has 15 villages in it, namely Mojowuku, Sidoraharjo, Slempit, Belahanrejo, Menunggal, Banyuurip, Ngepung, Kedamean, Tanjung, Katimoho, Turirejo, Tulung, Glindah, Lampah, and Cermenlerek. With an area of 65.95 km² and a population of 64,984 people, it is very important to carry out early detection (screening) of blood sugar, cholesterol and uric acid levels as efforts to monitor disease risk factors in the community and as data-based input at local health centers (BPS Gresik Regency, Kedamean District in Figures, 2022). Based on this background, the basis for researchers to carry out early detection of blood sugar levels, total cholesterol and uric acid in the Mojowuku community.

METHOD

This study is survey research with a cross-sectional design conducted in Kedamean District, Mojowuku Village, East Java Province in July 2023. The instruments or tools used in this study were lancet pens, alcohol swabs, ballpoint pens and GCU meters branded Easy Touch along with Glucose, Cholesterol and Urine Acid strips of the same brand, examination result sheets, and counseling sheets as an addition. Meanwhile, the material in this study is peripheral blood samples at the fingertips of the respondents. This study aims to describe the level of blood sugar, total cholesterol and uric acid in the Mojowuku Village Community.

The research population is community cadres who live or reside in Kedamean District, Mojowuku Village. While the sample of this study was 27 respondents with details of 21 respondents being checked for blood sugar levels at any time, 22 respondents being examined for total cholesterol levels and 24 respondents being examined for uric acid levels. Data collection was carried out directly with respondents using the accidental sampling technique by taking peripheral blood samples at the fingertips using a lancet pen that was first applied with alcohol swab. Blood samples are dripped onto each GCU Easy Touch strip (Glucose, cholesterol and uric acid) to measure blood sugar levels, total cholesterol and uric acid.

This study uses Univariate analysis with crosstab, data processing is carried out with the computerized application SPSS 2.0. The analysis described the blood sugar levels, total cholesterol and uric acid of Mojowuku Village health cadres according to gender, and age. Blood sugar levels, total cholesterol and uric acid were obtained from the examination results sheet on the respondents.

RESULT AND DISCUSSION

Blood Sugar Levels at Once, Total Cholesterol and Uric Acid in Community Cadres of Kedamean District, Mojowuku Village

Table 1. Average Blood Sugar Levels at Any Time, Total Cholesterol and Uric Acid in Community Cadres of Kedamean District, Mojowuku Village in 2023.

Types of Examinations	Mean	Category	Std. Deviation	95%CI
Blood Sugar Levels	119,5	Usual	108,80	(76,48-162,56)
Cholesterol Total	157,6	Usual	89,15	(122,36-192,20)
Uric Acid Levels	5,9	Usual	3,39	(4,651-7,341)

Blood sugar levels in a person consist of two types, namely Current Blood Sugar Levels (GDS) and Fasting Blood Sugar Levels (GDP) (Ministry of Health of the Republic of Indonesia, 2020). The Current Blood Sugar Test (GDS) is a blood sugar level check that can be measured at any time regardless of when a person last ate, while the Fasting Blood Sugar Level (GDP) test is a blood sugar level check that requires patients to fast first at least 8 hours before the test (American Diabetes Association, 2018). Based on table 1, the average sugar level in the people of Mojowuku Village is in the normal category, which is 119.5 mg/dL. Blood sugar levels in a person are categorized as normal if they < 200 mg/dL, categorized as low if their blood sugar level < 60 mg/dL, and categorized as high if > 200 mg/dL (Ministry of Health of the Republic of Indonesia, 2020).

A person who has excessive and uncontrolled blood sugar levels will suffer from Diabetes Mellitus (DM) (Ministry of Health of the Republic of Indonesia, 2020). DM occurs due to two risk factors, namely modifiable risk factors and non-modifiable risk factors (Ministry of Health of the Republic of Indonesia, 2019c). Risk factors that can be changed are obesity, lack of physical activity, high blood pressure, unbalanced diet, and smoking or exposure to cigarette smoke, while risk factors that cannot be changed such as age > 40 years, having a family history of diabetes, pregnancy with high blood sugar and babies who have a birth weight of < 2.5 kg (Ministry of Health of the Republic of Indonesia, 2019c).

Cholesterol is a type of fat in the body and is a major part of nerve cells and the brain in humans (Sigarlaki & Tjiptaningrum, 2016). Cholesterol plays an important role for humans, especially for cells and tissues of the body to develop and grow as they should (Djaelani & Tana, 2015). Cholesterol has been produced by the human body through the liver organ as much as 80% while 20% are produced from outside the body from foods consumed daily such as egg yolks, meat, brains, cheese, liver, butter, milk (animal products) (Sigarlaki & Tjiptaningrum, 2016). In humans, there are three types of cholesterol, namely total cholesterol, HDL (High Density Lipoprotein) or good cholesterol and LDL (Low Density Lipoprotein) or bad cholesterol (Ministry of Health of the Republic of Indonesia, 2018, 2019a). Total cholesterol is the combined level of the amount of good cholesterol, bad cholesterol and triglycerides in each deciliter of blood (Ministry of Health of the Republic of Indonesia, 2019a). Based on table 1. The

average total cholesterol level in the people of Mojowuku Village is in the normal category, which is 157.6 mg/dL. Normal total cholesterol levels in humans are < 200 mg/dL, categorized as ABA (Upper Threshold) if cholesterol levels reach 200-239 mg/dL and categorized as high if cholesterol levels > 240 mg/dL (ODPHP, 2020).

Uric acid is a crystal resulting from purine metabolism derived from food consumed from plants (nuts, vegetables and fruits) animals (offal, sardines and meat) or (Ministry of Health of the Republic of Indonesia, 2022; Madyaningrum et al., 2020). Gout usually occurs in the joints of the feet and hands (usually the joints in the big toe) which form uric acid crystals, causing painful inflammation (Centers for Disease Control and Prevention, 2020).

Based on table 1. The uric acid level in the people of Mojowuku Village is in the normal category, reaching 5.84 mg/dL. The World Health Organization (WHO) states that uric acid levels in humans are differentiated by gender, in men normal uric acid levels are between 3.5-7 mg/dL while in women between 2.6-6 mg/dL. Prevention of gout can be done by implementing a healthy lifestyle by reducing the consumption of food containing purines, doing regular exercise, and losing weight if you are overweight (Madyaningrum et al., 2020)

Current Blood Sugar Levels

Table 2. Average Current Blood Sugar Levels by Gender, and Age in Community Cadres of Kedamean District, Mojowuku Village in 2023

Variable		Current Blood Sugar Levels (Mean) mg/dL	Std. Deviation	95%CI
Gender	Man	142	4,243	(103,88-180,12)
	Woman	122,63	112,719	(75,03-170,22)
Age (Years)	24-33	99,50	55,861	(-402,40-601,40)
	34-43	151,75	98,435	(69,46-234,04)
	44-53	149,90	102,504	(76,57-223,23)

Based on table 2. The average sugar level in the people of Mojowuku Village based on gender is in the normal category, namely men (242 mg/dL) and women (122.63 mg/dL). In the public health cadres of Mojowuku Village, blood sugar levels are higher in men than in women. This can occur because men have a habit of smoking (nicotine and tar) which makes insulin receptor resistance and inhibits insulin secretion so that it makes an increase in glucose in the blood (Kurniawati et al., 2015).

Blood sugar levels in the community of Mojowuku Village based on table 2. according to gender, it is in the normal category, namely men 142 mg/dL and women 122.63 mg/dL. The lowest sugar content is found in the male sex.

Total Cholesterol Levels

Table 3. Average Cholesterol Levels Based on Gender, and Age in Kedamean District Community Cadres

Variable		Total Cholesterol Levels (Mean) mg/dL	Std. Deviation	95% CI
Gender	Man	151,50	12,021	(119,63-175,03)
	Woman	164,71	88,557	(127,31-202,10)
Age (Years)	24-33	186,67	65,225	(24,64-348,70)
	34-43	187,75	32,150	(160,87-214,63)
	44-53	199,45	61,346	(158,24-240,67)

Based on Table 3. The average total cholesterol level of the people of Mojowuku Village based on gender in men is at normal, reaching 151.50 mg/dL, while in women, it is in the normal category, reaching 164.71 mg/dL. Total cholesterol levels in the people of Mojowuku Village are based on table 3. according to gender, it is in the normal category, namely 151.50 mg/dL for men and 164.71 mg/dL for women. The lowest total cholesterol levels are found in the male sex.

Uric Acid Levels

Table 4. Average Uric Acid Levels by Gender, and Age in Kedamean District Community Cadres in 2023

Variable		Uric Acid Level (Mean) mg/dL	Std. Deviation	95% CI
Gender	Man	5,133	42,0040	(2,156-13,511)
	Woman	5,767	3,4807	(4,297-7,326)
Age (Years)	24-33	6,767	2,5007	(0,555-12,979)
	34-43	7,667	3,9506	(4,630-10,703)
	44-53	6,127	1,6596	(5,012-7,242)

Based on table 4. The average uric acid level of the people of Mojowuku Village based on gender reached 5.767 mg/dL ABA (Upper Threshold) for women and 5.133 mg/dL (Normal) for men.

CONCLUSION

The average sugar level in the people of Mojowuku Village was in the normal category. With the above results, all Mojowuku village health cadres were declared in good health and can maintain their normal health status and can set an example to the community in Mojowuku village.

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