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Description of the Risk of Heart Disease and Stroke in Residents of RW 03 Dampit, Malang, Based on Electrocardiogram and Fast Test Examination

Bambang Guruh Irianto¹, Dwi Herry Andayani¹, Sari Luthfiyah¹

¹ Department of Technology of Electro-medic, Health Polytechnic Minister of Health of Surabaya, sarilut@poltekkesdepkes-sby.ac.id

Corresponding author: Sari Luthfiyah (e-mail: sarilut@poltekkesdepkes-sby.ac.id)

ABSTRACT The Malang regency district has the fourth-highest smoking prevalence rate among those over 10 years old, at 30%. 23.91% of the population aged 10 to 18 are active smokers who smoke daily. The number of passive smokers or people exposed to cigarette smoke is estimated to be higher than the number of smokers because when active smokers smoke, they also interact with non-smokers. Residents of Rukun Warga 03 Dampit village who suffer from hypertension and smoke are believed to have an impact on the incidence of heart disease and stroke, characterized by changes in the configuration of the ECG signal and signs of stroke. The purpose of this community service is to get an overview of the residents of RW.03 Dampit Village who have the potential to get heart diseases and strokes. The methodology used in conducting the community service under the community partnership program (PKM) is a pre-experimental single case study, i.e. the results of studying cardiac records of partners with a target of 50 residents in the RT environment. 007 RW. 03. The results of the community service activities showed that most (59%) reported ST elevation (ischemia) and 30% reported ST depression, the remaining 16% reported T elevation, and another 16% reported T depression. The results of his ECG recording showed evidence of M-shape, ST elevation, and ST depression (arrhythmia and ischemia). Meanwhile, all VES (ventricular extrasystoles) indicated are female. The conclusion from this community service is that there are more people who have the potential to get heart disease and stroke than active smokers. The benefits to the community are to know the condition of the residents of RW.03 Dampit Village who are potentially affected by heart disease and strokes and to improve residents' knowledge of the dangers of smoking for both active and passive smokers, the importance of eating healthy foods, and routine of exercise.

INDEX TERMS Community service, risk of heart disease, stroke, recording ECG signals, Dampit

I. INTRODUCTION

Dampit sub-district, located about 50 km from Malang city, comprises 1 Kelurahan, 11 villages, 45 hamlets, 114 RW and 714 RT. The total population is 116,533, of which 57,556 (49.39%) are males and 58,977 (50.61%) are females, with a population density of 861 persons/km². In terms of government health services, Dampit district is served by 2 Puskesmas units, namely Dampit Health Centre and Pamotan Health Centre. Geographically, Dampit sub-district is predominantly mountainous. According to the Malang District Health Office (2015), Dampit District, where Dampit Health Centre operates, ranks eighth in the population suffering from hypertension with a prevalence rate of 1,019 residents or 3.31% of the total

population surveyed. According to the Malang Central Statistical Authority (2018), hypertension is the second most common disease affecting all age groups in Malang Regency after ARI, with an incidence of 97,498 in 2016. The a high prevalence of hypertension among the population in the Dampit district, especially in the Rukun Warga. Residents of 03 Kelurahan Dampit who smoke are expected to have an impact on the occurrence of cases of heart disease and stroke, which are characterized by changes in the configuration of the ECG signal and signs of stroke[1][2][3][4][5][6]. In this community service activity, there are several potential partners where the activities can easily collaborate to make the program a success, availability of places in running the program, easy licensing by

the local authorities, and also the education level of the surrounding community has an average of secondary education.

The methodology used in conducting the community service under the community partnership program (PKM) is a pre-experimental single case study, i.e., only the results of examining heart records of partners found to have a history of high blood disease are considered, with a target of 50 residents in the RT setting. 007 RW. 03. The results of the community service activities showed that most (59%) reported ST elevation (ischemia) and 30% reported ST depression, the remaining 16% reported T elevation, and another 16% reported T depression[9][10][11]. The results of his ECG recording showed evidence of M-shape, ST elevation, and ST depression (arrhythmia and ischemia)[9][12][11][1]. Meanwhile, all VES (ventricular extrasystoles) indicated were female[13][6]. The benefits to the community from the findings of this community service are the need for regular community counseling by local health workers on the dangers of smoking for both active and passive smokers[14][15][15][16][2][17][18]. People need to be educated about eating healthy foods to avoid high blood pressure and stroke and it is recommended to cultivate the habit of exercising regularly or doing morning exercises through the neighborhood community RT or RW[7][16].

The aim of this community service is to determine how many residents of RW.03 Dampit village are potentially affected by heart disease and stroke[3][7][8].

II. METHODS METHOD AND IMPLEMENTATION

A. METHOD

The methodology used in the implementation of community service activities under the Community Partnership Programme (PKM) is a pre-experimental single case study, i.e. only the results of the investigation of cardiac acts of partners with a history of high blood disease are considered, with a target size of 50 residents in the RT setting. 007 RW. However, in the implementation of the 11 (eleven) RTs under the auspices of RW.03, there are several residents who wish to participate in the examination of electrocardiographic records free of cost.

These activities were carried out starting with the coordination with the community service team in the Communal Partnership Programme (PKM) between lecturers and students of the electrical engineering programme. The next step is to formulate the purpose of the community service in the Communal Partnership Programme (PKM). The next step is to coordinate between the community service team and the head of RW. 03 and the head of RT.007 Dampit Village. Moreover, the data of the residents suffering from hypertension will be collected by submitting a photocopy of their identity cards. Before conducting the activity, the Community Service Team prepares the location and equipment needed to conduct the community service activities. The conduct of the free ECG screening takes place in the RW environment. 03 Dampit village, Malang regency. After admission, counseling and health checks were conducted for the residents of RT 007

Rukun Warga 03 Dampit Village who suffer from hypertension. Health education and awareness of the dangers of smoking are also provided [14][19][20][21].

This community service activity also builds partnerships with a comprehensive community partnership program on administration, management, or aspects of public health services within the RW. 03 Dampit Village, Malang Regency. Given the enthusiasm of the residents of RW.03 Dampit Village, the target population increased from 50 (fifty) people to 88 (eighty-eight), an increase of 78%.

B. IMPLEMENTATION

In the phase of preparation for implementation the implementation of community service activities takes place in the following phases, starting with coordination with the RT leader and the RW.03 leader. The team leader then reports to the local village leader, Polsek, Koramil and Camat. **FIGURE 1**, the team leader and team members, composed of faculty and students, prepare the materials for the activities by preparing basic equipment and other supporting equipment



FIGURE 1. Coordination and preparation of community service activities

The next is preparing for the human resources and the division of tasks according to their area of responsibility. Set up a table for registration and body temperature checks. The community service team prepares tables for blood pressure checks and equipment for monitoring blood pressure and measuring pulse rate. Next, prepare 2 beds and ECG equipment (one bed for examining female patients and one bed for examining male patients).

FIGURE 2, setting up of several tables for consumption of activity participants and participants coming for cardiac records.

In the implementation phase, it starts with the arrival of residents at the registration desk by presenting a photocopy of their identity card



FIGURE 2. Preparation of a place for community service activities and its accessories



FIGURE 3. The activities at the registration desk consist of handing over a photocopy of the resident's card to the official

FIGURE 3. the arrival of residents participating in community service activities is recorded with data on name, age, gender and signature accompanied by members of the community service team. After data collection, **FIGURE 4.**, the next step is to measure blood pressure and pulse.



FIGURE 4. Activities at the table to check blood pressure and pulse

The next step, **FIGURE 5.**, is to enter the electrocardiogram examination room to record the electrocardiogram.



FIGURE 5. Activities in the electrocardiogram examination room for recording the signal of cardio (heart)

The results of the electrocardiogram examination are communicated to the patient by a competent official in his or her field of expertise

After completing a series of activities, **FIGURE 6.**, at PKM, residents/participants are allowed to go home and drink 10 capsules of black garlic for 5 days (1 day 2 capsules).



FIGURE 6. A member of the PKM team explains the results of the electrocardiogram examination to the participant.

All the results of the community service activities related to the free ECG screening have been successfully conducted in the form of educating the public about the dangers of smoking, according to the proposal submitted to the Poltekkes Research and Development Centre of the Ministry of Health in Surabaya [14][20]. This is followed by educating the public on the signs and symptoms of stroke and the effects of smoking on active smokers and passive smokers [19][16][2][3][16][4][18]. The final step of this activity is to prepare a report on the results of the implementation of community service activities related to free ECG screening and present an analysis.

III. RESULTS

Results of data recapitulation of ECG examination activities for residents in RT. 007 Rukun Warga 03 Dampit Village, Dampit District, Malang Regency are as follows:

1. Characteristics by Age

In terms of gender, [FIGURE 7.](#), 88 residents of RW.03 underwent electrocardiogram examination, of which 37 males were active smokers and 51 females were passive smokers. Regarding age, the youngest resident is 33 years old and the oldest is 85 years old.

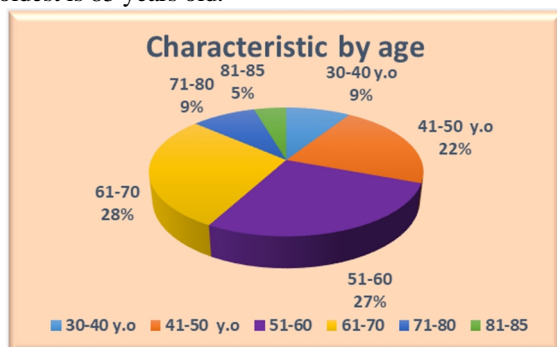


FIGURE 7. Characteristics by age

2. Characteristics participants by gender

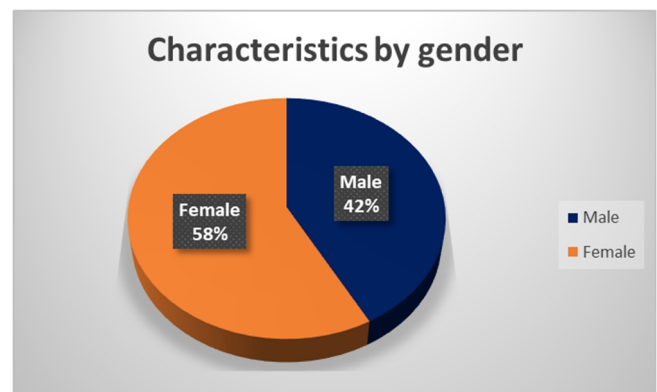


FIGURE 8. Characteristics by gender

[FIGURE 8.](#), in terms of gender, there were 88 residents of RW.03 who underwent electrocardiogram examination, consisting of 37 men as active smokers and 51 women as passive smokers.

IV. DISCUSSION

The results of pulse checks performed on 88 residents revealed that 4 (0.5%) females aged 60-71 years were found to have tachycardia. The heart rate is faster than normal or exceeds 100 beats per minute or is between 104 and 108 per minute, so 84 people (99.5%) have a normal pulse, which is between 64 and 100 beats per minute.

The results of blood pressure checks on 88 RW residents. 03 Dampit Village, 43 people (49%) had normal blood pressure readings that ranged between 106/65 mmHg and 135/85 mmHg. 14 people (16%) had symptoms of hypertension ranging from 137/94 mmHg to 140/71 mmHg and the remaining 31 people (35%), of which 12 people and 19 women fell into the hypertension category.). Hypertension), which ranges from 143/71 mmHg - 191/121 mmHg. According to WHO standards, normal blood pressure for adults is 90/60 mmHg - 135/80 mmHg. Blood pressure was measured in 12 men aged 47 to 74 years and 19 women aged 46 to 71 years[23][24].

The results of electrocardiogram examination in 88 people, only 4 people (0.5%) whose heart picture was normal, meaning that there was no problem with the heart, and 4 other people (0.5%) whose heart picture indicated VES (Ventricular Extrasystole). the rhythm of the heart signal, characterized by palpitations, when uncontrolled becomes life-threatening or arrhythmia[13][5]. In 46 people (52%), the recordings of their heart images showed M. Shape, which means that cardiac arrhythmia was present and was characterized by palpitations[25][12][22]. The results of the heart recordings that showed ST elevation involved 52 people (59%), which means that there was a change in the ECG curve resulting in a slight lack of oxygen in the heart muscle[1][9]. In addition, the data show ECG results leading to ST depression in 27 people, which means that there is a change in the ECG curve leading to a

moderate lack of oxygen in the heart muscle [1][25][6]. Subsequent data from ECG recording results indicating symptoms of T elevation and T depression were each from 14 people.

According to the results of the recapitulation of the electrocardiogram recordings, there were 11 people in whom the electrocardiographic images indicated M-shape, ST elevation and ST depression, while there were 16 people who indicated M-shape and ST elevation, and 8 people who indicated ST elevation and T depression. This condition, if not treated, can lead to a very serious heart attack, blocking one of the arteries that supply oxygen- and nutrient-rich blood to the heart muscle[25]. Blood pressure screening results indicated high blood pressure in 12 men aged 47 to 74, and stroke in 3[16][3].

From the community service activity results, most people in Dampit experience ST elevation, 52 people. This is a very serious type of heart attack where one of the arteries that supply oxygenated and nutrient-rich blood to the heart muscle is blocked[1][9].

And the recommended education is people should ensure a balanced diet with carbohydrates, vitamins, protein, minerals and fiber. Always make sure to drink a sufficient amount of mineral-rich drinking water. You should reduce caffeine consumption and also avoid smoking and alcohol, as these put a strain on the heart and are detrimental to health. Maintain the electrolyte balance of the body to always meet its needs. Minerals are needed for the heart to work and ensure a regular heart rhythm. Always put your trust in God to avoid stress and anxiety. Exercise regularly within your means, for example by taking a 30-minute walk every day in the morning. It is advisable to have routine electrocardiographic examinations at the nearest health center or hospital.

V. CONCLUSION

The purpose of this community service is to find out how many residents of RW.03 Dampit village are potentially affected by heart disease and stroke. The results of the community service showed that most residents (59%) reported ST elevation (ischemia) and 30% reported ST depression, the remaining 16% reported T elevation, and another 16% reported T depression. The results of his ECG recording showed evidence of M-shape, ST elevation, and ST depression (arrhythmia and ischemia). Meanwhile, all indicated VES (ventricular extrasystoles) were female. For the next community service, it is recommended to assess the community's adherence to health education.

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