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# Health Promotion Intervention to Improve Public Knowledge on Coronary Heart Disease in Yogyakarta, Indonesia: A Quasi-experimental Study

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**Abstract:**

***Objectives:*** A lack of public knowledge about coronary heart disease (CHD) contributes to the elevated incidence of delayed onset symptoms to the first medical contact and major adverse cardiac events. Health promotion intervention should be the first option in order to direct individuals toward adopting healthy behaviors to avert CHD, and improve their knowledge and attitude in handling CHD-related symptoms. Therefore, this study aimed to observe the impact of educational programs on the improvement of public knowledge about CHD in Yogyakarta, Indonesia.

***Methods:*** A quasi-experimental approach was implemented utilizing a questionnaire developed by the researchers, which included pharmacists and cardiologists and was based on the BASNEF model. An hour-long educational program was carried out three times a month by inserting the program into the community's routine agenda. A descriptive analysis, t-test, and multivariate regression were performed to evaluate the influence of the program on participants' knowledge regarding CHD.

***Results:*** A higher proportion of participants with a smoking environment (79.6%), diabetes mellitus (88.9%), abnormal waist circumference (61.9%) and abnormal 2 h postprandial blood glucose (77%) among 113 were involved in this study. Significant improvement was observed among the overall results of pre-test (75.59±15.29) and post-test (86.05±8.99) with *p*-value <0.001. Older participants and participants with acute coronary syndrome history (ACS) significantly improved their knowledge of CHD after the health promotion program with *p*-values of 0.022 and 0.008, respectively.

***Conclusion:*** These findings suggest that educational interventions could increase participants' knowledge of CHD. Local health officials should implement more health promotion to significantly enhance public knowledge of CHD.

**Keywords:** Health promotion, Public knowledge, Coronary heart disease, Healthy behaviors, Symptoms, Health promotion.



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## 1. INTRODUCTION

Coronary heart disease (CHD) remains a significant health concern in Asia, with varying prevalence across different countries. Recent studies indicate that the age-standardized prevalence of CHD in rural China was 2.23%, higher than previous national estimates [1]. According to the latest Indonesian National Primary Health Research 2018 report, cardiac disease has a prevalence of 1.5%, which is associated with significant mortality rates [2]. A study conducted in 2020 found that the prevalence of CHD in the Indonesian working-age population was 1.45% (1.3% in men and 1.6% in women), affecting approximately 2 million people aged 15-55 years [3]. Elevated incidences of CHD may result from the adoption of inappropriate behaviors, including smoking, insufficient physical activity, consuming unhealthy foods, and being overweight [4]. Further, inadequate public knowledge concerning the preventive measures against cardiovascular disease contributes to the adoption of inappropriate health practices, ultimately leading to death [5, 6].

Enhanced understanding of the risk factors associated with CHD can facilitate accurate risk assessment for individuals and inspire heightened preventive measures that are commensurate with increased risk mitigation efforts [7]. The high-risk factors and limited public awareness regarding the prevention of CHD have led to inappropriate health behavior intention and attitude, which contributes to the elevated incidence of delayed onset symptoms to the first medical contact (FMC) and major adverse cardiac disease (MACE) [8, 9]. Priority should be given to health promotion interventions that encourage individuals to adopt healthy behaviors, with a particular focus on preventing CHD and enhancing their understanding and attitude toward managing symptoms associated with CHD. Thus, this study aimed to assess the effect of an educational program in Yogyakarta, Indonesia, that utilized the BASNEF model (beliefs, attitudes, subjective norms, and enabling factors) in order to increase public awareness regarding CHD.

## 2. MATERIALS AND METHODS

### 2.1. Study Design

A quasi-experimental design was conducted by using a research questionnaire directed towards a society with CHD risks. Questionnaire was constructed by the researchers consisted of pharmacists and cardiologists and referring to BASNEF model. An hour-long educational program was carried out three times a month by inserting the program into the community's routine agenda. This health promotion interwvention also included review sessions, educational videos, and face-to-face discussions in every meeting. This health promotion program was implemented in response to an invitation from the local community to their regular meeting arranged by the local primary health care.

### 2.2. Data Collection

The BASNEF questionnaire, consisting of 22 inquiries, was applied to evaluate participants' understanding of relevant health information and their knowledge of the primary risk factors associated with CHD. The participants were requested to complete a pre-and post-questionnaire related to the educational intervention conducted by a cardiologist and a pharmacist. A higher result on a post-educational program is indicative of an individual's increased awareness and knowledge. For each respondent and each BASNEF dimension, the pre-and post-test scores were computed in order to determine which aspect of improvement the devised educational program stimulated. Data on participant characteristics and risk factors were collected, including gender, age, BMI, waist circumference, smoking habit, history post-acute coronary syndrome (ACS), hypertension, diabetes mellitus, 2h postprandial blood glucose (2H PP), and total cholesterol levels.

### 2.3. Data Analysis

Data obtained from 113 respondents was analyzed utilizing SPSS version 25.0 [10]. Sets of descriptive analyses were conducted to describe participants' characteristics according to their pre- and post-score improvement. A multivariate regression was conducted to evaluate the predictors of the improved public knowledge of CHD among health promotion participants. The relationship between the independent and the dependent variables was measured with a confidence level of 95% and a $p<0.05$, which is considered statistically significant.

## 3. RESULTS

### 3.1. Participant's Basic Characteristics

This health promotion study involved 113 respondents from the local community members in collaboration with local primary health care. The majority of respondents were female, 87.6% (n=99) with age 58.24±13.8 years old and with abnormal waist circumference status (61.9%) based on the updated guideline (female ≥88 and male ≥102 cm) [11]. The proportion of active smokers was significantly lower than those exposed to secondhand smokers (20.4% *vs* 79.6%; $p<0.001$), had diabetes mellitus (88.9%; $p<0.001$) and abnormal 2H PP blood glucose (77%; $p<0.001$) as shown in Table **1**.

### 3.2. Participant's Response to each BASNEF Component

This behavioral study explored participant's understanding of CHD-related information by using the BASNEF model. As presented in Table **2**, before the educational intervention, only 22% of respondents were aware that "electronic cigarettes *could not* be an alternative to help smokers in reducing their risk of CHD," and only 35.4% understood that "a family history of CHD could increase their risk to develop CHD".

The subjective norm component concerning misunderstanding coffee consumption to prevent heart attacks improved most after the educational intervention. The Belief domain also showed a substantial increase regarding the use of rubbing oil or balm to reduce heart attack symptoms (question 6), with a 34.6% improvement. This study also observed that knowledge about quitting smoking habit, particularly preventing each individual from being passive, was still low based on the pre-and post-score, which was still under 75%.

**Table 1. Demographic profile of the study population.**

| Variables | Total (N = 113) | *p*-value |
|---|---|---|
| Male (%) | 14 (12.4%) | 0.600 |
| Age, Mean (SD), N | 58.24 (13.8), 113 | 0.296 |
| BMI, Mean (SD), N<br>Obese (%) | 24.1 (4.41), 113<br>48 (42.47%) | 0.102 |
| Abnormal Waist circumference Status (%) | 70 (61.9%) | 0.035 |
| Smoking Habit<br>Active (%)<br>Passive (%) | <br>23 (20.4%)<br>90 (79.6%) | <0.001 |
| Post-ACS (%) | 31 (27.4%) | <0.001 |
| Hypertension (%) | 61 (54%) | 0.052 |
| Diabetes Mellitus | 100 (88.9%) | <0.001 |
| Abnormal Blood Glucose (2H PP) | 87 (77%) | <0.001 |
| Abnormal Total Cholesterol | 57 (50.4%) | 0.106 |

**Table 2. Participant's answer pattern in each BASNEF component.**

| S.No. | Questions | Pre-test | | Post-test | | Δ |
|---|---|---|---|---|---|---|
| | | % Correct Answer | n | % Correct Answer | n | |
| | **BELIEF** | | | | | |
| 1 | A family history of coronary heart disease increases an individual's risk of developing the condition. | 35.4% | 29 | 63.8% | 30 | +28.4% |
| 2 | Coronary heart disease is a condition that only affects older adults. | 63.4% | 52 | 87.2%% | 41 | +23.8% |
| 3 | Smoking is a significant risk factor for developing coronary heart disease. | 93.9% | 77 | 100% | 47 | +6.1% |
| 4 | Electronic cigarette is an alternative to help smoker in reducing their risk from developing coronary heart disease | 22% | 18 | 36.2% | 17 | +14.2% |
| 5 | Regular physical activity will reduce the risk of developing coronary heart disease. | 90.2% | 74 | 93.6% | 44 | +3.4% |
| 6 | Using rubbing oil or balm can reduce symptoms of chest pain and soothe the respiratory tract in patients who are having a heart attack. | 46.3% | 38 | 80.9% | 38 | +34.6% |
| | **ATTITUDE** | | | | | |
| 7 | A person who stops smoking will reduce the risk factors for suffering from coronary heart disease | 93.9% | 77 | 97.9% | 46 | +4% |
| 8 | Keeping blood pressure normal will reduce a person's risk factors for heart disease | 93.9% | 77 | 95.7% | 45 | +1.8% |
| 9 | High blood pressure is a risk factor for coronary heart disease | 86.6% | 71 | 97.9% | 46 | +11.3% |
| 10 | If my bad cholesterol (LDL) is high, I am at risk of developing coronary heart disease | 85.4% | 70 | 93.6% | 44 | +8.2% |
| 11 | Consuming high-fat foods will not affect your cholesterol levels | 69.5% | 57 | 63.8% | 30 | -5.7% |
| | **SUBJECTIVE NORMS** | | | | | |
| 12 | My family should support me to maintain my cholesterol starting from my eating habit to prevent coronary heart disease our | 92.7% | 76 | 93.6% | 44 | +0.9% |
| 13 | I should not smoke and living around the smoker to decrease the risk of coronary heart disease | 73.2% | 60 | 70.2% | 33 | -3% |
| 14 | I should not be obese to prevent myself from the high risk of coronary heart disease | 82.9% | 68 | 89.4% | 42 | +6.5% |
| 15 | I should stop consuming coffee to prevent heart attack | 42.7% | 35 | 83% | 39 | +40.3% |
| 16 | I should have time at least 30 minutes per day for doing exercises to reduce the risk of coronary heart disease | 91.5% | 75 | 97.9% | 46 | +6.4% |
| 17 | I should find a way to deal with my stress, so I can reduce my risk to developing coronary heart disease | 68.3% | 56 | 85.1% | 40 | +16.8% |
| | **ENABLING FACTORS** | | | | | |
| 18 | I need to have access to a gym or exercise facilities near my home or workplace so I can do exercises easily and frequently, thus I can prevent myself from developing coronary heart disease | 82.9% | 68 | 95.7% | 45 | +12.8% |
| 19 | I should not be concerned about my susceptibility to acquiring coronary heart disease due to the absence of any familial history of the condition. | 63.4% | 52 | 80.9% | 38 | +17.5% |
| 20 | I need to have healthcare provider who regularly checks my health profile and provides guidance on maintaining a healthy lifestyle | 90.2% | 74 | 89.4% | 42 | -0.8% |
| 21 | I need a supportive family and friends to encourage me to engage in healthy behaviors | 91.5% | 75 | 93.6% | 44 | +2.1% |
| 22 | I need to provide a specific budget that allows me to invest in healthy lifestyle choices such as gym memberships or healthy food | 87.8% | 72 | 95.7% | 45 | +7.6% |

**Table 3. The mean scores of different structures of BASNEF model pre *vs* post intervention.**

| S.No. | BASNEF Model Components | Mean | SD | Paired t-test P (intragroup) |
|---|---|---|---|---|
| 1 | Overall Test Score<br>Pre test<br>Post test | <br>75.59<br>86.05 | <br>15.29<br>8.99 | <0.001 |
| 2 | Belief Test Score<br>Pre test<br>Post test | <br>66.97<br>90.25 | <br>21.13<br>50.48 | <0.001 |
| 3 | Attitude Test Score<br>Pre test<br>Post test | <br>83.18<br>95.87 | <br>18.62<br>63.74 | 0.058 |
| 4 | Subjective Norm Test Score<br>Pre test<br>Post test | <br>70.79<br>97.19 | <br>25.05<br>49.09 | <0.001 |
| 5 | Enabling factor Test Score<br>Pre test<br>Post test | <br>84.07<br>90.97 | <br>23.48<br>11.02 | 0.005 |

**Table 4. Predictor factors to the overall improvement scores.**

| Factors | OR | SE | CI (95%) | *p*-value |
|---|---|---|---|---|
| Age | 1.984 | 0.018 | 0.009-0.066 | 0.022* |
| Hypertension | 1.002 | 0.537 | 0.692-1.687 | 0.202 |
| Diabetic mellitus | 1.366 | 0.498 | 0.057-1.348 | 0.289 |
| Post-ACS | 2.441 | 0.123 | 0.220-0.270 | 0.008* |
| Passive Smoker | 0.732 | 0.254 | 0.251-1.131 | 0.567 |
| Obesity | 0.479 | 0.460 | 0.350-1.109 | 0.183 |
| Abnormal waist circumference | 0.794 | 0.690 | 0.205-1.069 | 0.738 |
| Abnormal blood glucose (2H PP) | 1.096 | 0.659 | 0.576-1.624 | 0.261 |
| Abnormal total cholesterol | 1.814 | 0.939 | 1.082-1.936 | 0.051 |

**Note:** *inidividuals with increased BASNEF score.

### 3.3. Predictors to the Improvement BASNEF Scores

The assessment found that Belief and Subjective Norm pre-test scores remained below 75, indicating that, on average, the participants were unable to correctly answer more than 75% of CHD-related questions (Table 3). The educational program significantly increased the average total score from 75.59±15.29 to 86.05±8.99 ($p$<0.001). The component with the lowest pre-education score was the Belief dimension (66.97±21.13), followed by the Subjective Norm component. However, a substantial enhancement was achieved from both components [$p$<0.001), as well as from Enabling Factors ($p$=0.005), following the implementation of the educational program.

As seen from Table 4, a multivariate analysis found that individuals who were older and had a history of ACS experienced a substantial improvement in their BASNEF score after receiving the education program, with $p$-values of 0.022 and 0.008, respectively. The analysis also identified the higher improvement of pre and post-test scores among high-risk participants in developing CHD due to the hypertension status (OR 1.002; $p$=0.202), post-ACS history (OR 2.441; $p$=0.008), diabetic mellitus status (OR 1.366; $p$=0.289), abnormal 2H PP blood glucose (OR 1.096; $p$=0.261), and abnormal total cholesterol (OR 1.814; $p$=0.051). However, only participants with previous ACS experience had significant improvement post-test scores after receiving the CHD educational program.

## 4. DISCUSSION

The findings of this health promotion study, which involved 113 respondents, revealed that the majority of participants were older females, with more than half having a waist circumference >88 cm. It is necessary to be aware when interpreting the present trend in obesity prevalence, which is solely based on BMI calculations. Numerous studies have suggested that waist circumference measures be included as another important information to interpret BMI data on obesity and determine the existence of visceral fat among individuals [11-13]. For this reason, enhancing knowledge through training intervention programs is the main target for preventing and managing cardiovascular disease and its risk factors, which have an essential role in preventing obesity and hypercholesterolemia [14].

A greater proportion of participants with CHD risk factors were passive smokers. Widespread reports indicate that passive smoking is associated with an equivalent or even higher risk of CHD [15-17]. The study further assessed participants' understanding of CHD information using the BASNEF model. From a public health perspective, predictive mapping regarding health literacy can also be used as a way to identify at-risk society and to better focus on providing appropriate interventions for the targeted population [18]. Knowledge regarding risk

factors of CHD can provide benefits for people who are at risk to evaluate themselves and increase awareness, thereby reducing mortality and morbidity rates from CHD in the future [19].

This study found that many participants did not realize that electronic cigarettes are not a safe alternative to reduce the risk of CHD, and there was also a lack of understanding about the impact of a family history of CHD on an individual's own risk. While there has been some evidence suggesting that replacing conventional cigarettes with e-cigarettes can lead to a slight decrease in the negative impacts on health, the specific molecular mechanisms by which e-cigarettes affect the cardiovascular system (such as oxidative stress, inflammation, and lipid accumulation) are still being investigated, particularly in passive smokers with atherosclerosis and diabetic cardiomyopathy [13, 20]. A recent study conducted in Bandung (West Java, Indonesia) also reported a low level of knowledge regarding self-detecting risk factors of CHD, *i.e.*, 20% of respondents answered the question correctly; in comparison, 58.6% answered that they did not know [21].

The highest notable improvements observed after the educational intervention was related to correcting one of the most common myths found in society that coffee can increase the risk of CHD by causing heart attack symptoms. The researchers observed that there is an incorrect opinion in society that consuming coffee is thought to cause heart attacks. However, high caffeine intake can cause various side effects, and consuming more than 400 mg of caffeine/day in adults may have disadvantages [22]. Although coffee has physiological effects in increasing blood pressure, these effects appear to be temporary and do not affect the long-term tendency to develop hypertension [23]. A narrative review also reported that consuming a modest amount of coffee has been found to reduce the risk of death from any cause, as well as the risk of death connected to cardiovascular issues [24]. Thus, it is important to understand each individual's tolerance limits.

Misperceptions are thought to influence awareness of cardiovascular disease. Frequently, there are cases of delays in treating CHD patients due to underestimating the signs and symptoms that appear during an attack, and the occurred symptoms are usually assumed as only a common cold or tiredness [8, 24]. The onset of a heart attack to first medical contact or taking immediate and appropriate action can have a significant impact on morbidity and mortality [25]. Among patients who suffer a heart attack, longer delays before hospital admission for emergency treatment may negatively impact the patient's prognosis [8, 26]. Strategies to reduce risk factors or the severity of CHD are vital.

Similarly, the educational program revealed gaps in participants' understanding of the impact of dietary habits on heart health. There was an unexpected decrease in the accuracy of participants' responses concerning the impact of high-fat foods on cholesterol levels. During the discussion session, the educators made sure that there was no confusion among the participants regarding the consumption of foods that are high in fat. It was subsequently confirmed by the participants that they had been under the impression that all foods rich in fat were harmful to their bodies, when in fact, foods high in saturated fat are deemed to be harmful [27]. Lifestyle changes such as changing diet can also give much benefit to people at risk of CHD [28].

The study also found that participants' understanding of the benefits of quitting smoking, particularly in preventing individuals from becoming passive smokers, remained insufficient both before and after the intervention, as indicated by a slight decline in knowledge post-intervention. A number of participants remained uncertain during the discussion as to the fact that they, too, must take precautions to safeguard themselves from the smoking environment. In response to this circumstance among the participants, the educators endeavored to disseminate additional information and research data concerning the impact of secondhand smoke on certain diseases, including CHD, as well as the mechanism by which it affects the body's systems. Thus, more education programs specifically about secondhand smoke and related diseases are necessary to be conducted in Indonesia.

The findings of this educational program demonstrate a rise in favorable engagement with topics pertaining to lifestyle and health management for the purpose of preventing CHD. The significance of the public knowing risk factors for CHD can underscore the importance of understanding that despite preventive measures, age and family history of the disease may contribute to the likelihood of developing CHD; this would increase public awareness of the potential dangers associated with CHD [13]. Participants also demonstrated a significant improvement in knowledge and understanding, as evidenced by the increase in their overall scores. Initially, the Belief dimension and the Subjective Norm component showed the lowest scores, reflecting limited awareness in these areas. However, after the program, both components, along with Enabling Factors, demonstrated substantial improvements, highlighting the program’s effectiveness in enhancing participants’ comprehension and attitudes towards CHD. Participants also achieved higher motivation towards the significance of self-awareness, the influence of the surrounding environment, and the role of health personnel in preventing CHD, as indicated by the rise in scores on the Subjective Norm component.

The multivariate analysis identified that among various factors observed, individuals with a history of ACS and older age demonstrated greater improvements in their BASNEF scores following the educational program. This highlights age and post-ACS history can be regarded as important determinants of knowledge improvement concerning CHD through a health promotion program. A prior study indicates that approximately 50% of patients with CHD in the emergency unit had a lack of knowledge, attitudes, and beliefs regarding their health condition [29]. This phenomenon arises due to a substantial lack of comm-

unication between healthcare practitioners and patients [29, 30], highlighting the necessity of implementing health awareness campaigns specifically targeting individuals at risk ages and populations at high risk of CHD [30, 31]. Insufficient public knowledge of the significance of undergoing routine health examinations has been recognized as a contributing element to the public's lack of understanding regarding their risk factors for CHD [31, 32]. Therefore, it is crucial to prioritize these activities in order to effectively implement health promotion strategies aimed at preventing CHD.

The multivariate analysis showed varied levels of improvement among high-risk participants with these modifiable factors. Interestingly, only those with a history of ACS exhibited an enhancement in their scores after the CHD educational program, indicating a differential impact of the intervention on this specific subgroup. Individuals will have a significantly greater awareness of certain diseases and a greater intention to seek information regarding their condition, according to a previous study, once they have personally experienced the disease [33]. Knowledge about a particular disease that is being experienced was reported as strongly correlated with the number of positive perceptions about the disease and tends to have a positive influence on quality of life [33]. Moreover, government attention to health service policy is increasingly being driven by experiential knowledge through quality studies [33-35].

According to CHD risk factors such as hypertension among 54% of participants, a previous study found that hypertension can be prevented by society with individual knowledge of hypertension prevention behavior [36]. Based on a previous survey conducted, public knowledge about hypertension was in a good category (54.4%) after giving sets of health promotion about hypertension and related comorbid diseases [37]. The greater an individual's knowledge regarding the causes of hypertension, trigger factors, signs and symptoms, and normal range of blood pressure, the individual will tend to avoid factors that can trigger hypertension [38]. There is a correlation between people who have a good knowledge of particular diseases and their awareness of preventing themselves from the diseases [7]. The chance of developing CHD could be reduced by adopting a healthy lifestyle, which includes refraining from smoking, engaging in appropriate physical exercise, and reducing rising blood pressure through effective management [39].

Efforts to enhance health promotion habits should incorporate the implementation of behavioral modification strategies that are appropriate for the individual's age and job situation [7, 23]. Thus, the dissemination of information should be given priority in health promotion approaches in order to increase both understanding and consciousness of CHD. A previous study also found that participants' knowledge showed a substantial improvement after their involvement in an educational program, with an overall score improved by 57.9% from the pre-test to the post-test [40]. Enhancing disease awareness fosters a heightened level of precise public comprehension about diseases and promotes adherence to a healthy lifestyle as a preventive measure against CHD. Hence, possessing knowledge about the disease can aid in impeding the disease progression and managing the risk factors associated with CHD [28].

There is a possibility that the findings of this health promotion study will be influenced by the constraints of the study. Our health promotion program did not make a comparison between a control and a case group. The results of the pre-test and post-test were determined by conducting research with a group of 113 participants. Therefore, to assess the influence that this CHD educational program has on the participants' beliefs, attitudes, subjective norms, and enabling variables, it may be necessary to conduct research that includes a control group and a bigger sample size. To guarantee that the participants' health profiles will continue to improve as a consequence of this educational program, it may be necessary to implement a routine health assessment program for the participants.

## CONCLUSION

This study suggests that educational interventions can significantly alter participants' beliefs, attitudes, subjective norms, and enabling factors related to CHD, potentially enhancing their understanding of risk factor management. Although most respondents attained commendable scores on average before the educational intervention [pre-test], there remained a pervasive deficiency in belief and subjective norms concerning CHD among all respondents. The findings underscore the effectiveness of targeted educational interventions in enhancing public awareness and understanding of CHD risk factors and preventive measures. However, the study's limitations include the absence of a control group and a relatively small sample size of 113 participants, which may affect the generalizability of the results. These findings should be confirmed with a control group and a bigger sample in future studies to ensure educational program sustainability. Local health officials must develop health promotion measures to increase CHD education to raise public awareness. This study may help to design instructional materials or health promotion approaches to prevent CHD for community health workers and improve their popu-lation's health.

## AUTHORS' CONTRIBUTION

S.T., W.H.: Study conception and design were contributed; P.E.N.D.: Collected the data and the manuscript was drafted. All authors reviewed the results and approved the final version of the manuscript.

## LIST OF ABBREVIATION

| | | |
|---|---|---|
| ACS | = | Acute coronary syndrome |
| BASNEF | = | Beliefs, attitudes, subjective norms, and enabling factors |
| CHD | = | Coronary heart disease |
| FMC | = | First medical contact |
| MACE | = | Major adverse cardiac disease |

## ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study includes human subjects and received approval from the Health Research Ethics Board of Dr.

Sardjito Hospital and The Medical and Health Research Ethics Committee, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Indonesia (KE/FK/1694/EC/2023).

## HUMAN AND ANIMAL RIGHTS

All human research procedures followed were in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013.

## CONSENT FOR PUBLICATION

Informed consent was obtained from all participants.

## STANDARD OF REPORTING

TREND guidelines were followed.

## AVAILABILITY OF DATA AND MATERIALS

The data and supportive information are available within the article.

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## CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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