

# DETERMINANTS OF PREVENTIVE BEHAVIORS FOR CORONARY ARTERY DISEASE AMONG ADULTS IN ACEH PROVINCE, INDONESIA

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## ABSTRACT:

**Background:** Coronary Artery Disease (CAD) remains the major cause of mortality in developing countries including Indonesia. Rapid socioeconomic growth increases the risk factors for CAD including having hypertension, hypercholesterolemia, diabetes, obesity and smoking. Many patients do not have symptoms of CAD until it produces sudden death. Hence, it is vital for people to perform CAD preventive behaviors in order to avert CAD. By adopting the Health Belief Model (HBM) determinants, this study investigated CAD preventive behaviors and its predictors among adults in Aceh province, Indonesia.

**Methods:** This study was conducted at two secondary hospitals and one community hospital from three districts in Aceh Province, Indonesia. A total of 178 adults aged 20 to 59 years were recruited with convenience sampling. CAD preventive behaviors questionnaire, religious attendance questionnaire, The Intrinsic Spirituality Scale, the Health Beliefs related to cardiovascular scale, the Self Efficacy Questionnaire on Health Behavior were employed to collect the data. Descriptive statistics, Pearson's  $r$  correlation, Eta coefficient and Stepwise multiple regression were employed to analyze the data.

**Results:** Half of the participants (50.6%) were at average level of CAD preventive behaviors. Age, gender, religious attendance, religious salience, perceived susceptibility, perceived severity, perceived benefits, and self-efficacy were positively and significantly related to CAD preventive behaviors ( $r = .278$ ,  $r = .252$ ,  $r = .838$ ,  $r = .602$ ,  $r = .519$ ,  $r = .244$ ,  $r = .405$ , and  $r = .285$ , respectively). Perceived barriers was negatively and significantly correlated with CAD preventive behaviors ( $r = -.297$ ). Religious attendance, gender, perceived benefits, religious salience and self-efficacy together explained 80.3% of the variation in CAD Preventive behaviors ( $R^2 = .803$ )

**Conclusion:** Religious attendance, gender, perceived benefits, religious salience and self-efficacy were significant predictors of CAD preventive behaviors among adults in Aceh Province Indonesia. A gender specific cultural-based nursing intervention enhancing benefits and self-efficacy is suggested to help people avoid developing CAD.

**Keywords:** Adults; Coronary Artery disease preventive behaviors; Indonesia

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## INTRODUCTION

Coronary Artery Disease (CAD) remains the leading cause of cardiovascular mortality worldwide. It is estimated that 7.4 million people died from CAD in 2012 [1]. CAD mortality rates will be double in 2020, with approximately 82% of the increase attributable to the developing countries [2].

Rapid socioeconomic growth increases exposure to the risk factors for CAD including having hypertension, hypercholesterolemia, diabetes, obesity and smoking. According to the latest National Survey 2013, the prevalence of CAD in Indonesia is 1,146,009 cases for male and 1,416,557 cases for female. Of 34 provinces, 2.3 % of CAD incidence was reported in Aceh province which is the fourth highest incidence nationally [3].

CAD develops since young age due to

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cholesterol deposits (plaques) build up called atherosclerosis, narrowing the coronary arteries. The plaques will block the blood supply to the heart muscle [4]. Unfortunately, most patients do not feel any symptoms until it produces a heart attack. Hence, it is vital for people to perform CAD preventive behaviors in order to avert from CAD. American Heart Association (AHA) defined CAD preventive behaviors as continuous presence of 4 favorable health behaviors including abstinence from smoking within the last year, ideal BMI, physical activity at goal, healthy dietary pattern that promotes cardiovascular health, and the simultaneous presence of 4 favorable health factors which are abstinence from smoking within last year, total cholesterol <200 mg/dl, blood pressure <120/<80 mmHg, and absence of diabetes mellitus, and the absence of clinical cardiovascular disease [5].

Smoking is a major risk for CAD. Active cigarette smoking increases 80% in risk of CAD and 30% associated to passive smoking [6]. Smoking is common among men and become as a culturally habit in Indonesia. In addition, there is no smoking regulation policy arranged by Indonesian government. Consequently, people smoke everywhere at coffee shops, restaurants, in public transportations, and at any public facilities. Statistic showed that 56.7% of Indonesian adults are smoker [7]. Previous study discovered that the prevalence of CAD was significantly higher among smoker in Indonesia particularly among older group [8].

Obesity is recognized as a major risk factor for atherosclerosis. Being overweight leads to higher BMI, fat deposits in the arterial wall, insulin resistance, promote endothelial dysfunction [9]. In Indonesia, overweight and obesity are becoming problems in both urban and rural area. Obesity is higher among women due to women seems to have higher propensity to store fat [10]. Survey in Indonesia illustrated that the proportion of male adult with a BMI above 25 kg/m<sup>2</sup> is 19.7%, and the proportion of female adult with a BMI above 25 kg/m<sup>2</sup> is 32.9%. In Aceh province, 23 % of female with a BMI above 25 kg/m<sup>2</sup> and 9.5% of male with a BMI above 25 kg/m<sup>2</sup> [3].

Physical activity is defined as any bodily movement produced by skeletal muscle that results in energy expenditure [11]. Physical activity both prevents and helps treat many established atherosclerosis risk factors, including elevated blood

pressure, insulin resistance and glucose intolerance, elevated triglyceride concentrations, low HDL concentration and obesity [12]. Indonesian population is generally classified as physically inactive (26.1%), while in Aceh province 37.2% of Acehnese are classified as having sedentary lifestyle [3].

Unhealthy dietary pattern may impact weight and CAD morbidity. AHA selected 5 aspects of diet to define a healthy dietary pattern: fruits and vegetables more than 4 servings per day, fish more than 2 servings per week, fiber-rich whole grain more than 1.1 grams of fiber per day, sodium less than 1500 mg per day, and sugar less than 450 kcal per week [5]. In Indonesia, the food is a blend of various cultures such as Indian, Arab, and Malay which is mostly tasty, fatty and oily. Approximately 36.6% of Acehnese use coconut oil for cooking and consume it 20.2 grams per person daily. They also use palm oil 18.9 grams, consume sodium more than 2,000 mg, sugar more than 50 grams (150 kcal) per person daily [3].

Numerous factors may link to the intention of adopting CAD preventive behaviors. According to the Health Belief Model (HBM), in order to adopt a new recommended behavior, one must feel personally susceptible to a severe and serious illness and one must believe that the benefits of following the recommended action outweigh the costs or other barriers to performance [13]. Earlier study found that perceived susceptibility, perceived benefits and self-efficacy had significance association with health-related problem due to smoking [14]. Perceived susceptibility and perceived benefits were associated to exercise among cardiac prevention patients [15]. Perceived severity of CHD and perceived benefits of exercise are associated with CHD exercise program [16-18]. Self-efficacy was the strongest predictor of behavior in cardiac patients' program [19-21]. Perceived susceptibility of CHD and perceived seriousness of CHD explained 76% of the variance of CHD behaviors [22]. Perceived susceptibility and perceived benefits were associated to quit smoking among patients with chest pain symptom [23]. Perceived benefits and barriers were associated with men's heart-healthy behaviors [24].

Regarding the modifying factors, prior studies found that younger individuals had poorer cardiac health behaviors compared to older individual [25-27]. Women seek medical attention more frequently than men [28]. Female had a stronger predictor

between pretreatment motivation and perceived risks of smoking compared to male [29]. Attending to religious activities affected systolic and diastolic blood pressure [30]. People with greater level of religious attendance were less likely to smoke [31]. Religious service attendance promoted health and lifestyle behaviors that lower CAD risk [32]. Adults who were more salience were 15% less likely to smoke [33]. Religious salience was significant predictor of smoking [34].

Many previous studies have been conducted by adopting the determinants suggested by HBM theory. However, not many studies explored the cultural aspects particularly among Muslim population. Therefore, this study investigated the predictors of CAD preventive behaviors in Aceh Province, Indonesia. The independent variables in this study were derived from HBM constructs. Two religious variables (religious attendance and religious salience) were added as the modifying factors.

## METHODS

A descriptive predictive study was conducted at 2 secondary hospitals and 1 community hospital among adults Muslims who were not diagnosed with CAD coming to outpatient units for health care services. All independent variables were used to estimate and calculate the sample size using the Power Analysis and Sample Size (PASS) software. Based on the effect size of  $R = .3$ , to achieve a power of 80% at significant level of .05, 167 subjects were required. In order to overcome the missing data, 178 subjects were recruited. A convenience sampling technique was used to recruit the subjects. The inclusion criteria were: 1) Muslim male and female aged 20-59 years old who are not diagnosed with CAD; 2) no limitation of communication in both written and spoken Indonesian language; and 3) having the report on cholesterol and fasting blood glucose during the last three months. Finally, 60 participants were recruited from Rumah Sakit Umum Langsa hospital, 60 participants from Cut Meutia Hospital and 58 participants from Puskesmas Lhoksukon.

### Measurements

Demographic characteristics questionnaire was created by the researcher. It consisted of both closed-ended questions and open-ended questions asking about age, gender, marital status, education level, occupation, reason of coming to the hospital and health history.

CAD preventive behaviors questionnaire developed by AHA was used in this study [5]. The questionnaire assessed four health behaviors and three health factors (smoking behavior, BMI, physical activity and dietary, total cholesterol, blood pressure, and fasting plasma glucose). The fixed seven items were classified into three levels (poor = 0, intermediate = 1, ideal = 2). For smoking behavior, the participants were asked to choose their current smoking status (yes = poor, quit <12 months = intermediate, and never or quit >12 months = ideal). Body mass index of the participants was taken from participants' medical records ( $>30 \text{ kg/m}^2$  = poor,  $25\text{-}29.9 \text{ kg/m}^2$  = intermediate, and  $<25 \text{ kg/m}^2$  = ideal). For item physical activity, participants were given option: (1) none (poor); (2) 1-149 minutes weekly moderate intensity or 1-74 minutes weekly vigorous intensity or 1-149 minutes weekly moderate + vigorous intensity (intermediate); (3) >150 minutes/week moderate intensity or >75 minutes weekly vigorous intensity or >150 minutes moderate + vigorous (ideal). For diet, the participants were asked to choose the dietary components including: (1) fruits and vegetables more than 4.5 cups per day; (2) Fish more than 2 serving per week preferably oily fish, or equal to 6 ounces; (3) Fiber-rich whole grains more than 1.1 g of fiber per day; (4) Salt less than 1500 mg per day, or less than  $\frac{3}{4}$  teaspoon per day; (5) Sugar less than 450 kcal per week, or no more than 4 teaspoon daily. Those who chose only 1 component classified as poor, 2 to 3 components as intermediate, 4 to 5 components as ideal dietary score. For item total cholesterol ( $>240 \text{ mm/dl}$  = poor,  $200\text{-}239 \text{ mg/dl}$  = intermediate,  $<200 \text{ mg/dl}$  = ideal). Blood pressure (systole  $>140$  or diastole  $>90 \text{ mmHg}$  = poor, systole  $120\text{-}139$  or diastole  $80\text{-}89 \text{ mmHg}$  = intermediate, systole  $<120$  or diastole  $<80 \text{ mmHg}$  = ideal). Item fasting plasma glucose ( $>126 \text{ mm/dl}$  = poor,  $100\text{-}125 \text{ mm/dl}$  or treated to goal = intermediate,  $<100 \text{ mmHg}$  = ideal). Item cholesterol, blood pressure and fasting plasma glucose were taken from participants' medical record. The total scores ranged from 0 to 14 points. The scores were further classified into three categories: inadequate (0 – 4 points), average (5 – 9 points), and optimum (10 – 14 points). The content validity index was acceptable (1) and the reliability of the questionnaire was acceptable (.86).

Religious attendance questionnaire was modified from the religious attendance questionnaire [35]. It measured the frequency of the participants

attending to the mosque for to perform congregational prayers. The original questionnaire consisted of 1 item that asking about the frequency of the participants attending to the religious service. One additional question was added to represent the Islamic teaching class. The participants were asked to rate the frequency of attendance to the mosque for prayers and Islamic lecturers. Each item scored from 0 to 4, in which 0 corresponded to an absence of attend to the mosque and 4 corresponded to the maximum of attendance. The total scores ranged from 0 to 8, higher scores indicated higher religious attendance. The content validity index was satisfied (1). The reliability was acceptable (.87).

The Intrinsic Spirituality Scale (ISS) for Muslims was used to capture religious salience degree [36]. It consisted of 6 items asking about information regarding the importance of Islam and the degree to which the participants involved in Islamic practice. Each item scored from 0 to 10, in which 0 corresponded to an absence or zero amount of attribute, while 5 corresponded to a medium or moderate amount of the attribute, and 10 corresponded to the maximum of the attribute. The total scores ranged from 0 to 60. Higher scores indicated the more importance of Islam toward the participants and the more involved the participants in Islam practice. The content validity index was acceptable (1). The reliability was acceptable (.86).

The Health Beliefs related to Cardiovascular (HBCVD) scale was employed to measure the HBM constructs related to cardiovascular disease [37]. The HBCVD scale consisted of 25 items (perceived susceptibility 5 items, perceived severity 5 items, perceived benefits 6 items, perceived barriers 9 items) with the 4-point Likert scale, ranging from Strongly Disagree (1) to Strongly Agree (4). The reliability of susceptibility, severity and benefits was acceptable ranged from .72 to .93. The reliability of barriers was acceptable (.70). The content validity index were acceptable (1).

The Self-Efficacy Questionnaire on Health Behaviors was used measure self-efficacy [38]. It consisted of 9 items asking about the confidence of one's ability to quit smoking, do exercise, control diet and weight. The participants were asked to respond yes (5), probably yes (4), maybe (3), probably not (2), and no (1). The reliability of questionnaire was satisfied (.83), and the content validity was satisfied (1). An expert committee, comprised of three nursing professionals who are

expert in adult nursing field in Indonesia held a meeting to assess the content validity of all the instruments

#### **Ethical consideration**

This present study was approved by the Institutional Review Board (IRB) Ethical Committee University of Sumatera Utara Medan (Approval Letter no. 813/IV/SP/2016).

#### **Data analysis**

The level of significance of the study was set at  $\alpha = .05$ . The descriptive statistic was conducted including frequency, percentage, mean, and standard deviation, to describe demographic characteristics and CAD preventive behaviors of the subjects. The assumptions regarding normality of data distribution of independent and dependent variables, linearity of relationship, and multicollinearity were tested. Nominal data (gender) was recoded to dummy variable (male = 0, female = 1). Pearson's r correlation was executed to analyze the relationship between age, religious attendance, religious salience, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self- efficacy and CAD preventive behaviors. Eta coefficient was conducted to examine the relationship between gender and CAD preventive behaviors. Eventually, stepwise multiple regression was adopted to identify the predictors of CAD preventive behaviors.

#### **RESULTS**

A total of 178 Muslims who met the inclusion criteria were recruited in this study. More than half participants (54.5%) were female, and 81 participants (45.5%) were male. One third of the participants aged between 30 to 39 years old, the average age of the participants was 38.92 years. Majority of the participant were married (84.8 %). Level of education of the participants was Secondary School (35.4%), followed by Tertiary School (25.8%), Bachelor Degree (19.7%). Most of the subjects came to outpatient units for health services such as health counseling and receiving treatment for their current disease (80.9%). Participants were suffering from dyspepsia (35.7%), followed by hypertension (21.9%). Half of the participants (50.6%) was at average level of CAD preventive behaviors. In addition, 45.5% of them was at optimum level of CAD preventive behaviors, and only 3.9% was at inadequate level of CAD preventive behaviors, as shown in Table 1.

**Table 1** The level of CAD preventive behaviors of 178 adults in Aceh province

Category	Frequency	Percentage
Inadequate	7	3.9
Average	90	50.6
Optimum	81	45.5
Mean = 8.80, SD = 2.516		

**Table 2** Correlation matrix among selected factors and CAD preventive behaviors of 178 adults in Aceh province

	1	2	3	4	5	6	7	8	9	10
Age (1)	1.00									
Gender (2)	.252	1.00								
Religious Attendance (3)	.335*	.006	1.00							
Religious Saliency (4)	.320*	.079	.595*	1.00						
Perceived Susceptibility (5)	.268*	.111	.494*	.311*	1.00					
Perceived Severity (6)	.087	-.022	.238*	.201*	.181*	1.00				
Perceived Benefit (7)	.147	.099	.274*	.255*	.386*	.277*	1.00			
Perceived Barriers (8)	.120	-.120	-.202*	-.157*	-.277*	-.173*	-.315*	1.00		
Self-Efficacy (9)	.017	.258*	.164*	.150*	.087	.226*	.091	-.294*	1.00	
CAD Preventive Behaviors (10)	.278*	.252*	.838*	.602*	.519*	.244*	.405*	-.297*	.285*	1.00

\*Correlation is significant at the 0.05 level (2-tailed).

**Table 3** Predictors of CAD preventive behaviors among adults in Aceh province (n = 178)

	b	SEb	b <sub>adj</sub>	95 % CI		p-value
				LB	UB	
(Constant)	-2.159	.884		-3.903	-.415	.016
Religious Attendance	1.288	.077	.716	1.135	1.440	.000
Gender (0 = male, 1 = female)	1.017	.178	.202	.666	1.368	.000
Perceived Benefits	.126	.029	.153	.068	.184	.000
Religious Saliency	.039	.015	.108	.009	.070	.012
Self-Efficacy	.035	.014	.085	.006	.063	.017
R <sup>2</sup> = .803	R <sup>2</sup> <sub>adj</sub> = .797	SE=1.133				p-value = .000

### Correlation between selected factors and CAD preventive behaviors

Age and gender were positively and significantly correlated with CAD preventive behaviors ( $r = .278$ ,  $p < .05$ ;  $r = .252$ ,  $p < .05$ ), meaning that older people in Aceh were more likely performed CAD preventive behaviors compared to younger. Furthermore, Acehnese female were more likely adopted CAD preventive behaviors than male. Religious attendance and religious saliency were positively and significantly correlated with CAD preventive behaviors ( $r = .838$ ,  $p < .05$ ;  $r = .602$ ,  $p < .05$ ), indicating that the more frequent Acehnese attended to the mosque for praying, the better CAD preventive behaviors, and the more important Islam for them, the better CAD preventive behaviors. Perceived susceptibility, perceived severity, perceived benefits and self-efficacy were positively and significantly correlated with CAD preventive behaviors ( $r = .519$ ,  $p < .05$ ;  $r = .244$ ,  $p < .05$ ;  $r = .405$ ,  $p < .05$ ; and  $r = .285$ ,  $p < .05$ ), meaning that if Acehnese believe that CAD was a threat for them,

they would adopt CAD preventive behaviors. In addition, if Acehnese believe that a recommended behavior was beneficial for them and they believe they were able to perform the action, they would adopt CAD preventive behaviors. Lastly, perceived barriers was negatively and significantly correlated with CAD preventive behaviors ( $r = -.297$ ,  $p < .05$ ), meaning that the more obstacles they had, the less likely Acehnese would adopt CAD preventive behaviors. The correlation matrix is presented in Table 2.

### Predicting factors of CAD preventive behaviors

Stepwise multiple regression was adopted to select variables significantly related to CAD preventive behavior. The resulted shown that religious attendance was the first variable entered into the model followed by gender, perceived benefits, religious saliency and self-efficacy. Factors significantly predicted CAD preventive behaviors were religious attendance, gender, perceived benefits, religious saliency and self-efficacy. They

explained 80.3 % of the total variation of CAD preventive behaviors among adults in Aceh Province. If religious attendance, perceived benefits, religious salience and self-efficacy of Acehnese adults increased, they would perform better CAD preventive behaviors. In addition, Acehnese female were more likely to adopt CAD preventive behaviors compared to male, as shown in Table 3.

## DISCUSSION

In this study it was found that half (50.6%) of adults from Aceh Province Indonesia performed CAD preventive behaviors at average level. In addition, 45.5% of them performed optimum CAD preventive behaviors, and 3.9% performed inadequate CAD preventive behaviors. To meet the complete definition of CAD preventive behaviors, an individual would need to meet the ideal levels of all 7 components of the health behaviors or achieve the optimum level of the points [5]. Based on these criteria, this study discovered that only 45.5% of adults in Aceh had the ideal level of CAD preventive behaviors. This finding congruent to the National Survey in Indonesia found that Poor CAD preventive behaviors increase considerably in Indonesia such as cigarette smoking, unhealthy diet, and sedentary lifestyle and obesity [3]. Indonesia is a developing country. Rapid socioeconomic growth in developing countries including increases exposure to risk factors for CAD, such as diabetes, hypercholesterolemia, dietary, hypertension and smoking [2].

Age was significantly and positively correlated with CAD preventive behaviors ( $r = .278, p < .05$ ), indicating that older adults in Aceh were more likely to have better CAD preventive behaviors than younger adults. Older people feel more vulnerable to a disease due to the decrease of body function. In addition older people tend to have health problem due to the aging process compared to younger. This finding is relevant with prior study found that people over 51 years of age were more likely participating in specific screening health checks than people at younger age [25]. Another study showed that Middle-aged adults generally had poorer health behavior levels compared to older individuals [26].

Gender (female) was significantly and positively correlated with CAD preventive behaviors ( $r = .252, p < .05$ ), signifying that adults women in Aceh were more likely to adopt CAD preventive behaviors compared men. Gender predicted CAD preventive behaviors while controlling the other variables.

Culturally, women in Aceh are less likely to smoke compared to men. Frequently, women become the family health caregivers, encouraging male partners and family members to attend for health check. This result similar to previous study found that women were more likely to visit their medical practitioner compared to men [39]. It was found that adherence to 3 heart-healthy lifestyle behaviors was higher among women than men [40]. Women were more likely than men maintained a health weight and women did not smoke compared to men [41].

Religious attendance was significantly and positively correlated with CAD preventive behaviors ( $r = .838, p < .05$ ). Among other variables, religious attendance was the strongest predictor of CAD preventive behaviors among adults in Aceh, indicating that the more adults attended the mosque for congregational prayers or Islamic lecturers, the better CAD preventive behaviors. Aceh is the only Province in Indonesia which applying the Islamic *Shari'a* law into the practice. According to *Shari'a* law, Muslims are suggested to attend the mosque 5 times daily for prayers. A teaching may be held after the prayer procession. The subject of the teachings are not only addressing about religiosity, but also about health-related behaviors. The more a Muslims attend to the Mosque, the more information regarding health-related behaviors he/she gain from the teachings. This finding supported prior study discovered that Muslims who did not attend prayers compared to those who praying on time were 2.87 times at risk of health problems [42]. Another study in Kuwait found that religious attendance affected systolic and diastolic blood pressure [30].

Religious salience was significantly and positively correlated with CAD preventive behaviors ( $r = .602, p < .05$ ). Regression results showed that religious salience predicted CAD preventive behaviors by controlling other variables, meaning that the more importance Islamic practice for adults in Aceh, the better they would implement the belief to CAD preventive behaviors. Islamic beliefs and practices regarding health behaviors are depend on the Qur'an and the Hadith (sayings of Prophet Muhammad). There are twenty eight verses in the Qur'an which is relevant to preventive behaviors [43]. For instance, there is a verse addressing about eating what is good and lawful from the earth. Another verse is talking about fasting, which is scientifically proven reducing the level of glucose and cholesterol value as well as maintaining the ideal weight. There are more verses addressing

about certain aspects of health such as prohibition of eating carrion, pig meat, blood, intoxicants, healing in honey, alcohol abstinence, discouraging of free sex, it even has a specific verse addressing about the heart [43]. These religious verses are greatly influenced the health behaviors of the Muslims specifically for those who have greater salience. The results confirmed previous study revealed that religious salience was significant predictor of smoking [34]. People who were more salience were 15% less likely to smoke [33].

Perceived susceptibility and perceived severity were significantly and positively correlated with CAD preventive behaviors ( $r = .519, p < .05$ ;  $r = .244, p < .05$ ), meaning that the more the people believed that they were vulnerable to CAD, the better they engaged in CAD preventive behaviors. According to the HBM, the greater perceived risk, the better the likelihood of involving to a behavior to reduce the risk. When people believe they are at risk for a disease, they will be more likely to do something to prevent it from happening [13]. Past study revealed that perceived susceptibility of CHD can predict CHD preventive behaviors among women and it accounted for 50.7% of the variance [23]. Perceived susceptibility to ischemic heart attack associated with cardiac health related behavior among patient with chest pain [24]. Perceived threat to health was related to exercise habits among coronary heart disease patients [44]. Perceived severity predicted the willingness to engage in preventive health behaviors among cardiac patients [28].

Perceived benefits was significantly and positively correlated with CAD preventive behaviors ( $r = .405, p < .05$ ). Perceived benefits can predict CAD preventive behaviors among adults in Aceh, meaning that the more the people believed that a new behavior will decrease their chances of developing CAD, the more they involved in CAD preventive behaviors. The finding similar to former study revealed that perceived benefits was associated with exercise practice among CHD [15, 17]. Conversely, Perceived barriers was significantly and negatively correlated with CAD preventive behaviors ( $r = -.297, p < .05$ ), meaning that the more obstacles the adults had, the less they adopted CAD preventive behaviors. The finding affirmed prior study found that fewer barriers was associated to healthy dietary intake among cardiac patient [45, 46].

Self-efficacy was significantly and positively

correlated with CAD preventive behaviors ( $r = .285, p < .05$ ). When controlling other variables, self-efficacy predicted CAD preventive behaviors among adults in Aceh, indicating that the more the adults think that they were capable performing the behaviors required, the greater the chance of conducting CAD preventive behaviors. If someone believes that a new behavior is useful, and think that she/he is capable of doing it, the chances are that she/he will try the new behavior is greater [47]. Numerous previous studies about self-efficacy discovered the same results. Self-efficacy was the strongest predictor of behavior to modify cardiovascular risk factors [20, 48].

## CONCLUSION

The results showed that 50.6% of Indonesian from Aceh Province performed CAD preventive behaviors at average level and 45.5% of adults had ideal level of CAD preventive behaviors. Age, gender, religious attendance, religious salience, perceived susceptibility, perceived severity, perceived benefits, and self-efficacy were positively and significantly associated to CAD preventive behaviors. Perceived barriers was negatively and significantly correlated with CAD preventive behaviors. Lastly the regression results showed that religious attendance, gender, perceived benefits, religious salience and self-efficacy together explained 80.3% of the variance of CAD preventive behaviors.

## LIMITATION OF THE STUDY AND RECOMMENDATION

The findings of this study might not represent Aceh and Indonesia generally since the data of the study were gathered only in three districts in Aceh Province. Therefore, a multi-ethnic studies with a larger sample are recommended to fully understand CAD preventive behaviors description in Indonesia. Further study with higher women sample is required to confirm the relationship between religious attendance and CAD preventive behaviors among women. A cultural-based pilot study in the future is suggested to be conducted in Aceh Province in term of CAD preventive behaviors programs.

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