

Exploring the impact of lifestyle modification on quality of life of patients with coronary artery disease at one hospital in Ho Chi Minh City, 2022

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ABSTRACT

Improving the quality of life (QoL) of patients with Coronary Artery Disease (CAD) is a very important tool for evaluating outcomes. Therefore, we investigated Exploring the Impact of Lifestyle Modification on Quality of Life of Patients with Coronary Artery Disease. A cross-sectional design involving patients with having Coronary Artery Disease treated in the hospital in Ho Chi Minh City. The patients (N = 180) who came to Tam Duc Hospital for pre-examination during CAD treatment were asked to answer questionnaires which included SF-36 and lifestyle. The Pearson correlation was applied to identify the relationship between the lifestyle and quality of life in this study. And Chi-square test, T test, and one-way ANOVA test was also used. The QoL of the male subjects with Coronary Artery Disease were higher than female (60.45 ± 12.71 vs. 34.88 ± 0.00 , $p < 0.01$); living in urban was higher than living in rural (61.42 ± 15.37 vs. 53.59 ± 9.7 , $p < 0.01$); and in working patients was higher than unemployment (62.45 ± 12.68 vs. 55.98 ± 14.27 , $p < 0.01$). And the results showed that approximately 47.8% of the Score of SF-36 could be accounted by the Drinking Score – one of the Lifestyle modification in the CAD patients. The quality of life of male patients were higher than that of women. The QoL of urban residents were higher than that of rural people, and working people were higher than that of retirees.

Key words: Quality of Life, Coronary Artery Disease, Lifestyle Modification.

INTRODUCTION

The quality of life (QoL) of patients with coronary artery disease (CAD) is known to be impaired (Srivastava et al., 2017). Quality of life measures are useful when interventions or treatments are indicated for several reasons such as improvement of physical functioning, pain relief, to estimate the effectiveness of therapies or to predict mortality¹. Coronary artery disease is a major cause of morbidity and mortality throughout the world². Greater cardiovascular risk factor burden is associated with increased risk of cognitive decline and dementia^{3,4}. In 2020, approximately 19.1 million deaths were attributed to CVD globally. The age-adjusted death rate per 100,000 population was 239.8. The age-adjusted prevalence rate was 7354.1 per 100,000. The highest mortality rates attributable to CVD in 2020 were

in Eastern Europe and Central Asia, with higher levels also seen in Oceania, North Africa and the Middle East, Central Europe, subSaharan Africa, and South and Southeast Asia⁵.

In Vietnam, According to author Nguyen Lan Viet, the rate of acute coronary syndrome admitted to the Vietnam National Heart Institute accounted for 4.6% and ischemic heart disease accounted for 18.3% of cardiovascular diseases⁶. Obesity, diabetes, serum cholesterol levels, hypertension, smoking, inadequate exercise, and stress each provides an important target for efforts to reduce associated morbidity and mortality². Patients with symptoms of angina react to the illness with anxiety more than depression, whereas patients with heart failure with dyspnea react to the illness with depressive symptoms more than anxiety¹. The assessment of the health related QoL is well established as a subjective indicator of health and to measure the benefits of therapy. Frequently, it is assumed that patients with CHD have a reduced QoL, especially those who had undergone palliative surgical therapy⁷.

In addition, the few studies which have investigated quality of life in patients with coronary arteries diseases in many countries. However, the studies in Vietnam are still very little, Especially, the effect of lifestyle modification on quality of life in patients with coronary arteries diseases does not study. The education of this program helps patients increase the health-related quality of life (HRQoL). So, the objective of this study was to exploring the impact of lifestyle modification on Quality of life of patients with coronary artery disease.

RESEARCH METHODOLOGY

A cross-sectional design was applied in this study

The research collected at the Out Department at Tam Duc Cardiology hospital. The sample size was 180 people with CAD re-examination treatment at Out-patient Department.

Inclusive criteria in the study, the patients have got Coronary Artery Disease and out-patient who come to take examination in the Hospital in Ho Chi Minh city. Potential participants also had finished

with demographic characteristics, medical record question, and complete the self-administered SF36 and Lifestyle-7 questionnaire. The patients completely agreed to join the study. Data collection from February to March 2021 at Out-patient Department of Cardiology. Participants agreed to sign the consent form. They were completed the questionnaire in time from 40-50 minutes. After the questionnaire is completed and rechecked. The data were entered into SPSS 20 software for analysis.

Questionnaire

The demographic question

Age, gender, residence, marital status, working status, education.

The quality of life by the SF-36

The research instrument for evaluating the quality of life was the SF-36 questionnaire from The RAND 36 Items Health Survey, Version 1.0 by Vietnamese, that was checked by the reliability of the SF - 36 questionnaire with Cronbach's $\alpha = 0.67$ ⁸. The Cronbach's α for questionnaire of our study is 0.563. The SF-36 questionnaire shows eight domain. It is physical functioning (PF) 10 items, role limitations due to physical health problems (RP) 4 items, bodily pain (BP) 2 items, general health perceptions (GH) 6 items, vitality (VT) 4 items, social functioning (SF) 2 items, role limitations due to personal or emotional problems (RE) 3 items and mental health (MH) 5 items.

Questionnaire lifestyle

Low-fat diet, low-salt diet, regular exercise, weight-loss diet, stress reduction in daily life, drinking in moderation, smoking interruption.

Data analysis

The results were controlled the satisfied with the research's criteria and analyzes statistic the SPSS software version 20.0 to analyze the ratio and relationships. The types of data were illustrated as the following. SF-36 (Total score) with Demographic data, lifestyle modification (each domain) with demographic data, SF-36 (Total score) and lifestyle modification (each domain), SF-36 (Total score), demographic data and lifestyle modification (Total score) in this study.

RESULTS

Demographic characteristics of participants

Table 1. The descriptive of demography variable (N=180)

Variables		n	Percentage
Gender	Male	166	92.2
	Female	14	7.8
Living Place	Urban	112	62.2
	Rural	68	37.8
Married Status	Single	19	10.6
	Married	135	75
	Divorced	26	14.4
Working status	Working	69	38.3
	Unemployment	111	61.7
Education	Under high school	86	47.8
	High school	34	18.9
	College/University	43	23.9
	Graduated	17	9.4

The results showed that there are 92.3% percentage male participated the survey. The participants who came from urban 62.6% and rural 37.8%. Only 10.6% and 14.4% of them were single or divorced. There are 75 % who got married. There was 38.3% participant was working and 61.7% of them was unemployment. Therefore, only 9.4% participants was graduated, 23.9% of them was graduated at college/university, 18.9% of them was high school and 47.8 % was under high school.

Table 2. The descriptive of demography variable (N=180)

Variables	Minimum	Maximum	Mean±SD
Age	46	85	66.06 ± 13.025

The result showed that the range of age is from 46 years to 85 years, the average age was 66.06 ± 13.025.

Coronary Artery Disease Patient's Lifestyle

Table 3. The Patient's Lifestyle nominal variable (N=180)

Variable		n	Percentage
Low-fat Diet	Yes	143	79.4
	No	37	20.6
Low-sodium Diet	Yes	139	77.2
	No	41	22.8
Low-weight	Yes	139	77.2
	No	41	22.8
Regular exercise	Yes	139	77.2
	No	41	22.8

The result showed that most of Patients with Coronary Artery Diseases have been changed their lifestyle. The percentage use Low-fat Diet, Low-sodium Diet are 79.4 % and 77.2%.

Table 4. The Patient's Lifestyle continuing variable (N=180)

Continue Variable	Minimum	Maximum	Mean
Drinking (scale 0-10)	0	8	1.24 ± 2.48
Smoking Interruption (scale 0-10)	0	5	1.12 ± 1.85
Stress reduction (scale 0- 10)	0	10	1.84 ± 3.00
Weight loss (scale 0 – 10)	0	10	2.24 ± 4.00

Almost CAD patients who used alcohol and smoking have gradually been using a Scale from 1 to 10 with a mean of 1.24 ± 2.48 and 1.12 ± 1.85.

Quality of Life of Coronary Artery Disease Patients

Table 5. The Patient's Quality of Life variable (N=180)

Items	Minimum	Maximum	Mean
Physical functioning	0	100	60.31 ± 36.53
Role functioning/ physical	0	100	60.28 ± 45.29

Items	Minimum	Maximum	Mean
Role functioning/emotional	0	100	75 ± 41.67
Energy/fatigue	40	75	57.86 ± 8.44
Emotional well-being	24	56	36.16 ± 10.07
Social functioning	25	100	65.21 ± 19.92
Pain	0	100	70.40 ± 33.55
General health	15	65	42.47 ± 17.83
Quality of Life SF-36	34.88	74.44	58.46 ± 14.00

Results indicated the range of quality of life in the CAD patients is from 34.88 to 74.44 and mean scores is 58.46 ± 14.00. Some items of them, are higher, such as: Physical functioning (60.31 ± 36.53), Role functioning/physical (60.28 ± 45.29), Role functioning/emotional (75 ± 41.67), Social functioning (65.21 ± 19.92) and Pain (70.40 ± 33.55). The others are slower: Emotional well-being (36.16 ± 10.07), General health (42.47 ± 17.83) and Energy/fatigue (57.86 ± 8.44).

The relationship between the demographic characteristics and the patient's quality of life

Table 7. The QoL of patients with Coronary Artery Disease (N = 180)

Variables		n	Mean SF-36	F	Sig.	Scheffe's test
Marital status	① Single	19	49.56 ± .00	27.732	.000*	② > ①, ③
	② Married	135	62.34 ± 13.31			
	③ Divorced	26	44.81 ± 10.95			
Education	① Under high school	86	57.96 ± 12.15	20.335	.000*	② > ①, ③, ④ ③ > ④
	② High school	34	67.16 ± 1.24			
	③ College/University	43	60.20 ± 17.91			
	④ Graduated	17	39.19 ± .00			

Note. One way ANOVA test; Dependent variable: SF-36 Score

** Levene Statistic: sig. = 0.000 < 0.05

* < 0.001

The results indicated that there is a significant difference ($p < 0.01$) among subgroups in which are married status and education. With married status, the quality of life highest in the married (62.34 ± 13.31), medium in the single (49.56 ± .00) and lowest in the divorced (44.81 ± 10.95). With education, the highest QoL is the participants with high school (67.16 ± 1.24) and lowest in the patients with graduated degree (39.19 ± .00)

Table 6. The QoL of patients with coronary artery disease

Variables		Mean Rank	T	p
Gender	Male (n=166)	97.50	7.509	.000
	Female (n=14)	7.50		
Living Place	Urban (n=112)	100.82	3.766	.000
	Rural (n=68)	73.50		
Working status	Working (n=69)	107.97	3.170	.002
	Unemployment (n=111)	79.64		
Note. T = T-test; Dependent variable: SF-36 Score				

The results showed that there is have a significant difference about quality of life in the CAD patient in gender, living place, and Working status. With gender, the QoL in male higher than female with $p < 0.000$. With living place, the QoL of patients living in urban is higher than in rural with significant $p < 0.000$. Finally, with working status, the QoL of working patients is higher than in people who are unemployed (with significant $p < 0.002$).

The associations between the demographic characteristics and the lifestyle of patients with Coronary Artery Disease

Table 8. Associations between the demographic characteristics and low-lipid diet

Demographic characteristics		Low-Lipid Diet		X ²	p
		No	Yes		
Gender	Male	37 (23.3%)	129 (77.7%)	3.928	0.047
	Female	0 (0%)	14 (100%)		
Living place	Urban	17 (15.2%)	95 (84.8%)	5.249	0.022
	Rural	20 (29.4%)	48 (70.6%)		
Married status	Single	0 (0%)	19 (100%)	15.524	0.000
	Married	37 (27.4%)	98 (72.6%)		
	Divorced	0 (0%)	26 (100%)		
Working status	Working	32 (53.6%)	32 (46.4%)	74.922	0.000
	Unemployment	0 (0%)	111 (100%)		
Education	Under high school	20 (23.3%)	66 (76.7%)	23.065	0.000
	High school	0 (0%)	34 (100%)		
	College/University	17 (39.5%)	26 (60.5%)		
	Graduated	0 (0%)	17 (100%)		

There is an association of gender and living place with whether or not participants get lipid diet ($p < 0.05$). There is an association Married Status, working status, and Education with whether or not participants get lipid diet ($p < 0.001$).

Table 9. Associations between the demographic characteristics and low-salt diet

Demographic characteristics		Low-Salt Diet		X ²	p
		No	Yes		
Gender	Male	41 (24.7%)	125 (75.3%)	4.478	0.037
	Female	0 (0%)	14 (100%)		
Living place	Urban	21 (18.8%)	91 (81.2%)	2.734	0.098
	Rural	20 (29.4%)	48 (70.6%)		
Married status	Single	0 (0%)	19 (100%)	17.698	0.000
	Married	41 (30.4%)	94 (69.6%)		
	Divorced	0 (0%)	26 (100%)		
Working status	Working	37 (53.6%)	32 (46.4%)	60.524	0.000
	Unemployment	4 (3.6%)	107 (96.4%)		
Education	Under high school	20 (23.3%)	66 (76.7%)	14.235	0.003
	High school	4 (11.8%)	30 (88.2%)		
	College/University	17 (39.5%)	26 (60.5%)		
	Graduated	0 (0%)	17 (100%)		

There is an association of between gender and whether or not participants get salt diet ($p < 0.05$). There is no association of between living place and whether or not participants get salt diet ($p > 0.05$). There is an association Married Status, working status, and Education with whether or not participants get salt diet ($p < 0.01$).

Table 10. Associations between the demographic characteristics and physical exercise

Demographic characteristics		Physical Exercise		X ²	p
		No	Yes		
Gender	Male	41 (24.7%)	125 (75.3%)	4.478	0.037
	Female	0 (0%)	14 (100%)		
Living place	Urban	21 (18.8%)	91 (81.2%)	2.734	0.098
	Rural	20 (29.4%)	48 (70.6%)		
Married status	Single	0 (0%)	19 (100%)	17.698	0.000
	Married	41 (30.4%)	94 (69.6%)		
	Divorced	0 (0%)	26 (100%)		
Working status	Working	37 (53.6%)	32 (46.4%)	60.524	0.000
	Unemployment	4 (3.6%)	107 (96.4%)		
Education	Under high school	20 (23.3%)	66 (76.7%)	14.235	0.003
	High school	4 (11.8%)	30 (88.2%)		
	College/University	17 (39.5%)	26 (60.5%)		
	Graduated	0 (0%)	17 (100%)		

There is an association of between gender and whether or not participants get physical exercise ($p < 0.05$). There is no association of between living place and whether or not participants get physical exercise ($p > 0.05$). There is an association Married Status, working status, and Education with whether or not participants get physical exercise ($p < 0.01$).

Relationship between the lifestyle and quality of life in patients with Coronary Artery Disease

Table 11. Pearson Correlation between Lifestyle and quality of life

	Drinking	Smoking	SF-36
Drinking	1		
Smoking	.643**	1	
SF-36	.382**	-.041	1

**Correlation is significant at the 0.01 level (2-tailed).

The results presented that only Drinking Lifestyle significant correlated to Quality of Life in the CAD patients with the range of $r = 0.382$ is with p value < 0.01 . The result indicated the formula of the relationship between the Lifestyle Modification and Quality of Life in CAD patient is the following formula: $SF-36 = 60.616 + 2.8$ drinking score.

Table 12. The relationship of Lifestyle Modification and Quality of Life in CAD patient

Variables	Estimate	Std. Error	t- value	p-value
(Intercept)	60.616	.980	61.869	.000
SF-36	2.800	.816	3.432	.001
Variables	R ²	Adjusted R ²	F- value	p-value
Lifestyle Modification	(Constant)		40.130	.000
SF-36	0.478	0.466		

Dependent Variable: SF-36

Predictors: (Constant), Lifestyle modification.

Using Linear Model analysis

The results showed that approximately 47.8% of the Score of SF-36 could be accounted by the Drinking Score – one of the Lifestyle modification in the CAD patients.

DISCUSSION AND CONCLUSION

Demographic characteristics of participants

The result showed that the rate of male higher in Coronary Artery Disease. It was similar to the research of Enas and et al. (2019) in India showed that the age of Coronary Artery Disease in men 45 years old and 50 years old in women⁹. In this results also proved that 61.7% of participant retired or unemployed. Most of participants is under high school, therefore, they cannot recognize the necessary of physical excises or nursing education after treatment. However, indicators of lifestyle-related health/behavior for each theme were used, and regression analysis showed that individuals who were sedentary prior to the program were less likely to participate in the program's physical activities than the more active individuals¹⁰. The lower education in CAD patients also presented at 86.7% of participant with secondary school in study to find quality of life in patients with coronary artery disease¹¹.

Coronary Artery Disease Patient's Lifestyle

Tobacco cessation, exercise, and weight loss are the most important lifestyle modifications in CAD treatment¹². The result showed that most of Patients with Coronary Artery Diseases have been changed their lifestyle which are Low-fat Diet, Low-sodium Diet, Alcohol Drinking, Smoking Interruption. Li and et al. recommended that CAD patients should use medication and method which are to help treat hyperlipidemia¹³.

Quality of Life of Coronary Artery Disease Patients

The quality of life in CAD patients in the study in Slovakia is (47.6 ± 2) ¹¹ which was quite lower than in Vietnam (58.46 ± 14.00) . The results showed that the CAD quality of life in Vietnam was similar to Budzyński's study was 52.9 ± 7.7 ¹⁴. Some items in SF-

36 also similar such as Physical functioning 61.6 ± 8.7 versus 60.31 ± 36.53 in Vietnam. However, the quality of life in Vietnam was lower in Emotional well-being¹⁴. This value maybe come from the relative caring for patients after CAD treatment.

The associations between the demographic characteristics and the patient's quality of life

Research has shown that the quality of life of CAD patients is different between male and female patients. For male patients, due to cultures in Vietnam and the East, men often care for more than women, so the quality of life of men is often higher than that of women. As women are generally older, more often have hypertension, but less often have coronary heart disease¹⁵. QoL was negatively influenced by the higher number of risk factors in women. The research suggests that sex differences may be driven by the greater risk factor burden in women¹⁶. In addition, there is a difference in the patient's employment status for working people because they are earning money. Therefore, the patient's amount of money to save is more than that of unemployed patients, so the quality of life better. As for the location, people living in urban areas have a better quality of life than people living in rural areas.

The relationships between the demographic characteristics and the lifestyle of patients with coronary artery disease

The results show that the percentage of women participating in physical activity is higher than that of men. As women were more likely to interact with friends and to participate in sports groups when compared with men¹⁷. Regarding marital status, it is also easy to see that the percentage of divorced and single people who are physically active is higher than that of married people. The reason may be that single and divorced people have a higher self- reliance, while married patients rely on their children and spouse. Divorce in coronary artery disease was more frequent among women (27%) compared to men (6%)¹⁸. In coronary artery disease, more physical activity was associated with lower mortality¹⁹. For the working group, the number of people participating in the exercise is lower than that

of the unemployed or retired, perhaps because working patients may be under work pressure, or relying on the money they can afford. For the educational level, the subjects with the highest rate of physical activity were the group with post-graduate level because they were aware of the nature of the disease. Joining physical activity quite low in elderly. Participating in sports groups (such as dancing, fitness, or other sports groups) could promote physical activities for the elderly¹⁷.

The associations between the demographic characteristics and the lifestyle of patients with coronary artery disease

The study identified a positive correlation between the quality of life and alcohol consumption. For Vietnamese culture, the number of people who drink alcohol will easily smoke and vice versa. In comparison, lifestyle changes such as exercise, a low-salt regimen, or a lipid-lowering regimen do not significantly improve the patient's quality of life. Lipid-lowering therapy (LLT) improves quality of life which is a major risk factor for coronary artery disease²⁰. A large majority of coronary patients have unhealthy lifestyles in terms of smoking, diet and sedentary behavior, which adversely impacts major cardiovascular risk factors²¹. Most evidence has focused on dietary fats, due to the established relationship between serum cholesterol level and CAD. Previous evidence on the association between dietary fat intake and CAD prevention is determine. The results of review determined the evidence of the effects of nutrients which are high salt and fat on CAD risks²².

Conclusion and Recommendation

Based on the cross-sectional design, the questionnaire was surveyed on 180 patients who has been coronary artery disease. This research found the impact of lifestyle modification on quality of life of patients with coronary artery disease in Ho Chi Minh City. This result has determined the patient's quality of life, in which the score should be more concerned with the affection for the patient. The quality of life of male patients is higher than that of women. The QoL of urban residents is higher than that of rural people, and working people is higher than that of retirees. The QoL of married is highest compared to

single, divorced. The quality of life of high school is highest compared to college, under high school and graduated is lowest. Most patients made lifestyle changes such as following a low-fat diet, reducing salt, and increasing exercise. However, this change had no effect on aging on quality of life. Attention should be paid to patients with an alcoholic lifestyle, as demonstrated by their lower quality outcomes in the group. They need to adhere to treatment and make positive lifestyle changes without alcohol.

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