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Effectiveness of Nurse-Led Educational Program on Quality of Life of Geriatric Patients with Coronary Artery Disease

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ABSTRACT:

Background: The main cause of death around the world is coronary artery disease; it diminishes quality of life and precipitates psychological and physical problems in the elderly. Nurse-led educational programs, including educational booklets and sessions, significantly enhance patients' quality of life by improving knowledge regarding diet, exercise, and medication management.

Aim: The present study aimed to evaluate the effect of nurse-led educational program on quality of life of geriatric patients with coronary artery disease.

Design: This study used a quasi-experimental research design (pre-post).

Setting: The present study was carried out at the cardiac outpatient clinics of Kafr El-Sheikh, General Hospital.

Sampling: A purposive sample of 108 geriatric patients was recruited from study setting within a period of one year.

Tool of data collection: Four tools were used to gather data; Structured Interview Sheet, Coronary Artery Disease Knowledge Questionnaire, Coronary Artery Disease Practices Questionnaire, and the World Health Organization Quality of Life Assessment Instrument (WHOQOL) - (BREF).

Results: The participants' mean age was 66.79 ± 5.28 years. The overall knowledge, practices and quality of life scores improved significantly immediately after conducting the nurse-led educational program and remained significantly higher after four months compared to baseline ($P < 0.001$).

Conclusion: The nurse-led educational program effectively improved quality of life among geriatric patients with coronary artery disease.

Recommendations: Continuous educational programs should be integrated on a regular basis into mongered plan.

INTRODUCTION

The percentage of population aged 70 years and more is growing worldwide due to improved life expectancy. Consequently, the burden of CAD is expected to increase, due to the increasing age of population, particularly among older adults. Annually,

CAD cause more death than any other disease, remaining the first cause of death among the elderly worldwide. It is estimated that by 2030, CAD could result in over 23 million deaths globally (World Health Organization, 2022).

Coronary artery disease is a prevalent coronary vascular disease (CVD) that contributes significantly to mortality and morbidity in developed countries. Older adults with CAD have multiple comorbidities; suggest that 70% of adults over age 70 will develop CAD, with over two thirds also suffering from non-cardiovascular illnesses. Since the 1990s, CAD has been the primary cause of death in Egypt, accounting for 46.2% of all mortalities in 2017 (WHO, 2023). Similarly, CAD is responsible for approximately one third of all death in the United States of America (USA) and poses significant risk in developing countries. In Iran, for instance, CAD accounts for half of all annual death. It is attributed to an aging population, rapid, industrialization, and unhealthy lifestyles (Ferrucci & Fabbri 2018).

Coronary artery disease impacts the major blood vessels that supply the heart with blood, primarily due to the accumulation of lipids, cholesterol, and other materials on the arterial walls. This process leads to the narrowing arterial walls and decreasing cardiac blood flow (Shahjehan et al., 2024). Quality of life is affected by every phase of the disabling process, in chronic diseases, especially cardio vascular disease, the decline in function must be considered in relation to its effect on QOL (Ahmed et al., 2024). For patients with chronic diseases, QOL can be improved even or at least preserved, even when physical functioning cannot be reserved. One of the main problems in enhancing the QOL among elderly patients is preserving their independence in cognitive and physical activities QOL describes how individuals perceive their place in life in respect to their goals, standards, expectations, and worries as well as the culture and value systems in which they live (Weeda et al., 2019). Gerontological nurses play a key role in clinical setting, serving as assertive providers in their field. These nurses play a vital role in assisting elderly patients with CAD to enhance their QOL. This is achieved by in improving level of disease awareness, empowering elderly to manage their physical and mental health, reducing complications, hospital readmissions, and stress through targeted educational programs (Cacchione, 2020). Nurse-led usually assumed by nurses, frequently in advanced practice or specialized roles, assuming primary responsibility for patients care coordination, patients monitoring, education for health, lifestyle modification counseling, symptomatic treatment, and follow-up. The strength of nurse-led models lies in their comprehensive, humanistic philosophy, which corresponding closely with the patients' needs with many medical conditions. Moreover, nurses are exclusively positioned to deliver continuity of care, foster patient empowerment, and support self-management via consistent communication and reliable therapeutic interactions (Saizen, 2024). Research indicates that nurse-led interventions may improve a number of outcomes, such as improved quality of life, improve adherence to medication, less hospitalizations, improved disease control and higher patient satisfaction. (Choi & Seomun, 2024).

AIM OF THE STUDY:

Evaluate the effectiveness of nurse-led educational program on quality of life of geriatric patients with coronary artery disease.

Research hypothesis

Geriatric patients with coronary artery disease who receive nurse-led educational program will experience an improvement in their quality of life after implementation of the program.

METHOD

Study design:

Quasi experimental research design (pre-post) was utilized in this study.

Study Setting:

This study was conducted at the cardiac outpatient department of Kafr El- Sheikh, General Hospital.

Participants:

A purposive sample of 108 geriatric patients attending the study setting was recruited in according with the following criteria: aged sixty years and above of both sexes, prepared to participate, capable of communicate and diagnosed with CAD for at least one year. Patients with severe heart failure, rheumatic heart diseases or chronic liver and kidney diseases were not included in the study.

Sample size calculation:

The sample size was calculated using ClinCalc.com software /calculating sample size using averages for calculating number of patients to be studied. Estimation based on a previously reported improvement in total QOL (Mounir, et al., 2016). 108 older adults were needed to achieve β error 5% (95% statistical power), and alpha error level 1% (99% significance).

TOOL OF DATA COLLECTION

Tool I: Structured Interview Sheet

This tool was composed of two parts: part 1, 2 was designed by researcher after carefully reviewing the literature.

Part 1: Demographic data includes age, sex, marital status, residence, type of family, educational qualification, occupation before retirement and monthly income.

Part 2: Medical health history includes the onset and duration of CAD.

Tool II: Coronary Artery Disease Knowledge Questionnaire

The researcher developed this instrument to evaluate the knowledge of the studied elderly patient's regarding their condition. It consist of questions related to nature of disease as definition of CAD, types, causes, signs and symptoms, atypical manifestations in elderly, complications, risk factors and diagnostic methods. Additionally, questions related to treatment and prevention of CAD. Each questions comprised multiple-choice item; one point was awarded for each correct response, while incorrect or missing answers received a score of zero. The scored were summed to determine the total knowledge score, which was calculated out of maximum of 88 points

Tool III: Coronary Artery Disease Practices Questionnaire

This tool was developed by researcher to evaluate the practice of the studied elderly patient's regarding their condition. It consist of asset of questions about 7 items related to healthy diet, medication adherence, practicing exercise, weight reduction, smoking cessation, quality of sleep and getting regular follow up. Every question contained a set of answer points, one grade for each right answer, and zero points for not answering or not knowing, taking into account the question's reverse. The overall scores are calculated by adding the results for each set of questions. The overall score was 38 point.

Tool IV: World Health Organization Quality of Life Assessment Instrument (WHOQOL) (BREF).

The WHOQOL-BREF is a condensed version of the WHOQOL-100, both developed by the World Health Organization (WHO, 1994).The questions arise from multiple statements about health, well-being and quality of life from healthy persons and patients as well as health professional. The WHOQOL-BREF is a 26-item instrument containing four domains: physical health domain comprises (7 items), psychological health domain comprises (6 items), social health domain comprises (3 items) environmental health domain comprises (8 items). It also contains two questions related to general health items and overall QOL. This tool is a 5- point likert scale ranging from one (not at all) to five (completely). The total score ranges from 26 the lowest level to 130 the highest level. Finally scores are linearly transformed to a scale of 0–100-scale to facilitate interpretation.

Validity and Reliability

A team of five gerontological nursing professionals served as a jury to evaluate the research instruments' validity, including their content validity, completeness, practicality, and item clarity. As a result, all required modifications were done. Reliability and the internal consistency for study tools were assessed the method by test- retest on two occasions during the pilot phase with the same participants. Reliability was calculated by using Pearson's correlation coefficient as follow, for tool III, the result was $r = 0.812$, indicating high reliability.

Ethical considerations:

An ethical approval was approved by the Research Ethics Committee of the Faculty of Nursing at Mansoura University (Ref, No 343) at 5 June 2023. Informed consent was obtained from each participant. They were providing with comprehensive information regarding the nature, aim, and benefits of the study. The privacy of elderly patients and the confidentiality of the

gathered data were secure and only used for the purpose of the study. Each studied geriatric patient was assured that the participation was voluntary and they have the right to withdraw from the study at any time without any consequences.

Pilot study:

Pilot study was performed on 10% (11 of geriatric patients) from the outpatient department at Kafr El - Sheikh General Hospital. The purpose to examine the feasibility, objectivity, clarity and applicability of the study instrument, as well as to recognize potential obstacles and estimate the time required for data capture. Subjects from the pilot study were omitted from the research.

DATA COLLECTION PROCESS:

The research took place in four phases, as follows:

Assessment phase:

In order to gain the studied elderly patients cooperation and verbal agreement, the researcher presented herself and concisely clarified the purpose of the study. Researcher interviewed each patient in order to get baseline data using Tool I. Furthermore, the researcher evaluated the patient's knowledge and practices about coronary artery disease using tool II and III and evaluated their quality of life using tool IV before implementation of educational program.

Planning phase:

According to the assessment results, the researcher identified the educated needs of the studied geriatric patients. Following a comprehensive literature review and online search, educational materials were developed under the supervision of academic experts. The primary goal of these methods, which include a simplified illustrated Arabic booklet, was to enhance QOL of patients with CAD.

Implementation phase:

The program was implemented while patients were attending their scheduled follow up visits. The patients were split up into smaller groups of five. The program consisted of four sessions, delivered to each group over two weeks. Each session lasted approximately 20 to 30 minutes, considering the attention span of the studied geriatric patients. Data collection happened from 9:00 am to 2:00 pm. From the beginning of January 2024 to end of December, 2024.

Evaluation phase:

The researcher evaluated the patient's knowledge, practices and QOL using study tools immediately following the intervention to determine educational programs initial impact. Follow up assessment were conducted at two and four months post intervention to compare results within the pretest and immediate post test data. Additionally, bi- weekly telephone calls were made during the first two month to assess patient's adherence to the programs recommendation.

Statistical analysis:

After data collection, SPSS software (version 21.0) was used for data entry, processing, and analysis. Descriptive statistics, including the mean, standard deviation, median, minimum, and maximum, were utilized to summarize numerical data. To evaluate differences between means, two groups were compared using the Student t test., while for comparisons more than two groups, the one-way ANOVA test (F test) was utilized. The Chi-Square test was used to examine the relationship between two qualitative variables, while Spearman's correlation coefficient was used to evaluate the strength of relationship between two quantitative variables. Statistical significant was set at $P \leq 0.05$.

RESULTS

Table (1) describes the distribution of the patients according to their demographic characteristics. The table shows that the participant's at the age group 60 to 77 years, with a mean of $(66.79 \pm 5.28 \text{ yrs})$. The majority of the participants (91.7%) fell with age group of 60 to less than 75. Concerning sex, slightly more than half (60.2%) were male, most of participant (82.4%) were married. Illiteracy prevailed among considerable number (70.3%), 70.4% were not working before retirement. Regarding residence, 70.4% were resided in rural area, 75% reported insufficient income. Concerning living condition, the majority (79.6%) lived with wife, husband and children.

Table (1): Distribution of the studied geriatric patients with coronary artery disease according to their demographic characteristics (N=108)

Characteristics	No	%
Age		
60 – less than 75	99	91.7
75 and more	9	8.3
Min – max = 60 – 77 years, Mean $\pm$ SD = 66.79 $\pm$ 5.28 years		
Sex		
Males	65	60.2
Females	43	39.8
Social status		
Married	89	82.4
Divorced	6	5.6
Widow	13	12.0
Education level		
Illiterate / read and write	76	70.3
Secondary	26	24.1
University	6	5.6
Working before retirement		
Working	32	29.6
Not working	76	70.4
Residence		
Rural	76	70.4
Urban	32	29.6
Income		
Enough	27	25.0
Not enough	81	75.0
Living condition		
Only	13	12.1
With wife/husband/Children	86	79.6
With one sone	9	8.3

Table (2) illustrates that myocardial infarction was reported by 56.5% of the studied elderly patients and 40.7% had been diagnosed with CAD since 1-3 years. Fatigue was the most prevalent presenting symptoms reported by (96.3%) of participant. furthermore, half of them (50%) suffering of CAD related symptom more than four times per month. Concerning pain, 43.5%

the studied elderly patients experienced moderate pain and slightly more than 2 thirds (73.1%) of them reported pain lasted longer than five minutes.. Pain radiation to the left arm, shoulder and jaw was the primary presentation among all participants. Finally physical activity represented the main precipitating factor for CAD in nearly half (46.3%) of studied elderly patients.

Table (2): Clinical characteristics of the studied elderly patients with coronary artery disease (N=108)

Clinical Characteristics of the CAD	No	%
Diagnosis		
MI	61	56.5
Unstable angina	47	43.5
Disease duration		
One - three years	44	40.7
three –five years	25	23.2
> five years	39	36.1
Complains during chest pain #		
Fatigue	104	96.3
Difficult breathing	101	93.5
Drowsiness/fainting	55	50.9
Bad digestion	6	5.6
Number of complaints per months		
Twice	29	26.9
Three	25	23.1
4+	54	50.0
Pain severity		
Mild	20	18.5
Moderate	47	43.5
Severe	41	38.0
Pain duration		
Less than 5 minutes	29	26.9
5 +	79	73.1
Pain radiation #		
Left arm	108	100.0
Shoulder	108	100.0
Jaw	108	100.0
Back	78	72.2
Neck	9	8.3

Factors occur before pain #		
Physical activity	50	46.3
Physical stress	39	36.1
At rest	36	33.3
Heavy meal	17	15.7
Cold weather	7	6.5

More than one response

Figure (1) represents the sources of knowledge about CAD among the participants. Physicians were reported as the main source of knowledge by 85.1% of the studied elderly patients followed by nurses (48.1%) and finally other patients.

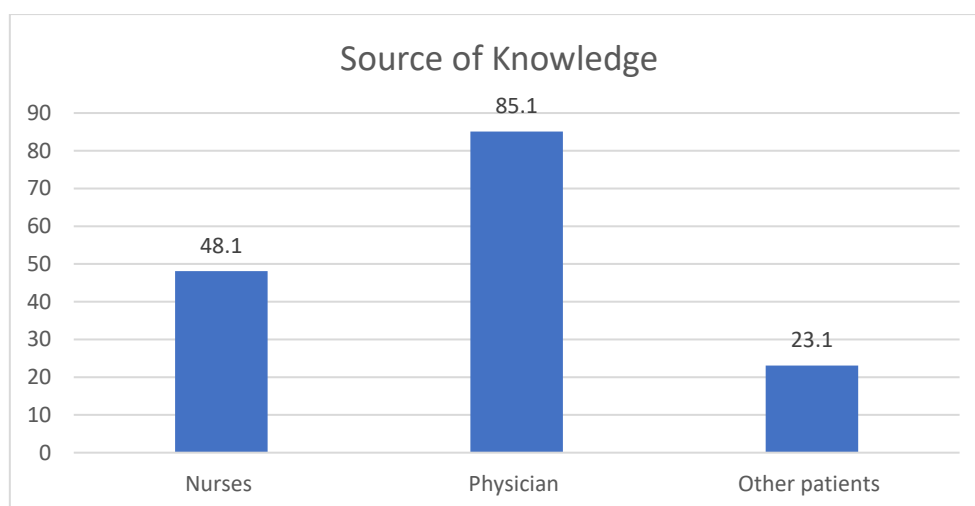


Figure (1): Sources of knowledge

Table (3) reveals that the effect of the program on knowledge of the studied elderly patients with CAD pre and post educated sessions. The total knowledge score and its domains (nature of disease, coronary artery treatment and prevention) increased significantly immediately after implementation of sessions educated. Although these scores decreased slightly after four months, they remain significantly higher than the pre intervention ($P < 0.001$).

Table (3): Knowledge of the studied elderly patients with coronary artery disease pre and post the program

Knowledge Items	Pre-Program	Immediately Post	2months Post	4months Post	Test of Significance
	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	
Nature of the disease	10.32 $\pm$ 3.91	33.41 $\pm$ 1.84	29.88 $\pm$ 2.88	28.78 $\pm$ 3.45	$P < 0.001^*$
Treatment and prevention	17.04 $\pm$ 7.87	40.94 $\pm$ 2.52	37.69 $\pm$ 4.54	37.23 $\pm$ 4.81	$P < 0.001^*$
Total knowledge	27.34 $\pm$ 11.72	74.31 $\pm$ 4.35	67.56 $\pm$ 7.42	66.01 $\pm$ 8.25	$P < 0.001^*$

*Significant at $P < 0.001$

Table (4) demonstrates the effect of the program on practice of the studied elderly patients with coronary artery disease pre and post program. The total practice score and its domains (healthy diet, medication adherence, practicing exercise, weight reduction, smoking cessation, quality of sleep and periodic medical follow up) increased significantly immediately after implementing of sessions educated. Although these scores decreased slightly after four months, they remain significantly higher than the pre intervention ($P < 0.001$).

Table (4): Practice of the studied elderly patients with coronary artery disease pre and post the program

Practice Items	Pre-Program	Immediately Post	2months Post	4months Post	Test of Significance
	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	
Diet	2.70 $\pm$ 1.66	5.85 $\pm$ 0.96	5.61 $\pm$ 1.37	5.50 $\pm$ 1.69	215.70 ($P < 0.001$)*
Medication	2.29 $\pm$ 0.98	3.82 $\pm$ 0.36	3.82 $\pm$ 0.39	3.71 $\pm$ 0.46	67.319 ($P < 0.001$)*
Exercises	2.08 $\pm$ 0.79	6.80 $\pm$ 0.49	6.61 $\pm$ 0.64	6.53 $\pm$ 0.77	495.32 ($P < 0.001$)*
Weight reduction	1.86 $\pm$ 0.62	5.81 $\pm$ 0.55	5.43 $\pm$ 0.79	4.95 $\pm$ 1.21	628.90 ($P < 0.001$)*
Smoking cessation	3.50 $\pm$ 1.22	3.79 $\pm$ 1.05	3.68 $\pm$ 1.04	3.61 $\pm$ 1.00	2.026 ($P = 0.110$)*
Sleep	3.86 $\pm$ 0.46	7.19 $\pm$ 1.25	7.12 $\pm$ 1.26	7.03 $\pm$ 1.28	105.62 ($P < 0.001$)*
Follow up	1.55 $\pm$ 0.73	1.85 $\pm$ 0.38	1.78 $\pm$ 0.49	1.71 $\pm$ 0.51	843.27 ($P < 0.001$)*
Total practice score	17.44 $\pm$ 5.46	35.11 $\pm$ 5.04	34.05 $\pm$ 5.98	33.01 $\pm$ 6.71	($P < 0.001$)*

*Significant at $P < 0.001$

Table (5) shows the participants rate QOL before and after the intervention. The results revealed that prior to the educational program, just over half (51.9%) of the geriatric patients rated their QOL as (neither poor nor good). A significant improvement was observed immediately post program, with the majority of patients (88.9%) rating QOL as (very good). Although this improvement decreased slightly to (good) rating after two and four months, the score remained significantly higher than the preprogram levels ($P < 0.001$).

Table (5): Rate of quality of life of the studied geriatric patients with coronary artery disease pre and post the program

Q1: Rate quality of life	Pre		Immediate post		2 months post		4 months post		Significance test
	No	%	No	%	No	%	No	%	
Very poor	7	6.5	0	0.0	0	0.0	0	0.0	X ² = 337.4 $P < 0.001$ *
Poor	10	9.3	0	0.0	0	0.0	0	0.0	
Neither poor nor good	56	51.9	3	2.8	8	7.4	16	14.8	
Good	35	32.4	9	8.3	74	68.5	69	63.9	
Very good	0	0.0	96	88.9	26	24.1	23	21.3	

*Significant at $P < 0.001$

X² Chi-Square test

Table (6) describes the satisfaction of the studied geriatric patients about their health pre and post educational program. The results revealed that prior the educated program, two third (69.4%) of the elderly patients reported (satisfied) with their health. A significant improvement was observed immediately post program, with 85% of patients expressing being (very satisfied). Although this level of satisfactions decreased slightly after two and four months, the results remained significantly higher than the preprogram levels ($P < 0.001$).

Table (6): Satisfaction of the studied geriatric patients about their health pre and post the program

Q2: Satisfied with health	Pre		Immediate post		2 months post		4 months post		Significance test
	No	%	No	%	No	%	No	%	
Very dissatisfied	0	0	0	0.0	0	0.0	0	0.0	X ² = 209.5 P<0.001*
Dissatisfied	3	2.8	0	0.0	0	0.0	0	0.0	
Neither dissatisfied nor satisfied	30	27.8	2	1.9	21	19.4	26	24.1	
Satisfied	75	69.4	10	13.1	57	52.8	55	50.9	
Very satisfied	0	0.0	96	85.0	30	24.8	27	25.0	

*Significant at $P < 0.001$

X² Chi-Square test

Table (7) shows the score QOL and its domains including physical, psychological, social and environmental domain increased significantly immediately after educated sessions.

Although a slight decrease in QOL scores was observed across all domains after two and four months, the score remained significantly higher than the preprogram levels ($P < 0.001$).

Table (7): Quality of life of the studied elderly patients with coronary artery disease pre and post the program

Domains of QOL	Pre	Immediate post	post 2 months	post 4 months	Significance Test
	<i>Mean ± SD</i>	<i>Mean ± SD</i>	<i>Mean ± SD</i>	<i>Mean ± SD</i>	
Physical domain	35.82 ± 14.52	73.81 ± 4.09	58.18 ± 8.61	57.33 ± 6.81	F=302.27 P<0.001*
Psychological domain	54.25 ± 14.82	77.11 ± 5.49	68.63 ± 9.76	66.93 ± 8.62	F=91.038 P<0.001*
Social domain	39.50 ± 14.67	70.00 ± 2.25	60.08 ± 8.68	59.00 ± 8.56	F=190.752 P<0.001*
Environmental domain	47.93 ± 12.52	65.60 ± 10.22	65.58 ± 6.47	64.18 ± 6.45	F=99.056 P<0.001*
Total QOL score	44.24 ± 12.51	71.63 ± 4.00	63.12 ± 6.54	61.86 ± 5.74	F=230.108 P<0.001*

*Significant at $P < 0.001$

F: ANOVA test

Table (8) illustrates that correlation between different study variables after intervention. There was a strong positive correlation between knowledge and practices at 4 months after the intervention ($r = -0.713$). This indicates that the level of practices was better among participants who had higher level of knowledge.

Also, strong positive correlation was present between either knowledge or practices and quality of life ($r = 0.436$ and 0.659 respectively). As the quality of life was better among participants who have high level of knowledge and practices.

Table (8): Correlation between the different study variables

Variables		Knowledge	Practices	QoL
Knowledge	<i>r</i>	1.000		
	<i>P</i>	----		
Practices	<i>r</i>	0.713	1.000	
	<i>p</i>	0.001	----	
QoL	<i>r</i>	0.436	0.659	1.000
	<i>p</i>	0.001	0.001	----

*Note: Significant *p* value (≤ 0.05) is bolded, *r*: Pearson correlation coefficient*

DISCUSSION

Coronary artery disease remains one of the primary causes of death globally. Due to poor risk factor management and an aging population with more clinical comorbidities, it is anticipated that the incidence of coronary artery disease (CAD) would rise sharply over the coming decades. Inadequate secondary prevention is still a major and difficult global issue. The lifestyle and risk factor objectives suggested by clinical practice guidelines are still not being met by patients with CAD. Knowledge is still remaining a vital first step to promote suitable behaviors. Compliance with some lifestyle modifications has been linked to knowledge of risk factors such as dietary changes, medication adherence, smoking cessation, weight reduction, increased physical activity, quality of sleep and medical periodic follow up (Kaminsky et al., 2022).

Nurse-Led education programs are vital for coronary artery disease patients. As nurses have primary accountability and autonomy for patient assessments, care planning, clinical decision-making, and case management Nurse-led interventions have drawn a lot of interest as a potential strategy to enhance the provision of care for geriatric patients with multiple medical conditions that improve overall quality of life (Saizen, 2024). These programs empower patients with knowledge and skills to modify behaviors, manage risk factors like nutrition and physical activity, cope with the disease's physical and psychological impacts, promote long-term self-management and adherence to treatment (Ebrahimi, 2021).

The largest independent risk factor for CAD is age due to progressive atherosclerosis. According to the current study, the greatest prevalent risk factor for developing CAD is age. This result may be justified as; circulatory function naturally declines with age, the prevalence of CAD is gradually increasing. This study is consistent with a study in Egypt by El-Moselhy et al., (2018). This result in contrast the study in Egypt by Mahmoud & Sabry (2017) revealed that around 50% of cardiovascular patients were within the age groups 40 years to less than 50 years.

The present study illustrated that elderly males were more likely than female to have coronary artery disease. This is attributable to the fact that risk factors are more likely to be encountered by men, such as alcohol consumption, cigarette smoking and developing hypertension more than females. This finding aligns with a study in Egypt by El-Moselhy et al., (2018) which stated that male gender is considered a significant risk factor for CAD. In contrast, these findings differ from a study in Iran by Gheisari, (2020).

Concerning level of education, the current study confirmed a high rate of illiteracy between the geriatric patients. This outcome may be justified as majority of the studied geriatric patients resided in rural areas. This is consistence with the study in Egypt by Abd Elhalim et al., (2025) which reported less than two thirds of participants were unable to read and write. However this finding contrast with a study in Egypt by El-Moselhy et al., (2018), who reported the secondary and high education prevailed among the elderly patients.

In relation to medical history of CAD, almost half of the elderly patients had diagnosis of myocardial infarction. This is due to the fact that CAD is the main cause of the majority of myocardial infarctions. In particular, thrombosis (a blood clot) results from an abrupt rupture or erosion of an atherosclerotic plaque inside a coronary artery, obstructing blood flow and causing tissue death. This result concurs with a study in Egypt by Abd El Mageed et al., (2023).

The existing study describes that fatigue and difficulty breathing was the most common complaints reported by majority of the elderly patients. This may be attributed to the facts that fatigue and dyspnea are prevalent and serious indicators of CAD, often signifying heart's ability to supply sufficient oxygenated blood to the body. As plaque accumulates in the coronary arteries, it leads to narrowing arterial and restrict blood flow to the heart muscle. These symptoms may emerge gradually or abruptly during physical activity or stressful situations. This result congruence with a study in Egypt by Abd El Mageed et al., (2023).

Regarding precipitating factors of chest pain, the existing study discovered that more than third of the studied geriatric patients experienced chest pain after physical activity. This occurs because exercise increases the heart's demand for oxygen, which narrowed or blocked arteries cannot meet. This imbalance between supply and demand of oxygen leads to myocardial infarction, causing discomfort typically that is relieved by rest. This result in the same line with The National Heart, Lung, Blood Institute (2022), which revealed the physical exertion, is a primary precipitating factor of chest pain.

Quality of life for elderly patients with CAD is challenging. There are a lot of approaches for improvement amongst elderly patients with this disease. Patient education is one of the most efficient methods and strategies. Importance of educating these patients for improving their health, well-being, over all life (Rad et al., 2021).

The higher level of knowledge regarding CAD is directly related to better prevention and improved disease management. Increased awareness of risk factors and symptoms reduces mortality through positive behavioral changes. Conversely, low awareness leads to poorer prognosis, especially among high-risk participants. Prevention remains the most effective approach address as the increase the rising epidemic of CAD, particularly in developing countries. Enhancing public knowledge, shaping favorable attitudes, and improving preventive practices are crucial steps in mitigating the impact of this condition (Al-khlaiwi et al., 2023).

Concerning the sources of knowledge about CAD. This study reported that, the majority of the participants obtained their information from the physician. This may be

a attributed to the limited access of nursing at the time of medical diagnosis, lead to physician to assume the primary role in patient education. This finding align with a study in Egypt by Mahmoud & Sabry (2017) which, revealed that most elderly people preferred to follow their doctors' advice and recommendations.

Concerning the program effectiveness on patient knowledge. The existing study revealed that, the total level of knowledge is significantly improved at different time point of evaluation after implementation of the educated sessions $P < 0.001$. This results is justified by the implementation of targeted, of structured, and consistent educational interventions that enable patients to play an active role in their care by improved awareness of the geriatric patients under study about regarding nature of disease and the treatment regimen. These finding aligns with a study in Egypt by Ahmad et al., (2022). In the same way a study in Jordan by Tawalbeh et al., (2022) showed that a statistically significant development in patients knowledge after the implementation of the cardiac program.

Similarly study in Sweden by Sandberg et al., (2024) who reported that the participants reported significant improvements in their knowledge and healthy lifestyle, which practice, are important to reducing risk of recurrent coronary artery disease. Furthermore, study carried out in Baghdad by Isam & Hassan (2023) noted the effectiveness of such programs on patients knowledge and this results also supported by Podvorica et al., (2021), noted that patient education is high effective in increasing disease related awareness among individuals living with heart disease.

Involvement in health behaviors is an important to constructing a healthy life style and avoiding coronary artery disease and other kinds of chronic vascular disease. Behaviors contains of several components, including (healthy diet, medication adherence, practicing exercise, weight reduction, smoking cessation, quality of sleep and periodic medical follow up) which are overall important in controlling CAD. Implementing educational program can assistance patients with CAD feels self-confident about dealing with their condition. It has been conveyed that, self-management therapies helped patients with CAD maintain healthy eating habits, take their medications as prescribed, and engage in physical activity, all of which improved their quality of life and health outcomes (Nunthaitaweekul & Pansup, 2021).

Regarding practices for elderly patients with CAD. This reflects the positive effectiveness of the program as participants show acquired information into practice, adaptation of healthy behavior. The current study revealed that, patients' practices improved significantly immediately after implementing sessions and the improvement was decreased slightly after 4 months but persist

differ significantly in comparison before sessions $P < 0.001$. This due to structured education fills knowledge gaps, enhances self-efficacy and provides actionable skills for managing symptoms and lifestyle changes. These programs foster independence, reducing mortality, re hospitalization, and anxiety while boosting QOL. Also this result align with a study in Egypt by Emam et al., (2023) reported that the educational program produced improvement practice compared with usual routine care. Also these was congruence with studies in china by Shang et al., (2019), Yang et al., (2021) and Shalaeva et al., (2023) revealed that lifestyle changes, including diet, exercise, and quitting smoking, greatly improved quality of life and slowed the progression of disease. Also study done by Podvorica et al., (2021) show that patient's education effectively increases self-management in patients living with heart disease. Quality of life is a Multifaceted, subjective, conception that demonstrating the persons overall well-being, including physical, mental health, social connection, financial security, and environmental conditions. Educational programs significantly improves patients with CAD by enhancing lifestyle practices, self-efficacy, and disease management. These programs improve physical/psychological well-being; reduce re hospitalization and lower mortality through education such as multimedia and booklets (Pardo et al., 2023).

Concerning quality of life, the existing study showed that, there was a statistically significant improvement in overall quality of life scores observed at different point of follow-up, compared to pre intervention phase containing physical, psychological, social, environmental domain, overall quality of life and general health of the studied participants $P < 0.001$. This may be attributed that increased awareness of the studied elderly regarding their disease empowers them to modifying their life style which minimize the disease burden and eliminate its negative impact. This finding aligns with the study conducted in Egypt by Ahmed et al., (2024) and a study in Iran by Rad et al., (2021), which concluded that improved score of QOL during the follow- up of the studied elderly patients. Similarly, the study in Iran by Dehkordi et al., (2021) found that increase in QOL throughout the term of follow-up. Accordingly a study carried out in Baghdad by Isam & Hassan (2023) reports that effectiveness of educational program on score of QOL domains and study in Egypt by Mounir et al., (2016) revealed that the overall QOL mean score had greatly improved at 4 months after implementing. Finally study in Indonesia by Oktarina., (2025). Found that significant improvements psychological distress ($p < 0.001$), and physical activity ($p < 0.005$). Regarding evaluating correlation between the patients' overall knowledge score, practice score and QOL concerning CAD, it was discovered that there was strong positive correlation between overall knowledge, practice and quality of life ($r = 0.436$ and 0.659 respectively). This may be due to knowledge is a significant role in raising patient awareness, enabling them to adapt healthy behaviors related to CAD, thereby reducing their vulnerability to additional complications. Therefore, patients with high levels of knowledge will engage in healthy activities that progress in their QOL and overall health. The present finding is constant with a study in Egypt by Ahmed et al., (2024) report increased knowledge about coronary artery disease directly improves practices and enhances QOL. Also, the present finding is agreement with a study in South Korea by Jung & Yang (2021). Additionally, study in china by Wang et al., (2026) showed that positive knowledge correlations with attitude and Practice. This outcome is contradict with a study in Iran by Asadi et al., (2019) noted that there is no correlation between QOL and self-care behaviors.

CONCLUSION AND RECOMMENDATIONS

Predicated on the result of the existing study, it can be inferred that, coronary artery disease remains a significant public health concern. The primary risk factors identified among the studied geriatric patients includes advancing age, male, family history and hypertension. Moreover, this study illustrated that the implementation of a nurse-led educational program improves knowledge, practice and health related to QOL in elderly patients with CAD.

In light of study findings, the following recommendations are suggested:

- 1- Implement structured education programs routinely for geriatric patients with coronary artery disease during hospitalization and outpatient follow-up.
- 2- Investigate the long-term effect of nurse-led education programs on morbidity, mortality, and hospital readmission rates.

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