

Effect of an Educational Intervention on Knowledge, and Self-Efficacy for Post Coronary Artery Bypass Graft Surgery patients

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Abstract: Background: Patient education is considered the core of nursing care, it can determine how well individuals and their families are able to maintain and improve health status, restore health and cope with illness-related functional impairment. The aim of this study was to evaluate effect of an educational intervention on knowledge, compliance and self-efficacy for post Coronary Artery Bypass Graft surgery patients, Design: A quasi experimental research design was utilized, Setting: the study was conducted at the Cardio-Thoracic Surgery outpatient Clinic in Suez Canal University Hospitals, Sample: A purposive sample of 64 patients, Tools: two tools were used to collect the study data. Structured interview questionnaire and assessment of self - efficacy for post CABG surgery patients questionnaire. Results: The study revealed that all of the studied patients had unsatisfactory knowledge about disease and its' treatment before educational intervention implementation, even though the total percentage of patient's knowledge post educational intervention implementation was improved and regarding to self-efficacy the study results showed that the studied patients had high self- efficacy after implementation of educational intervention. Conclusion: Level of patient's knowledge and Self efficacy were improved after implementation of an educational intervention. Recommendations: Developing an individualized care plan for each patient based on health belief model construction.

Keywords: Coronary Artery Bypass Graft surgery, Educational intervention, Knowledge, Self efficacy.

1. INTRODUCTION

Coronary Artery Disease has been cured by myocardial revascularization since 1960, and the most common Coronary Artery Bypass Graft techniques have been implemented for more than 35 years. CABG surgery is the standard care in the treatment of advanced coronary artery disease (*Ibrahim et al., 2020*). CABG is a surgical procedure in which blood vessel is grafted to an occluded coronary artery so that blood can flow beyond the occlusion. Number of CABG surgery that had been performed in the United States every year was 395.000 (*Center for Disease and Control Prevention, 2015*).

The nurse has a critical role in teaching patients and caregivers about diet, exercise, medications and follow up medical care. nurse helps patient in a construct list of drugs and time of administration that can be posted at home, Instruct patient to avoid certain over counter drugs, Teach patient for daily monitor coagulation profile to early detect risk and presence of bleeding and discuss life style changes that may be required to prevent further complications and improve patient outcomes (*Almaskari et al., 2019*).

Significance of the study:

Inadequate knowledge about the disease and its recommended treatment regimen remains an important problem that facing health care providers in all settings and populations. Based on previous researches, it was noted that low level of knowledge makes a threat to satisfactory outcome. It has an impact on the patient's morbidity and mortality and rising the costs of treatment and increasing effort of the care providers (*Devi et al., 2018*).

A person's confidence in their own ability to make changes to their lifestyle, coupled with their perception of barriers to these changes, can significantly impact their ability to adhere to a management plan. Patients who have self confidence in their abilities to manage their illness are more likely to make beneficial changes and are more likely to experience better long term health outcomes. Otherwise, patients with low sense of self efficacy are more likely to have worse health outcomes, mood disturbance and worse quality of life (*O'Neil et al., 2016*).

The aim of the study: was to evaluate effect of an educational intervention on knowledge and self-efficacy for post CABG surgery patients.

The Research Hypothesis: - Post CABG surgery patients' knowledge will be better after implementation of the educational intervention.

- Post CABG surgery patients' self-efficacy will be improved after implementation of the educational intervention.

Subject and Methods:

Study design: A quasi experimental research design was used for the study.

Study Setting: This study was conducted at the Cardio-Thoracic Surgery outpatient Clinic affiliated to the Suez Canal University Hospitals, at the outpatient clinics building. located at the right side from the main hospital entrance, lies in the ground floor and located centrally between the dermatology clinic and neuropsychiatry clinics, open two days a week, on Saturday and Tuesday.

The sample of the study: A purposive sample of sixty four adult patients after CABG, admitted to the previous mentioned setting at the time of data collection over 11 months period that started from 1st of July 2021 to June 2022 Sample size estimation was determined according to the following equation: (*Kim, et al. 2016*).

$$n = \left(\frac{Z_{1-\alpha/2} + Z_{1-\beta}}{ES} \right)^2$$

Where α is the selected level of significance and $Z_{1-\alpha/2}$ is the value from the standard normal distribution holding $1-\alpha/2$ below it. For $\alpha=0.05$, then $1-\alpha/2 = 0.975$ and $Z=1.96$. $1-\beta$ is the selected power, and $Z_{1-\beta}$ is the value from the standard normal distribution holding $1-\beta$ below it. The $Z_{1-\beta}$ values for 95% power $Z_{0.95}=1.64$

$$= \left(\frac{1.96 + 1.64}{0.50} \right)^2 = 53$$

With 10-20% attrition rate the required total sample size is 64 participants

Inclusion criteria:

- Adult patients who had follow up after one month of surgery and within six months or less after CABG.
- Conscious patients and able to communicate.
- Accepted to participate in the study.

Exclusion criteria:

- Patients who had repeated revascularization.
- Patients who had disabling ailments and cognitive disorders.
- Patients with severe chronic illness as a third stage of cancer, liver cirrhosis, rheumatoid arthritis and thyroid disorder.
- Patients confirmed to have complications after CABG such as stroke, arrhythmias, bleeding and infection.

Tools of data collection:**Tool 1: Structured interview questionnaire**

The questionnaire was divided into four sections: **Part 1**: assessed sociodemographic variables; **Part 2** asked about medical history; **Part 3** inquired about smoking history; and **Part 4** assessed the participant's degree of knowledge on diseases, risk factors, and treatments.

Tool 2: Assessing self-efficacy in patients following CABG surgery questionnaire (Taha et al., 2018; Sullivan et al., 1998; Charles et al., 1993 and Grembowski et al., 1993).

The post-CABG surgery patients' 33 self-efficacy measures were all scored using a five-point Likert scale: 5 represents strongly agree, 4 represents agree, 3 represents neither agree nor disagree (neutral), 2 represents disagree, and 1 represents severely disagree.

Scoring system:

For the knowledge items, a correct response = one and the incorrect response = zero. The total score of the knowledge was 14 points. These scores were converted into a percent score. Knowledge was considered satisfactory if the percent score was 60% or more and unsatisfactory if less than 60%. $\geq 60\%$ was considered a satisfactory level of knowledge (eight points or more). $< 60\%$ was considered an unsatisfactory level of knowledge (seven points or less) (Taha et al., 2018).

All 33 items of assessment of self-efficacy for post CABG surgery patients used the 5 point Likert scale format; 5=strongly agree, 4=agree, 3= neither agree nor disagree (neutral), 2=disagree, and 1=strongly disagree. Consequently, the score range for pain control was 4-20 which was divided into two categories as follow: which was divided into two categories as follow: $\geq 60\%$ was graded as confident when total grades ranged as (12-20), $< 60\%$ was graded as un-confident when total grade (<12) based on statistical analysis. Furthermore, the score range for exercise regimen was 5-25 which was divided into two categories as follow: $\geq 60\%$ was graded as confident when total grades ranged as (15-25), $< 60\%$ was graded as un-confident when total grade (< 15) based on statistical analysis.

Moreover, the score range for medications regimen was 7-35 which was divided into two categories as follow: $\geq 60\%$ was graded as confident when total grades ranged as (21-35). $< 60\%$ was graded as un-confident when total grade (< 21) based on statistical analysis. the score range for diet regimen was 13-65 which was divided into two categories as follow: $\geq 60\%$ was graded as confident when total grades ranged as (39-65). $< 60\%$ was graded as un-confident when total grade (< 39) based on statistical analysis and the score range for daily living activity was 4-20 which was divided into two categories as follow: $\geq 60\%$ was graded as confident when total grades ranged as (12-20). $< 60\%$ was graded as un-confident when total grade (< 12) based on statistical analysis.

The scoring of self-efficacy was conducted with the sum of items was 135 grades. These scores were converted into a percent score. Patients were considered high self-efficacy and high confident if the percent score was 60% or more and low self-efficacy and low confident if less than 60%. Which is divided into two categories as follow: $\geq 60\%$ was graded as high self-efficacy when total grade ranged as (81-135). $< 60\%$ was graded as low self-efficacy when total grade (< 81) based on statistical analysis (Abdel-Salam and Mahmoud, 2018).

Validity of Tools:

The content and face validity were reviewed by a jury of five experts in the field of Critical, Medical-Surgical Nursing and cardiology department in faculty of medicine - Suez Canal University to determine whether the included items are comprehensive, understandable, applicable, clear and suitable to achieve the aim of the study. The needed modifications were done according to the experts' opinions.

Reliability of the Tools:

Reliability and internal consistency of the evaluating tools were measured by Cronbach Alpha. Cronbach Alphas were calculated for the patients' knowledge, patients' compliance with therapeutic regimen and self-efficacy. A commonly accepted rule of thumb for describing internal consistency using Cronbach's alpha as follows; $\alpha \geq 0.9$ = excellent, $0.8 \leq \alpha < 0.9$ = good, $0.7 \leq \alpha < 0.8$ = acceptable, $0.6 \leq \alpha < 0.7$ = questionable, $0.5 \leq \alpha < 0.6$ = poor and $\alpha < 0.5$ = unacceptable.

Pilot Study:

A pilot study was conducted on 10% of the studied patients, their number was seven male and female patients with coronary artery disease after CABG to check and ensure the clarity, applicability, relevance and feasibility of the tools, to identify the difficulties that may be faced during the application and to estimate the time required to fill the questionnaire. According to the results of the pilot study, some items were modified, omitted and added. Patients who participated in the pilot study were excluded from the main study sample.

Field work:

Data collection of this study was carried out over 11 months period that started from 1st of July 2021 to June 2022. Data collection was conducted through four phases (assessment, planning, implementation and evaluation phase).

Assessment phase (Pre-Test):-

After preparing the tool, the study sample was recruited. This was followed by collecting baseline data. Pre-tested questionnaire was administered to the studied patients to study their existing level of knowledge and patients' self-efficacy. The researcher introduced herself and explained the aim and the purpose of the study to the studied patients in order to obtain their cooperation and they were reassured that the information obtained were strictly confidential with patient's right to withdraw from participation at any time of study and took the consent from them. This phase was continued for three months (from beginning of July 2021 to ending of September 2021).

Data were collected in the Cardio Thoracic Surgery Outpatient Clinic at Suez Canal University Hospitals, it composed of three rooms; one of them was waiting room for patients where the researcher interviewed with them, it had one a disk and three chairs, another room had a dressing change equipment trolley, sink and patients records and the last room was the examination room which had one a disk, two chairs, examination bed and curtains. In the outpatient clinic, one nurse works in it and she helped the researcher more in persuasion the patients in collecting data process.

Planning and Designing Phase:

Based on the information obtained and the actual need assessment of studied patients from initial assessment in addition reviewing the related literature to gain more in- depth information about the subject and to be able to design the educational intervention.

Educational intervention was covering the theoretical and practical parts related patients' knowledge, and self-efficacy. Booklet content was designed by the researcher and it was written in simple Arabic language and supplemented by photos and illustrations to help patients to understand the content, this took about 5 months (from beginning of October 2021 to February 2022).

Implementation Phase:

The researcher visited the clinic for 2 days per week (Saturday & Tuesday) from 9 am to 12pm with the rate of follow up 2-4patients had CABG a day, but in some visits the researcher hadn't found the needed subject with desired inclusion and exclusion criteria. The researcher used the previous mentioned tools to collect the data.

Structurally planned educational intervention of this study were implemented in form of sessions using various of teaching methods and media such as: discussion, lecture, colored posters, animation video, power point, pamphlets, and handouts to be attractive for patients and to enhance understanding.

The total number of educational sessions were seven sessions, each session was last for 30-40 minutes, at the beginning of the first session an orientation to the aim of the study and the goals of the educational intervention took place and each session started by a summary of the previous session. The studied patients and their care giver were allowed to ask any interpretation, elaboration or explanation of any item included in the sessions. The duration of program implementation was four months (from March 2022 to the end of June 2022).

Evaluation Phase (Post- test)

After implementation of the educational intervention, test was done to evaluate the effect of the educational intervention sessions; the post test was done immediately by end of the educational intervention sessions implementation using the same tools which was used in the pretest, then the follow up test was done two months later.

Administrative design:

To carry out this study, official permission was obtained from the outpatient clinics director. this was done by submission of a formal letter from the vice dean of the faculty of nursing for post- graduate and research affairs and dean of the faculty of nursing with explaining the objectives of the study and after receiving approval of ethical code (58) from ethical research committee at faculty of nursing in Suez canal university. Meeting and discussion were held between the researcher and the nurse who worked in the outpatient clinic to make her aware about the aim of the study and purposes of the research, as well as to get better cooperation during the implementation phase of the research and patients.

Ethical considerations:

Primary approval of the research ethics committee at the faculty of nursing- suez canal university with ethical code (58) was obtained to carry out the study. The ethical considerations include explaining the purpose and nature of the study, stating the possibility to withdraw at any time. The researcher emphasized that participation in the study is entirely voluntary, anonymity and confidentiality was assured. Written and verbal consent obtained from the studied patients to participate in the study.

Statistical design:

After the collection of data, it was revised, coded and fed to statistical software statistical package for the social sciences (SPSS) version 20. microsoft office excel software was used to construct the needed graphs. After data coding the following data manipulation were done.

3. RESULTS

Table (1) Reveals that 51.5 % of the studied patients were at age of 58-63 years old, 64.1 % were males, 81.2% were married, 71.9% had have work, while, 81.2 % of their work doesn't require effort. In relation to educational level 65.6 % were educated. Regarding to residence, 90.6% of the studied patients were lived in rural areas. Additionally, income was not enough for 73.5 % of studied patients and about 82.8 % depended on governmental coverage and only 17.2% had health insurance.

Table (2) Discloses that 96.8 % of the studied patients had have angina and 73.4% of the studied patients had hypertension. Only, 26.5 % of the studied patients had history of renal failure. Even though, 15.6% of the studied patients had a history of rheumatic fever and Diabetes Mellitus. Additionally, 10.9 % of the studied patients had history of chronic chest disease. Regarding to the history of smoking, 21.9 % of the studied patients were current smoker, 40.6 % had a history of previous smoking, while, 79.7 % had a smoker family member.

Table (3): Depicts that all of the studied patients had a knowledge about cardiac catheterization is one of the diagnostic and treatment method for CAD, the total percentage of patient's knowledge regarding disease, disease, risk factors, CABG and treatment before educational intervention implementation was (25%). On the other hand, the total percentage of patient's knowledge post educational intervention implementation was (75%) and the total percentage of patient's knowledge in follow up was (64%).

Table (4): Denotes that 46.9 % of the studied patients were agree regarding control chest pain with medications pre-intervention, 54.7% in post- intervention phase and 57.8% in follow up phase regarding controlling chest pain with medications. Also, the total percentage of agree concerning pain control is 17.18% in pre intervention phase, the total percentage of agree concerning pain control is 73.8% in post intervention phase and the total percentage of agree concerning pain control is 66.01% in follow up intervention phase.

Table (5) Reveals that 45.3 % of the studied patients were disagree regarding lose weight if obese pre- intervention, while 48.4% of them agree with lose weight in post- intervention phase and 51.6% in follow up phase. Besides, the total percentage of agree regarding exercise regimen is 25% in pre intervention phase. Likewise, the total percentage of agree regarding exercise regimen is 74.06% in post intervention phase. As well the total percentage of agree concerning exercise regimen is 59.4% in follow up intervention phase.

Table (6) Illustrates that 48.4 % of the studied patients were disagree regarding don't stop medications when feel better in pre- intervention phase, while 57.8% of them agree with don't stop medications in post- intervention phase and 40.6% in follow up phase. Further, the total percentage of agree regarding medications regimen is 22% in pre intervention phase. Also, the total percentage of agree regarding medications regimen is 74.5% in post intervention phase. As well the total percentage of agree concerning medications regimen is 67.8% in follow up intervention phase.

Table (7) demonstrates that 56.3% of the patients under study disagreed with the idea of eating at regular intervals. Additionally, 10% of respondents overall agree with a diet plan. Meals on time had a mean score of 3.8 ± 0.6 . Regarding small frequent meals, the mean score is 3.2 ± 0.9 . A reduced salt diet has an average score of 3.7 ± 0.9 .

According to **Table (8)**, Indicates that 56.3 % of the studied patients were disagree regarding taking meals on regular time in pre- intervention phase, while 56.3% of them agree with taking meals on regular time in post- intervention phase and in follow up phase. Additionally, the total percentage of agree related to diet regimen is 10% in pre intervention phase. Correspondingly, the total percentage of agree regarding diet regimen is 71.4% in post intervention phase. As well the total percentage of agree concerning diet regimen is 59.3 in follow up intervention phase.

Table (9) Represents that 51.6 % of the studied patients were disagree regarding control fatigue with activity level in pre-intervention phase, while 48.4% of them agree with controlling fatigue with activity level in post- intervention phase and in follow up phase. Furthermore, the total percentage of agree related to daily living activity is 13.7 % in pre intervention phase. Correspondingly, the total percentage of agree regarding daily living activity is 60.9 % in post intervention phase. Too, the total percentage of agree concerning daily living activity is 48% in follow up intervention phase.

As displayed by **figure (1)**, the total self-efficacy score among the studied patients before the implementation of educational intervention is 50%, conversely, the total self-efficacy score among the studied patients after the implementation of educational intervention is 100% and 90.6% in follow up phase.

Table (10) Reveals that there is statistically significant increase in the level of knowledge of the studied patients at the post and follow up phases (10.5 ± 1.9 , 8.9 ± 2.4) compared to the pre-intervention phase (3.5 ± 1.3) with p value = $<.001$.

Table (11) Exposes that there is no statistically significant correlation between knowledge and self- efficacy among the studied patients.

Table (12) Presents that there is no statistically significant correlation between knowledge and socio-demographic characteristics of the studied patients.

Table (13) Discloses that there is no statistically significant correlation between self-efficacy and sociodemographic data.

4. DISCUSSION

The present study revealed that, the age range of the studied patients were 52-64 years, this finding agreed with *CDC, (2021)* in a study titled " Coronary Artery Disease" and *Hajar, (2017)* in USA in a study titled " Risk Factors for Coronary Artery Disease: Historical Perspectives" reported that age is major uncontrollable risk factor for CAD and incidence of CAD is increased with advanced age. The researcher point of view, coronary artery disease' incidence increase with age because of the anatomic structure of coronary arteries differs with advanced age, increasing susceptibility to plaques formation and developing atherosclerosis.

As regards to gender, the current study results revealed that, more than half of the studied patients were males, this finding was in harmony with *Pačarić et al. (2020)* in Osijek in study about " Assessment of the Quality of Life in Patients before and after Coronary Artery Bypass Grafting (CABG): A Prospective Study" as well as with *Wang et al. (2014)* in the Mazankowski Alberta Heart Institute in a study about " the Association between older age and outcome after cardiac surgery", reported that around three quarter of patients were males.

Also, this finding agreed with *Balkhy et al. (2020)* in a study "Robotic totally endoscopic beating-heart bypass to the right coronary artery: first worldwide experience" which reported that about more than half of patients were males. from the researcher point of view, males exposed to stressful situations and more smokers than females which are major risk factors for having CAD.

However, *Sallam et al. (2022)* in Egypt in their study titled "Relation Between Compliance of Patients Post Coronary Artery Bypass Surgery Towards Symptoms Management Strategies and Experienced Discomforts" reported that more than half of patients were females.

In relation to marital status the present study results showed that the most of the studied patients were married. This finding was in accordance with *Nielsen et al. (2019)* in their study entitled "Social Factors, Sex, and Mortality Risk after Coronary Artery Bypass Grafting: A Population-Based Cohort Study" reported that the majority of the studied patients were married. This finding may be due to the study patients' age which ranged from 40 to 60 years and socially in this phase of age the most of the people became married.

Concerning the occupation, the finding of the present study showed that more than three quarters of the studied patients were working, this finding agreed with *Blokzijl et al. (2021)* in a study conducted in Groningen- the Netherland, titled "Barriers That Obstruct Return to Work After Coronary Bypass Surgery: A Qualitative Study" which reported that the majority of the studied patients were working. In the researcher point of view, this may be due to patients tolerated a job that suitable with their health condition and didn't require high labored work.

In the other hand, this finding disagreed with *Irfan, et al. (2013)* in Dhaka in a study about "Health Related Quality of Life Among Coronary Artery Bypass Graft Patients Attended at Combined Military Hospital" reported that the majority of the studied patients were un employed. This may be due to many factors such as having difficulty with daily activities as daily working, walking, climbing stairs, psychological status such as depression, fatigue and general weakness.

Regarding to educational level this study represented that above two third of the studied patients were educated, this finding agreed with *Bsharat & Karadağ (2019)* in Palestine in a study titled "The Impact of Patient Education on Quality of Life of Patients Undergoing Coronary Artery Bypass Grafting (CABG) in the West Bank of Palestine", reported that about half of the studied patients were primary and technical education. In contrast, *Soroush, et al. (2017)* in Iran in a study "Coronary Artery Bypass Graft Patients' Perception about the Risk Factors of Illness: Educational Necessities of Second Prevention", reported that the majority of the study patients were illiterate.

The result of the present study portrayed that most of the studied patients were lived in rural area which could be attributed the geographic location of the Ismailia city as it surrounded by a lot of villages, changes in rural areas life style, unhealthy practices, and unavailability of capacitated health care services. Current finding agreed with *Baljepally & Wilson., (2021)* in USA in study titled "Gender-Based Disparities in Rural Versus Urban Patients Undergoing Cardiac Procedures" reported that about a half of the studied patients were lived in rural area.

However, *Mahmoud, et al. (2016)* in Alexandria in their study "Relation between Quality of Life and Sex of Patients Post Coronary Artery Bypass Surgery", reported that more than two thirds of the studied patients were lived in urban area.

Concerning the income, the finding of the current study showed that nearby three quarter of the studied patients had an insufficient income, this finding was in accordance with *Nielsen et al. (2020)* in Sweden in their study titled "Socioeconomic Factors, Secondary Prevention Medication, and Long-Term Survival After Coronary Artery Bypass Grafting: A Population-Based Cohort Study From the SWEDEHEART Registry" reported that about half of the studied patients were had low income.

Concerning the treatment fees, the findings of the present study represented that most of the studied patients depended on governmental coverage, this finding agreed with *Gupta, et al. (2022)* in India in their study titled "Association of health insurance status with coronary risk factors, coronary artery disease, interventions and outcomes" concluded that cost of treatment after CABG were expensive and the three quarter of the studied patients depend on governmental insurance. Moreover, *Kwesigabo, et al. (2012)* in Tanzania in a study titled "Tanzania's Health System and Work force crisis" founded that about three quarters of the patients were treated by health insurance service.

Regarding to past medical history, the current study showed that all of the studied patients had a history of angina, this finding agreed with *Thielmann, et al. (2021)* in Federal State of North-Rhine Westphalia in a study "Coronary Artery Bypass Graft Surgery in Patients With Acute Coronary Syndromes After Primary Percutaneous Coronary Intervention: A Current Report From the North-Rhine Westphalia Surgical Myocardial Infarction Registry" and with *Giustino & Mehran, (2015)* in USA in a study titled "CABG Surgery Versus PCI in Coronary Artery Disease" this indicate that CABG is the main stone treatment for unstable angina if PCI and other lines of treatment failed and it is the most effective one.

In relation to Hypertension, the findings showed that most of the studied patients had a history of hypertension, this finding was in accordance with *Fuchs & Whelto, (2019)* in a study entitled "High Blood Pressure and Cardiovascular Disease" this indicates that hypertension is the major risk factor for coronary artery disease.

Concerning DM, the present study results showed that three quarter of the studied patients had a history of DM, this finding agreed with many studies; *Gupta, et al. (2022)* in Alain City United Arab Emirates in a study about "Diabetes and the heart: coronary artery disease" reported that DM associated with atherosclerosis complications, *Al-Nozha, et al. (2016)* in Taibah University in study "Coronary artery disease and diabetes mellitus" reported that the prevalence of diabetes in patients with CAD was up to half percent in many countries.

Additionally, with *Aronson & Edelman, (2014)* in Roma in a study to "Identify Incidence of coronary Artery Disease among Diabetic Patients", reported that the majority of CAD had a diabetes mellitus. This may be due to diabetes has a silent effect on the heart vessels causing endothelial dysfunction, hypercoagulability, platelet dysfunction and atherogenic dyslipidemia which is associated with hyperglycemia.

The present study showed that nearby three quarters of the studied patients were a previous smoker, this finding was agreed with *Sandin & Malm (2021)* in Sweden in a study titled "Smoking and Postoperative Risk in Cardiac Surgery Patients", founded that about a half of the studied patients were previous smokers and *Bahadur, et al. (2019)* in Nepal in a study titled "Association of smoking with coronary artery disease in Nepalese populations: a case control study", concluded that there was a positive correlation between smoking and incidence coronary artery disease and approved by the Food and Drug Administration (FDA) that about one-third of cardiovascular disease mortalities are attributed to smoking *Brown, et al. (2023)*.

From the researcher point of view, most of the patients in our society gave up smoking when their status become complicated and became have worries and apprehensive thoughts regarding CABG surgical short or long complications due to prolonged smoking period.

The current study showed that most of the studied patients were had unsatisfactory level of knowledge about disease and it's treatment at pre educational intervention phase, This finding was matched with *Said, et al. (2022)* in Egypt in study titled "Assessment of Patients' Knowledge and Lifestyle Before Coronary Artery Bypass Grafting Surgery" and with *Taha, et al. (2018)* in Egypt in study about "Factors Affecting Compliance with Therapeutic Regimen for Patients with Coronary Artery Bypass Graft: Suggested Nursing Guidelines", reported that most of the studied patients were had poor level of knowledge about CAD and it's treatment.

Also, with *Rahman, et al. (2013)* in India in study titled "Level of Knowledge about Coronary Artery Disease is Poor Among Bangladeshi Hospitalized Patients Following Acute Coronary Syndrome" showed that the majority of the studied patients were had poor level of knowledge. the researcher point of view, unsatisfactory knowledge may be due to lack clarity of instructions, misunderstanding of information, the health care provider didn't have enough time to provide information for them, effect of culture, level of education and their residence. When patients have sufficient knowledge, they would have proper strategies to improve their compliance.

After implementation of an educational intervention, the level of knowledge of post and 3 months follow up phase was statistically significant increase, this result was supported with *Torknejad, et al. (2020)* in Iran in study titled "Effect of an educational intervention based on BASNEF model on treatment, adherence after coronary artery bypass surgery: A randomized clinical trial" which illustrated that the mean score of knowledge of the patients was significantly higher immediately and 3 months after the intervention. It may be increasing level of knowledge and details related disease and its treatment after educational intervention sessions.

In the existing study, the studied patients were un-confident self-efficacy domains which include pain control, exercise regimen, medications regimen, diet regimen, daily living activities before application of educational intervention. There was statistically significant increase in self-efficacy at the post and follow up phases compared to the pre intervention phase

This was in corroborator with *Keating & et al. (2023)* in study titled "Adherence to secondary prevention recommendations after coronary artery bypass graft surgery" which conveyed that Compliance with diet and exercise modifications was suboptimal and the patients were in confident. And correspondingly with *Nair & et al. (2018)* in India in study on "Lifestyle

practices, health problems, and quality of life after coronary artery bypass grafting" which concluded that the studied patients had a poor quality of life after CABG which can lead to psychological disturbance and need for aggressive and continuing health education to improve patient awareness about adopting healthy lifestyle practices.

On the contrary, the present study concluded that there was statistically significant difference in self-efficacy domains after implementation of educational intervention. This result was endorsing with *Gohari & et al. (2022)* in Iran in study about "Comparison of the effectiveness of home visits and telephone follow-up on the self-efficacy of patients having undergone coronary artery bypass graft surgery (CABG) and the burden of their family caregivers: A randomized controlled trial".

And correspondent with *Ghisi & et al. (2020)* in Canada in study titled "Effectiveness of an Education Intervention Among Cardiac Rehabilitation Patients in Canada: A Multi-Site Study". Similarly with *Borzou & et al. (2018)* in Tehran in a study "Effects of the First Phase of Cardiac Rehabilitation Training on Self-Efficacy among Patients Undergoing Coronary Artery Bypass Graft Surgery". On the same line, this result was consistent with *Motlagh & et al. (2015)* in a study titled "Effectiveness of Educational Programs to Promote Nutritional Knowledge in Type II Diabetes Patients Based on Health Belief Model" which reported that there was increasing in mean score of self-efficacy after application of educational intervention for the studied patients.

In contrast with *Nooriani, et al. (2019)* in Iran in study about "The Effect of Nutritional Education Based on Health Belief Model on Nutritional Knowledge, Health Belief Model Constructs, and Dietary Intake in Hemodialysis Patients" and with *(Elaskary, 2011)* in study "Impact of Health Promotion program on compliance with therapeutic regimen among hypertensive patients in Gaza Strip" which concluded that the self-efficacy after program intervention not improved.

The current study exposed that there was statistically significant increase in the studied patients' level of knowledge at the post and follow up intervention phases compared to the pre intervention phase. This is on the same with *Abd El Rhman, (2020)* in Ain Shams University Hospital, in Egypt in study titled "Applying Health Belief Model among High Risk Hypertensive Clients" which concluded that there was statistically significant difference in the knowledge level throughout the phases of the study. This result as the studied patients were highly motivated to learn, good preparation of an educational intervention, effective implementation through good presentation skills and good cooperation between researcher and study sample.

The present study clarified that there was no statistically significant correlation between knowledge and self-efficacy among the studied patients. This was supported with *Rüppell, et al. (2021)* in Germany in study "Professional Knowledge and Self-Efficacy Expectations of Pre-Service Teachers Regarding Scientific Reasoning and Diagnostics" and with *Chen, et al. (2014)* in USA in study "Relationships between health literacy and heart failure knowledge, self-efficacy, and self-care adherence" also with *Stanley& Pollard. (2013)* in study "Relationship between knowledge, attitudes, and self-efficacy of nurses in the management of pediatric pain". From the researcher point of view, self-efficacy focused on patient's beliefs, culture, own motivation and social environment to perform an act regardless their level of knowledge.

This result was in contrast with *Sari, et al. (2022)* in "Correlation Between Knowledge and Self-Efficacy with Family Skills in Exercising Range of Motion for Post-Stroke" and moreover with *Shrestha, et al.(2020)* in study about "Predictors of cardiac self-efficacy among patients diagnosed with coronary artery disease in tertiary hospitals in Nepal" which reported that there was statistically significant correlation between knowledge and self-efficacy.

The present study elucidated that there was no statistically significant correlation between knowledge and socio-demographic characteristics of the studied patients. this may be due to the majority of the studied patients were male, middle educated and employed that make them no having time to increase their level of knowledge. This was supported with *Al-Gburi, et al. (2023)* in study "Assessing knowledge, attitudes, and practices toward sexually transmitted infections among Baghdad undergraduate students for research-guided sexual health education".

But this was in contrast with *Boakye, et al. (2023)* in study on "Sociodemographic determinants of knowledge, attitude and practices of Ghanaian nurses towards persons living with HIV and AIDS in Kumasi" and with *Saeed, et al. (2021)* in study about "Socio-demographic correlate of knowledge and practice toward COVID-19 among people living in Mosul-Iraq: A cross-sectional study" which may be due to the majority of the studied patients in these study were highly educated, younger and female that had a willing to learn to able to perform daily living activities without restrain.

The present study enlightened that there was no statistically significant correlation between self-efficacy and socio-demographic data. this may be due to self - efficacy based on mainly persons' belief, capacity in improving their health regardless any domain in socio-demographic data. This was in agreement with *Ferrari, et al. (2019)* in study about " Is there a relationship between self-efficacy, disability, pain and socio-demographic characteristics in chronic low back pain? A multicenter retrospective analysis" which concluded that there was no relation between sefl-efficacy and socio-demographic characteristics.

This finding was in contrast with *Andi, et al. (2019)* in study about" The relationship between self-efficacy and some demographic and socioeconomic variables among Iranian Medical Sciences students" which stated that there was a significant correlation between socio-demographic data among the studied sample with self-efficacy.

Conclusion: Based on the results of this study, Level of patient's knowledge and Self efficacy were improved after implementation of an educational intervention.

Recommendations:

Develop discharge plan for patients including cardiac rehabilitation program.

Develop posters and booklets for patients to increase their level of knowledge.

Table (1): Distribution regarding Socio- demographic characteristics of post CABG surgery patients (n=64).

Demographic Characteristics	No	%
Age:		
52 – 57	26	40.6
58 – 63	33	51.5
≥ 64	5	7.9
Range	52-64	
Mean ± SD	58.31 ± 2.70	
Median	58	
Male	41	64.1
Female	23	35.9
Married	52	81.2
Divorced	6	9.4
Widowed	6	9.4
Work		
Yes	46	71.9
No	18	28.1
Hard effort		
Yes	12	18.8
No	52	81.2
Educated	42	65.6
Illiterate	22	34.4
Rural.	58	90.6
Urban.	6	9.4
Income		
Enough.	17	26.5
Not-enough.	47	73.5
Treatment Fees.		
Governmental Coverage.	53	82.8
Health insurance.	11	17.2

Table (2): Distribution of post CABG surgery patients' medical history (n=64)

Medical History	No	%
Presence of medical history	64	100
History of Angina	62	96.8
History of HTN	47	73.4
History of Rheumatic Fever	10	15.6
History of Renal Failure	17	26.5
History of Diabetes Mellitus	10	15.6
History of Chronic Chest Disease (Asthma & COPD)	7	10.9
Smoking History		
Present Smoking	14	21.9
Previous Smoking	26	40.6
Family member smoker	51	79.7

Table (3): Percentage distribution of post CABG surgery patients' correct knowledge about the disease and treatment (n= 64).

Knowledge Items	Pre		Post		Follow up	
	No	%	No	%	No	%
Definition of CAD	10	15.6	48	75	48	75
Smoking is only the cause	14	21.9	40	62.5	32	50
Smoking again	10	15.6	45	70.3	33	51.6
Manifestations of CAD	9	14.1	42	65.6	42	65.6
Cardiac catheterization	64	100	64	100	64	100
Aspirin	20	31.3	41	64.1	47	73.4
Definition of CABG.	8	12.5	37	57.8	34	53.1
Indications of CABG.	14	21.9	51	79.7	54	84.4
Duration for recovery.	13	18.8	40	62.5	32	50
Duration for ribs healing.	34	53.1	55	85.9	13	20.3
Complications of CABG.	10	15.6	52	81.3	40	62.5
Importance of taking Plavix.	10	15.6	55	85.9	36	56.3
Aspirin or Plavix or both.	5	7.8	58	90.6	51	79.7
Side effects	7	10.9	49	76.6	49	76.6
Total Score	228	25.0	677	75.0	575	64.0

Table (4): Percentage distribution of pain control for post CABG surgery patients (n=64).

Pain control	Pre					post				Follow Up			
	SA (F %)	A (F %)	N (F %)	D (F %)	SD (F %)	SA (F %)	A (F %)	N (F %)	D (F %)	SA (F %)	A (F %)	N (F %)	D (F %)
Control chest pain with medications.	8(12.5)	30(46.9)	9(14.1)	17(26.6)	0	21(32.8)	35(54.7)	8(12.5)	0	9(14.1)	37(57.8)	13(20.3)	5(7.8)
Control chest pain with deep breathing exercise.	0	0	11(17.2)	36(56.3)	17(26.6)	21(32.8)	33(51.6)	8(12.5)	2(3.1)	13(20.3)	30(46.9)	14(21.9)	7(10.9)
Support wound	0	6(9.4)	27(42.2)	15(23.4)	16(25)	14(21.9)	21(32.8)	19(29.7)	10(15.6)	12(18.8)	31(48.4)	21(32.8)	1(1.6)
Control fatigue with medications.	0	0	20(31.3)	31(48.4)	13(20.3)	5(7.8)	39(60.9)	11(17.2)	9(14.1)	4(6.3)	33(51.6)	16(25)	11(17.2)
Total Percentage	17.18	0	26.18	56.6	73.8	18	8.2	66.01	25	9			

Table (5): Percentage distribution of exercise regimen for post CABG surgery patients (n=64).

Exercise regimen	Pre					Post				Follow Up			
	SA (F %)	A (F %)	N (F %)	D (F %)	SD (F %)	SA (F %)	A (F %)	N (F %)	D (F %)	SA (F %)	A (F %)	N (F %)	D (F %)
Walking daily.	0	13(20.3)	10(15.6)	25(39.1)	16(25)	21(32.8)	24(37.5)	19(29.7)	0	14(21.9)	17(26.6)	25(39.1)	8(12.5)
Ascends stairs slowly	14(21.9)	28(43.8)	22(34.4)	0	0	18(28.1)	32(50)	14(21.9)	0	17(26.6)	25(39.1)	22(34.4)	0
Lose weight	0	6(9.4)	11(17.2)	29(45.3)	18(28.1)	3(4.7)	31(48.4)	7(10.9)	23(35.9)	7(10.9)	33(51.6)	24(37.5)	0
Range of motions exercise for arm.	0	6(9.4)	16(25)	27(42.2)	15(23.4)	11(17.2)	46(71.9)	7(10.9)	0	10(15.6)	30(46.9)	19(29.7)	5(7.8)
Range of motions exercise for neck	0	13(20.3)	10(15.6)	22(34.4)	19(29.7)	14(21.9)	37(57.8)	13(20.3)	0	12(18.8)	25(39.1)	20(31.3)	7(10.9)
Total Percentage	25	21.5	53.5	74.06	19	7	59.4	34.6	6				

Table (6): Percentage distribution of medications regimen for post CABG surgery patients (n=64).

Medications regimen	Pre					Post				Follow Up			
	A (F %)	N (F %)	D (F %)	SD (F %)	SA (F %)	A (F %)	N (F %)	D (F %)	SA (F %)	A (F %)	N (F %)	D (F %)	
Medication on time.	9(14.1)	24(37.5)	18(28.1)	13(20.3)	13(20.3)	28(43.8)	23(35.9)	0	13(20.3)	28(43.8)	23(35.9)	0	
Prescribed dose of medication.	22(34.4)	15(23.4)	27(42.2)	0	5(7.8)	40(62.5)	19(29.7)	0	13(20.3)	31(48.4)	20(31.3)	0	
Don't Take medication	15(23.4)	26(40.6)	15(23.4)	8(12.5)	14(21.9)	30(46.9)	10(15.6)	10(15.6)	15(23.4)	32(50)	17(26.6)	0	
Don't stop medications	11(17.2)	10(15.6)	31(48.4)	12(18.8)	15(23.4)	37(57.8)	12(18.8)	0	15(23.4)	26(40.6)	15(23.4)	8(12.5)	

Side effects of medication	14(21.9)	16(25)	26(40.6)	8(12.5)	17(26.6)	29(45.3)	6(9.4)	12(18.8)	14(21.9)	30(46.9)	14(21.9)	6(9.4)
Take the exchanged medication	18(28.1)	12(18.8)	22(34.4)	12(18.8)	10(15.6)	48(75)	5(7.8)	1(1.6)	13(20.3)	32(50)	17(26.6)	2(3.1)
Increase or decrease dose.	9(14.1)	19(29.7)	27(42.2)	9(14.1)	18(28.1)	30(46.9)	13(20.3)	3(4.7)	11(17.2)	31(48.4)	17(26.6)	5(7.8)
Total Percentage	22	27	51		74.5		19.7	5.8	67.8		27.6	4.6

Table (7): Percentage distribution of diet regimen for post CABG surgery patients (n=64).

Diet regimen	Pre				Post				Follow Up			
	A (F %)	N (F %)	D (F %)	SD (F %)	SA (F %)	A (F %)	N (F %)	D (F %)	SA (F %)	A (F %)	N (F %)	D (F %)
Meals on regular time.	11(17.2)	17(26.6)	36(56.3)	0	13(20.3)	36(56.3)	15(23.4)	0	8(12.5)	36(56.3)	20(31.3)	0
Small frequent meals	7(10.9)	16(25)	31(48.4)	10(15.6)	0	42(65.6)	9(14.1)	13(20.3)	4(6.3)	28(43.8)	15(23.4)	17(26.6)
Low salt in diet.	0	26(40.6)	21(32.8)	17(26.6)	12(18.8)	40(62.5)	12(18.8)	0	14(21.9)	26(40.6)	17(26.6)	7(10.9)
Don't eat Pickles.	12(18.8)	31(48.4)	14(21.9)	7(10.9)	13(20.3)	26(40.6)	25(39.1)	0	9(14.1)	24(37.5)	26(40.6)	5(7.8)
Don't eat preserved foods.	0	18(28.1)	29(45.3)	17(26.6)	7(10.9)	32(50)	12(18.8)	13(20.3)	8(12.5)	23(35.9)	19(29.7)	14(21.9)
Salt alternatives	0	17(26.6)	33(51.6)	14(21.9)	10(15.6)	36(56.3)	18(28.1)	0	13(20.3)	28(43.8)	17(26.6)	6(9.4)
Corn oil	0	18(28.1)	29(45.3)	17(26.6)	7(10.9)	36(56.3)	10(15.6)	11(17.2)	8(12.5)	33(51.6)	14(21.9)	9(14.1)
Low cholesterol.	12(18.8)	21(32.8)	26(40.6)	5(7.8)	7(10.9)	37(57.8)	20(31.3)	0	10(15.6)	23(35.9)	25(39.1)	6(9.4)
White meats	7(10.9)	18(28.1)	33(51.6)	6(9.4)	14(21.9)	36(56.3)	14(21.9)	0	17(26.6)	26(40.6)	16(25)	5(7.8)

Low fatty Diet.	8(12.5)	15(23.4)	22(34.4)	19(29.7)	17(26.6)	35(54.7)	12(18.8)	0	15(23.4)	27(42.2)	19(29.7)	3(4.7)
Fresh vegetables.	10(15.6)	23(35.9)	17(26.6)	14(21.9)	0	33(51.6)	23(35.9)	8(12.5)	6(9.4)	23(35.9)	26(40.6)	9(14.1)
Fresh fruits.	7(10.9)	18(25)	28(43.8)	13(20.3)	15(23.4)	38(59.4)	11(17.2)	0	12(18.8)	27(42.2)	17(26.6)	8(12.5)
Boiled and grilled food	7(10.9)	12(18.8)	24(37.5)	21(32.8)	13(20.3)	39(60.9)	12(18.8)	0	13(20.3)	32(50)	19(29.7)	0
Total Percentage	10	30	60		71.4		23.2	5.4	59.3		30	10.7

Table (8): Percentage distribution of daily living activities for post CABG surgery patients (n=64).

Daily living activities	Pre				Post				Follow Up			
	A (F %)	N (F %)	D (F %)	SD (F %)	SA (F %)	A (F %)	N (F %)	D (F %)	SA (F %)	A (F %)	N (F %)	D (F %)
Follow precautions of wound care	22(34.4)	0	26(40.6)	16(25)	19(29.7)	36(56.3)	9(14.1)	0	17(26.6)	31(48.4)	16(25)	0
Control fatigue with activity level.	0	12(18.8)	33(51.6)	19(29.7)	6(9.4)	31(48.4)	17(26.6)	10(15.6)	0	24(37.5)	24(37.5)	16(25)
Usual daily living activities.	8(12.5)	22(34.4)	23(35.9)	11(17.2)	14(21.9)	28(43.8)	18(28.1)	4(6.3)	11(17.2)	21(32.8)	24(37.5)	8(12.5)
Social activities.	5(7.8)	35(54.7)	14(21.9)	10(15.6)	0	22(34.4)	29(45.3)	13(20.3)	2(3.1)	17(26.6)	28(43.8)	17(26.6)
Total Percentage	13.7	27	59.3		60.9		28.6	10.5	48		36	16

Table (9): Distribution of overall post CABG patients' self- efficacy (n= 64).

Items	No	%
Pain control	14	21.9
Exercise regimen	13	20.3
Medications regimen	7	10.9
Diet regimen	0	0
Daily living activity	10	15.6

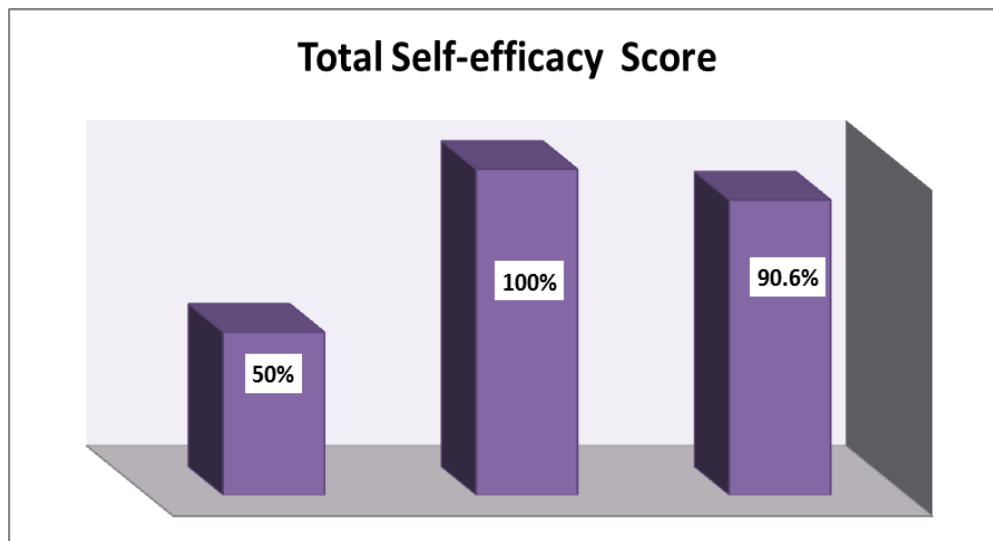


Figure (1): Distribution of overall self-efficacy among the studied patient's level throughout the study phases (n=64)

Table (10): Relation between studied patient's knowledge throughout the study phases n= (64)

Items	Pre	Post	Follow up	Least Significant Difference (LSD)	P value <.001
	Mean ± SD	Mean ± SD	Mean ± SD		
Knowledge	3.5 ± 1.3	10.5 ± 1.9	8.9 ± 2.4		
P+ pre/post	0.000				
P+ pre/FU			0.000		

Table (11): Correlation of knowledge and self- efficacy for post CABG patients (n=64).

Item	Pearson correlation (r test)	Sig. (2-tailed)
Self-efficacy	- 0.01	0.8

* P ≤ 0.05 (significant)

Table (12): Relation between level of knowledge and socio-demographic data (n=64).

knowledge						
Variables	Pre		Post		Follow up	
	X ²	Sig.	X ²	Sig.	X ²	Sig.
Age	38.6	0.8	66	0.8	77.7	0.5
Gender	3.2	0.7	13	0.1	10.2	0.4
level of education	5.09	0.5	9	0.4	8.3	0.5
Marital status	11.8	0.4	23.4	0.1	18.3	0.5
Work	5.6	0.4	9.8	0.3	15.5	0.1

X² is chi-square test.

* P ≤ 0.05 (significant)

Table (13): Relation between self-efficacy and socio-demographic data (n=64).

Self-efficacy						
socio-demographic data	Pre		Post		Follow up	
	X ²	Sig.	X ²	Sig.	X ²	Sig.
Age	170.3	0.1	147.2	0.4	125.1	0.7
Gender	13.1	0.8	17.6	0.4	11.17	0.8
level of education	21.6	0.3	15.9	0.5	18.8	0.3
Marital status	24.6	0.9	12.03	0.2	31.6	0.5
Work	25.7	0.1	21.03	0.2	13.4	0.7

X² is chi-square test.

* P ≤ 0.05 (significant)

REFERENCES

- [1] **Abd El Rhman, H., Ahmed, M. and Radwan, S. (2020):** Applying Health Belief Model among High Risk Hypertensive Clients. Egyptian Journal of Health Care, 11(2): 286-306.
- [2] **Abdel-Salam, A. & Mahmoud, F. (2018):** Effect of Educational Program on The self-Efficacy and Quality of Life for Mothers Caring children With Congenital Heart Disease, IOSR Journal of Nursing and Health Science, 7(4): 68-78.
- [3] **Al-Gburi, G., Al-Shakarchi, A., Al-Dabagh, J. and Lami, F. (2023):** Assessing knowledge, attitudes, and practices toward sexually transmitted infections among Baghdad undergraduate students for research-guided sexual health education. Frontiers in Public Health, 1(1):1-11.
- [4] **Almaskari, A., Al Noumani, H., Al-Omari, K. and Al Maskari, M. (2019):** Patients' and Nurses' Perceptions of Post-coronary Artery Bypass Graft Learning Needs in Two Omani Hospitals. Sultan Qaboos University Medical Journal, 19(2): 122-128.
- [5] **Al-Nozha, M., Ismail, H. and Nozha, O. (2016):** Coronary Artery Disease and Diabetes Mellitus. Journal of Taibah University Medical Sciences, 11(4): 330-338.
- [6] **Andi, S., Bakouei, F., Adib Rad, H., Khafri, S. and Salavati, A. (2019):** The relationship between self-efficacy and some demographic and socioeconomic variables among Iranian Medical Sciences students. Advances in Medical Education and Practice, 10 (1): 645–651.
- [7] **Aronson, D. and Edelman, E. (2014):** Coronary Artery Disease and Diabetes Mellitus. Cardiology Clinical Journal, 32(3): 439-455.
- [8] **Bahadur, T., Xu, C., Mallah, M., Indayati, W., Shi, C., Xu, J., Gu, A. (2019):** Association of Smoking with Coronary Artery Disease in Nepalese Populations: A Case Control Study. Toxicology Research Journal, 8(5): 677-685.
- [9] **Baljepally, V. and Wilson, D. (2021):** Gender-Based Disparities in Rural Versus Urban Patients Undergoing Cardiac Procedures. Cureus, 13(7): 1-7.
- [10] **Balkhy, H., Kitahara, H., Mitzman, B. and Nisivaco, S. (2020):** Robotic Totally Endoscopic Beating-heart Bypass to the Right Coronary Artery: First Worldwide Experience. Eur J Cardiothorac Surg, 57(3): 529-534.
- [11] **Brown, J, Gerhardt, T. and Kwon, E. (2023):** Risk Factors For Coronary Artery Disease. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK554410/>. Accessed on: (13/3/2023- 10pm).
- [12] **Bsharat, R. and Karadag, M. (2019):** The Impact of Patient Education on Quality of Life of Patients Undergoing Coronary Artery Bypass Grafting (CABG) in the West Bank of Palestine. EC Nursing and Healthcare 1(2): 11-23.
- [13] **Blokzij, F. Onrust, M., Dieperink, W., Keus, F., van der Horst, I., Paans, W., Mariani, M. and Reneman, M. (2021):** Barriers That Obstruct Return to Work After Coronary Bypass Surgery: A Qualitative Study. J Occup Rehabil, 31(2):316-322.

- [14] **Boakye, D., Konadu, B., Mudzusi, Z. (2023):** Sociodemographic determinants of knowledge, attitude and practices of Ghanaian nurses towards persons living with HIV and AIDS in Kumasi. *International Journal of Africa Nursing Sciences*, 18(1): 100519.
- [15] **Borzou, S., Amiri, S., Salavati, M., Soltanian, A. and Safarpour, G. (2018):** Effects of the First Phase of Cardiac Rehabilitation Training on Self-efficacy among Patients Undergoing Coronary Artery Bypass Graft Surgery. *Journal of Tehran University Heart Center*, 13(3): 126-131.
- [16] **Centers for Disease Control & Prevention. National Center for Health Statistics (2015):** Heart Disease in the United States. *accessed on (7/11/2020-10:30pm).available at: www.cdc.gov/heart disease/facts.htm.*
- [17] **Center for Disease Control and Prevention (2021):** Coronary Artery Disease. Available at: https://www.cdc.gov/heartdisease/coronary_ad.htm. Accessed on: (28/9/2022-11 pm).
- [18] **Chen, A., Yehle, K., Albert, N, Ferraro , K., Matthew , H. and Plake, K. (2014):** Relationships between health literacy and heart failure knowledge, self-efficacy, and self-care adherence. *Research in Social and Administrative Pharmacy*, 10(2): 378-386.
- [19] **Charles W, Barbara A, Rita S & John W. (1993):** Development of Scales to Measure Beliefs of Diabetic Patients. *Research in Nursing and Health*, 6(1), 127-141.
- [20] **Devi, L., Prakash, K. and Chauhan, V. (2018):** Adherence to Therapeutic Regimen among Patients with Cardiovascular Diseases in Selected Community Area Dehradun, Uttarakhand. *International Journal of Medical Science and Public Health*, 7(7): 1-11.
- [21] **Elaskary, E. (2011):** Impact of Health Promotion Program on Compliance with Therapeutic Regimen Among Hypertensive Patients in Gaza Strip, Unpublished Doctoral Thesis. Faculty of Nursing, Cairo University.
- [22] **Fuchs, F. and Whelton, P. (2019):** High Blood Pressure and Cardiovascular Disease. *Hypertension*, 75(2): 285–292.
- [23] **Ghisi, G., Kin ,F. Ross, M. Doiron, M., Brideau, R., Aultman, C. (2020):** Effectiveness of an Education Intervention Among Cardiac Rehabilitation Patients in Canada: A Multi-Site Study. *CJC Open*. 2(4):214-221.
- [24] **Giustino, G. and Mehran, R. (2015):** CABG Surgery Versus PCI in CAD. *Nature Review of Cardiology Journal*, 12(1): 75-77.
- [25] **Gohari, F., Hasanvand, S., Gholami, M., Heydari, H., Baharvand, P. and Almasian, M.(2022):** Comparison of the effectiveness of home visits and telephone follow-up on the self-efficacy of patients having undergone coronary artery bypass graft surgery (CABG) and the burden of their family caregivers: A randomized controlled trial. *Investigación y Educación en Enfermería*, 40(1): 14.
- [26] **Grembowski, D., Patrick, D., Diehr, P., Durham, M., Beresford, S., Kay, E. and Hecht, J. (1993):** Self-Efficacy and Health Behavior Among Older Adults. *Journal of Health and Social Behavior*, 34 (2) :89-104.
- [27] **Gupta, N., Elnour, A. and Sadeq, A. (2022):** Diabetes and the Heart: Coronary Artery Disease. *European Society of Cardiology*, 22(10): 241-50.
- [28] **Hajar, R. (2017):** Risk Factors for Coronary Artery Disease: Historical Perspectives. *Heart Views Journal*, 18(3): 109-114.
- [29] **Ibrahim, A., Refaat, M., Helmy, I. and Abdelhady, Y. (2020):** Assessment of Coronary Artery Bypass Graft by Using Multidetector Computed Tomography Coronary Angiography. *Benha Medical Journal*, 37(2): 347.
- [30] **Irfan, S., Rahaman, M., Noman, A., and Mithun, S. (2013):** Health Related Quality of Life Among Coronary Artery Bypass Graft Patient Attended at Combined Military Hospital. *Medical College Journal*, 4(2): 10-17.
- [31] **Keating, T., Al-Adalieh, M., Chughtai, Z. and Javadpour ,S. (2023):** Adherence to secondary prevention recommendations after coronary artery bypass graft surgery. 192(1): 1103–1108.

- [32] **Kim, M., Mallory, C. and Valerio, T. (2016):** Statistics for evidence-based practice in nursing. Jones & Bartlett Publishers. 2nd edition.
- [33] **Kwesigabo, G., Mwangi, M., Kakoko, C., Warriner, I., Mkony, A., Killewo, J. and Macfarlane, B. (2012):** Tanzania's Health System and Work Force Crisis. *Public Health Policy*, 33(1): 35-44.
- [34] **Mahmoud, S., Alaa Eldin, S., Hussein, R. (2016):** Relation between Quality of Life and Sex of Patients Post Coronary Artery Bypass Surgery. *ASNJ*, 18(1): 137-160.
- [35] **Motlagh, Z., Sharifirad, G., Jalilian, F., Alavijeh, M., Aghaei, A. and Ahmadi, T. (2015):** Effectiveness of Educational Programs to Promote Nutritional Knowledge in Type II Diabetes Patients Based on Health Belief Model. *J Health Syst Res*, 9(4): 412-20.
- [36] **Nair, V., Nair, J., Das, S., Singh, K., Kathayanat, J., Radhakrishnan, R., Chooriyil, N. and Babu, A. (2018):** Lifestyle practices, health problems, and quality of life after coronary artery bypass grafting. *Indian J Thorac Cardiovasc Surg*. 34(4): 476–482.
- [37] **Nielsen, S., Giang, K., Rosengren, A., Pivodic, A., Jeppsson, A., and Karlsson, M. (2019):** Social Factors, Sex, and Mortality Risk After Coronary Artery Bypass Grafting: A Population-Based Cohort Study. *Journal of American Heart Association*, 8(6):1-24.
- [38] **Nielsen, S., Karlsson, M., Björklund, E., Martinsson, A., Emma, C., Malm, C., Pivodic, A. and Jeppsson, A. (2020):** Socioeconomic Factors, Secondary Prevention Medication, and Long-Term Survival After Coronary Artery Bypass Grafting: A Population-Based Cohort Study From the SWEDEHEART Registry. *Journal of the American Heart Association*, 9(5): 9-13.
- [39] **Nooriani, N., Mohammadi, V., Feizi, A., Shahnazi, H., Askari, G., and Ramezanzade, E. (2019):** The Effect of Nutritional Education Based on Health Belief Model on Nutritional Knowledge, Health Belief Model Constructs, and Dietary Intake in Hemodialysis Patients. *Iran J Nurs Midwifery Res*, 24(5): 372–378.
- [40] **O'Neil, A., Berk, M., Davis, J. and Stafford, L. (2016):** Cardiac Self-efficacy Predicts Adverse Outcomes in Coronary Artery Disease Patients. *Scientific Research*, 5(7): 1-9.
- [41] **Pačarić, S., Turk, T., Erić, I., Orkić, Z., Petek, A., Milostić-Srb, A., Farčić, N., Barać, I. and Nemčić, A. (2020):** Assessment of the Quality of Life in Patients before and after Coronary Artery Bypass Grafting (CABG): A Prospective Study. *Int J Environ Res Public Health*, 17(4): 1417.
- [42] **Rahman, M., Sarker, S., Mahbub, T., Khanam, S., and Zafrin, N. (2013):** Level of Knowledge About Coronary Artery Disease is Poor Among Bangladeshi Hospitalized Patient Following Acute Coronary Syndrome. *Journal of Medicine*, 14(2): 119-122.
- [43] **Rüppell, D., Meier, M., Horn, D. and Höner, K. (2021):** Professional Knowledge and Self-Efficacy Expectations of Pre-Service Teachers Regarding Scientific Reasoning and Diagnostics. *Educ. Sci.* 11 (629): 2-32.
- [44] **Saeed, B., Al-Shahrabi, R. and Bolarinwa, O. (2021):** Socio-demographic correlate of knowledge and practice toward COVID-19 among people living in Mosul-Iraq: A cross-sectional study. *PLoS One*. 2021; 16(3): e0249310.
- [45] **Said, N., Nasr, M. and Ebraheim, M. (2022):** Assessment of Patients' Knowledge and Lifestyle Before Coronary Artery Bypass Grafting Surgery. *Egyptian Journal of Health Care*, 13(1): 1065-1071.
- [46] **Sallam, G., Abdalla, K., and Mahmoud, S. (2022):** Relation Between Compliance of Patients Post Coronary Artery Bypass Surgery Towards Symptoms Management Strategies and Experienced Discomforts. *Egyptian Journal of Health Care*, 13(3): 2-15.
- [47] **Sandin, E. and Malm, C. (2021):** Smoking and Postoperative Risk Cardiac Surgery Patients. Available at: <https://gupea.ub.gu.s>. Accessed on: (28/9/2022- 10 pm).
- [48] **Sari, C., Nofrel, V. and Lukman, M. (2022):** Correlation Between Knowledge and Self-Efficacy with Family Skills in Exercising Range of Motion for Post-Stroke. *Journal of Multidisciplinary Healthcare*, 17(2):222-240.

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- [49] **Shrestha, R., Rawal, L., Bajracharya, R. and Ghimire, A. (2020):** Predictors of cardiac self-efficacy among patients diagnosed with coronary artery disease in tertiary hospitals in Nepal. *J Public Health Res.* 9(4): 1787.
- [50] **Soroush, A., Komasi, S., Saeidi, M., Heydarpour, B., Carrozzino, D., Fulcheri, M., Marchettini, P., Rabboni, M. and Compare, A. (2017):** Coronary Artery Bypass Graft Patients' Perception about the Risk Factors of Illness: Educational Necessities of Second Prevention. *Ann Card Anaesth.* 20(3): 303–308.
- [51] **Stanley, M. and Pollard, D. (2013):** Relationship between knowledge, attitudes, and self-efficacy of nurses in the management of pediatric pain. *Pediatr Nurs,* 39(4):165-71.
- [52] **Sullivan, D., LaCroix, A., Russo, J. and Katon, W. (1998):** Self-efficacy and self-reported functional status in coronary heart disease: a six-month prospective study. *Psychosom Med,* 60(4):473-8.
- [53] **Taha, N., Ibrahim, M. and Elsayed, E. (2018):** Factors Affecting Compliance with Therapeutic Regimen for Patients with Coronary Artery Bypass Graft: Suggested Nursing Guidelines. *Iosrjournal,* 7(2): 2320-1959.
- [54] **Thielmann, M., Wendt, D., Slottosch, I., Welp, H., Schiller, W., Tsagakis, K., Schmack, B., Weymann, A. and Martens, S. (2021):** Coronary Artery Bypass Graft Surgery in Patients With Acute Coronary Syndromes After Primary Percutaneous Coronary Intervention: A Current Report from the North-Rhine Westphalia Surgical Myocardial Infarction Registry. *Journal of American Heart Association,* 10(18): 1137-1144.
- [55] **Torknejad, A., Babaei, S., Mirmohammadsadeghi, M. (2020):** Effect of an Educational Intervention Based on BASNEF Model on Treatment, Adherence After Coronary Artery Bypass Surgery: A Randomized Clinical Trial. *ARYA Atheroscler Journal,* 16(3): 105-14.
- [56] **Wang, W., Bagshaw, S., Norris, C., Zibdawi, R., Zibdawi, M. and MacArthur, R. (2014):** Association Between Older Age and Outcome After Cardiac Surgery: A Population-based Cohort Study. *Journal of Cardiothoracic Surgery,* 19(177): 2-7