

An education program for patients post Coronary Artery Bypass Graft (CABG) for age between 35-60 male/female in Saudi Arabia

Amani Almutairi

*Master of Science in Nursing Advanced Practice
School of Nursing, Psychotherapy and Community Health
Dublin, Ireland*

Date of Submission: 02-01-2023

Date of Acceptance: 14-01-2023

Globally, coronary heart disease remains a leading cause of death, causing about 17.5 million deaths per year (Dalirirad et al., 2021). Of this number, 80% occur in low- and middle-income countries (LMICs) (Dalirirad et al., 2021). Persons suffering from coronary heart disease receive coronary artery bypass graft (CABG) surgery, a potentially life-saving treatment for the disease (Alghafees et al., 2020). As for CABG surgery, patients benefit from reduced disease symptoms, enhanced quality of life, prolonged life span, and decreased mortality incidences (Medalion& Park., 2016; Alburikan&Nazer, 2017). However, despite the current developments increasing the success rate in CABG surgeries, the procedure harbors deliberating psychosocial and physical consequences after surgery (YamanAktas et al., 2021). Hence, patients must receive optimal care before, during, and after the surgery. The advancement in technology and changes in the health care system have substantially reduced hospital stay duration, leaving patients with long-term and complex care needs with no option but to receive care at home after the surgery (Dalirirad et al., 2021). Lack of effective educational programs restricts patients' knowledge to engage in specific self-care behaviors, leading to the onset of complications and subsequent hospital readmissions.

Hospital readmissions are an issue of concern across the healthcare system. It affects patients and medical facility reimbursements and quality measures (Shah et al., 2019). In their research, Shar et al. (2019) established that 12.2 % of CABG patients were readmitted within 30 days. Patients were readmitted approximately within the first two weeks of discharge, with a readmission length of stay being six days and at a medical cost of \$ 13 500 (Shah et al., 2019). The readmission rates were higher in older women and exhibited higher medical comorbidity rates (Shah et al., 2019). After undergoing cardiac surgery, patients experience sleep disorders, activity intolerance, fatigue, respiratory distress, chest pain, and weight loss. Other difficulties include leg incisions and gastrointestinal problems such as nausea, loss of appetite, and changes in bowel habits. Also, between three to 12 months after CABG, patients experience psychosocial problems such as lack of coping with stressors, unhappiness, lifestyle changes, family complexity, and changes in sexual life (Shah et al., 2019). Other shortcomings include marriage-family-friend relationships, depression, anxiety, mood changes, and irritability (YamanAktas et al., 2021). Given their conditions, patients may require assistance from caregivers after CABG surgery, exerting a burden of care on the family exposing them to stress (Bax et al., 2021). The above statistics indicate the need for evidence-based approaches to reduce complications and reduce readmission costs while enhancing the quality of life for post-CABG surgery (Masoumeh et al., 2018). Family engagement is an essential element of patient-oriented care that positively impacts care and health outcomes for the patient (Osailan&Abdelbasset, 2020). Therefore, an effective education program must include the family members.

A patient-centered education program after CABG surgery remains a plausible option towards reducing recurrent readmissions. Existing literature supports the need for individualized discharge planning after cardiac surgery, facilitating a successful home transition that supports their recovery journey (Rushton et al., 2017; Fredricks, 2021). A greater understanding of the patients' needs is critical for shaping the education offered to promote self-care management. Such an approach empowers the patient, increasing their confidence while minimizing anxiety and depression. Designing a responsive educational program required active participation by all relevant stakeholders such as the patient, their family members and the nursing staff (McAllister, 2016). Engaging patients in decision-making is essential in eliminating assumptions that hinder their ability to interact with the process. Patients feel their decisions are appreciated and were incorporated with the discharge plan;

they identify with the process, increasing their buy-in (Aydin &Gursoy, 2019). This increases their satisfaction and contributes to a quick recovery process and ultimately positive health outcomes.

The family members will support the patient at home, so engaging them in the education program empowers them to understand what is expected of them when attending to the patient (Brennan, 2016). The approach contributes to positive care outcomes because it increases their knowledge of the medication plan the patient must adhere to, exercise, diet and the kind of environment the family members must create to help the patient with the recovery journey (Janjua et al., 2021). Health practitioners drive care delivery from the time the cardiac patients are admitted to their discharge, requiring them to practice knowledge and skills at every step of the way to enhance health outcomes. Therefore, health care leaders must raise awareness of the need for patient-centered discharge planning on nurses and institute models and structures that create the desired culture (Defibaugh, 2018). Thus far, the multifaceted approach to discharge planning facilitates the build-up to a patient-centered education plan that meets their care needs.

Saudi Arabia experiences an increased incidence of cardiovascular disease, with more patients expected to undergo cardiac revascularization surgery. Saudi Arabia's government has been investing in cardiac centers, substantially increasing access to its population. According to the country's Ministry of Health statistical yearbook, the kingdom facilitated 59321 chest cardiac and vascular surgeries in 2018. In their research on post-cardiac surgery health-related quality of life (HRQoL), Murshid et al. (2020) reveal that patients with medical comorbidities such as stroke, diabetes, and hypertension were at increased risk of disability. According to Alsaqri et al. (2020), Saudi Myocardial Infarction patients valued information concerning risk factors, medication, anatomy, and physiology before discharge. This research reveals a statistically significant difference between patients' total health educational needs and their socio-demographic characteristics, highlighting the need for a patient-oriented educational plan. Younger patients and the highly educated required more information than the older and the uneducated ones; an analogy pinpoints the need for assessing cardiac patients' needs before discharge towards developing a responsive cardiac educational program that enhances the patient's recovery at home (Alsaqri et al., 2020). Aziz et al. (2017) supports a similar analogy in their research that sought to evaluate home self-care management programs for patients with open heart surgery, recommending the need to design such plans to support and offer follow-up care for such demographic towards presenting complications, improving knowledge and practices.

With the increasing evidence on the importance of patient-centered education programs during discharge after cardiac surgery, this study aims to pursue such a theme reinforcing the existing literature. The study results will facilitate the development of individualized education programs during discharge planning after cardiac surgery. This would reduce readmission rates, significantly minimizing pressure on already stretched resources. Reducing postoperative complications during the recovery period that emanate from cases of depression and anxiety will positively impact the patients' ability for self-care, well-being, and health.

To this end, this research proposal seeks to answer the PICOT question:

How do CABG patients aged 35-60 (P) exposed to education programs (I) compared to no educational intervention (C) impact their level of awareness (O) after one-month discharge.

The proposal's objectives are:

- Increase quality of life for post CABG surgery.
- Minimize complications after CABG surgery.
- Reduce the cost of readmission in KSA

I. Literature Review

The project proposal will employ a systematized review of existing literature as the research method. The proposal will utilize qualitative, quantitative, and evidence-based reviews to learn other research on the topic. As for the systematic review approach, the author finds it the most applicable for this proposal because it provides reliable methods for evaluating and gathering the research findings by other authors, accumulating robust and accurate evidence. The author executes an inclusive search with a systematic research method to access relevant published and unpublished articles on the topic. According to Siddaway et al. (2019), this allows the researcher to systematically integrate the search results to accommodate a critique of the quality, extent, and nature of the evidence that answers the research question. This proposal will amalgamate existing research to assemble broad theoretical conclusions on the prevailing reference evidence, concurrently linking evidence to theory and vice versa. To this end, this systematic review strives to answer the research questions:

1. Do patient-oriented educational programs delivered post-CABG surgery increase the quality of life for Saudi Arabian patients aged 35-60?
2. Do patient-centered educational programs offered to Saudi Arabian patients post coronary artery bypass graft for ages 35-60 minimize complications?
3. Does a person-oriented educational program provided to Saudi Arabian patients post CABG surgery reduce the cost of readmission in KSA?

The systematic review will incorporate diverse literature articulating the topic and focusing on local, regional, and global educational program patterns, providing the author with an all-inclusive literature scope that reveals correspondence and deviations. Such an approach will provide an opportunity to blend the review findings towards shaping the conclusion and recommendation. The author will use the school digital library to access systematized literature on the topic area. Using different databases such as Academic search complete, MEDLINE, CINAHL Complete, and APA PsycINFO complete will help locate relevant articles for this proposal. MEDLINE database will help provide current bibliographic citations and author abstracts, while CINAHL completely offers rich access to allied and nursing health fields database; hence, it contains authoritative journal articles. APA PsycINFO database hosts social science journals, providing information necessary for shaping the topic. The Academic complete search avails an extensive literature on peer-reviewed academic journals and publications, extending to magazines conference proceedings, among other materials on the topic area. With such a multifaceted database, the proposal will benefit from a comprehensive literature base from scholarly articles and journals and theoretical models that shape the topic area.

The business proposal will employ keyword search separated by Boolean functions as the core search approach. The principal search terms will encompass: Patient-centered education program "and" post CABG surgery, individualized "or" standardized "and" discharge planning post-CABG, educational intervention "and" cardiac surgery patients, education program "and" family members for CABG patients, self-care "and" complications post-CABG surgery. The author will also employ hand search through google scholar to access data sets such as BMJ, Science direct, and PLoS. The truncation approach will be critical in reducing the numeral variations in the different searchers. According to Salvador-Olivan et al. (2019), such an approach enhances the quality and validity of the systematic reviews by minimizing errors in the search strategies. The author will pursue citation tracking to locate references in journals and peer-reviewed articles identified during the initial search. This will widen the literature search, facilitating a robust and authentic data accumulation. A Critical Appraisal Skills Program (CASP) tool will come in handy to promote the aspects of reliability and validity for this systematic review.

The inclusion criteria will pursue features characterizing journals that meet the research questions demands; it will cover the English language published articles in the last five years, randomized controlled trials that are full text, grey literature covering reports, conference proceedings, qualitative data, and papers that meet ethical principles. The exclusion criteria will involve non-English language articles published in the last five years and those not full text.

The effect of educational programs in enhancing the quality of life for CABG patients after surgery

A patient's mental status is one of the dimensions of quality of life (QoL) in the recovery period after CABG because it influences their social functioning and restarting activities. As a common mental outcome after CABG surgery, depression affects the recovery course of these patients. Statistics indicate that 54% of patients suffer clinical depression after CABG surgery (Mohsenipouya et al., 2018). The condition exposes such patients to an increased risk of mortality, decreased routine activities, inability, and increased medical care (Fredericks et al., 2021). The administration of an adequate education program after CABG surgery improves the patient's mental status, reduces cardiac mortality, improves QoL, and decreases behavioral risk factors. The efficacy of such models is a factor of educational model's health care workers use.

Family members play a crucial role in providing care to patients with chronic conditions. Such support may cover financial and emotional aspects during hospital admissions and the organizational and physical activities for managing wound care, postoperative pain, medication administration, changes in lifestyle, and diet (Dalirirad et al., 2021). The family members exert pressure on the caregivers and subsequent stress, which affects their well-being (Liljeroos et al., 2016). Often, the caregivers report their unpreparedness for the burden and demands of caring for the persons (Halm, 2017). Such an analogy highlights the need for educational programs to prepare the family members for the extra work with the CABG patients, equipping them with the care-related knowledge they can utilize to facilitate the recovery process while enhancing the patient's quality of life (Moosaviean et al., 2021). The caregiver's optimal participation in the patient's life helps with the patient's full and prompt physical recovery after CABG surgery. This enhances the patient's ability to assume normalization of routine activities that link with the need to pursue a healthy lifestyle and pharmacological management in the long term (Hu, 2016). Therefore, the family members are an integral part of cardiac rehabilitation, which is the sum of all activities necessary to determine a positive recovery journey while at the same time offering optimal physical, social, and mental situations (Mendes, 2016). With adequate support from family caregivers, patients can resume their daily functioning and reverse the disease progression through a healthy lifestyle.

An education program for both the patient and caregivers after CABG surgery is instrumental in influencing the risk factors for heart disease. The education seeks to reduce risk activities by helping patients, and family caregivers control blood pressure, stop smoking, reduce excess weight by engaging in regular exercise and reduce stress. Such aspects require a change in lifestyle habits with consistent medications to fully

recover. The education plan may focus on helping understand the discharge plan (Yu & Guo, 2018). The education must also answer all questions and offer a written direction on medication. Such aspects are critical for enhancing the patient's QoL.

The impact of an educational program in minimizing complications on Saudi Arabian patients post coronary artery bypass graft

Postoperative teaching and counseling and follow-up by phone are essential services that reduce the risk of complications after CABG surgery. Complications after CABG surgery are associated with increased health care costs and readmissions (Akbari & Celik, 2015). Patient education concerning self-care reduces the risk of preventable complications, prompting the need for discharge planning to facilitate the effective transition between hospital and home care. Patient education enhances their readiness to leave the hospital setting after CABG surgery. The nature and delivery model influence the success of self-care. This argument highlights the need for patient-centered education to help them understand the indicators of complications (Aydin & Gürsoy, 2019). A patient-oriented discharge planning that involves the family and caregiver prepares the patient, reducing the risk of complications. The requirement to enforce a patient-centered education for discharge planning concerns individual-centered concepts requiring practitioners to collaborate with the patient and significant others to develop shared decision-making (Mussa, 2021). The approach promotes self-management skills and knowledge critical for preventing post-CABG surgery complications (Rushton et al., 2017). Individualized education empowers patients, promoting their ability to utilize targeted interventions to build skills and confidence necessary for adopting healthy behavior, resulting in reduced complications.

The impact of patient-centered education on reducing costs associated with readmission

Unplanned hospital readmissions are commonplace post-CABG. The 30-day readmissions rates after CABG surgery are associated with preventable issues concerning self-care. Statistics indicate that about 1 in 8 patients are readmitted post-CABG surgery within 30 days (Shawon et al., 2021). The length of stay for such patients is 6 days at an average cost of \$ 13,499 (Shah et al., 2019). The lack of knowledge about preventing infections, seeking help in case of complications after discharge, and identifying signs of clinical deterioration between patients and their families contribute to the challenge (Shaughnessy et al., 2020). Such readmissions result in increased cost of care for both families and the hospital. The readmissions negatively affect hospital reimbursements and quality measures. This is because the 30-day readmissions post-CABG relate to challenging postoperative course preoperative comorbidities (Shah et al. 2019). The quality of patient education intervention regarding mode, timing, and episode often influences the effectiveness in promoting self-care behaviors (Fredericks & Yau, 2021). Patients potentially develop complications without a patient-centered education program, increasing hospital readmissions.

Like elsewhere across the globe, the Saudi Arabian demographics are shifting to the elderly and an urban population that assumes lifestyles that expose them to the risk of cardiovascular disease. This has led to increased demand for cardiac surgery and a subsequent need to offer evidence-based discharge planning that empowers patients and their family members to effectively self-manage their condition (Alburikan & Nazer, 2017). Assessing the population's needs informs the process while implementing a tried and tested educational model that facilitates self-management care after CABG surgery.

In conclusion, the literature reveals the importance of patient-centered education in enhancing QoL reducing complications and hospital readmissions. The literature underscores the need to engage the patient and their family members during discharge planning to ensure comprehensive care after discharge. By understating patient needs, healthcare practitioners can instate tailored education to patients after CABG surgery, promoting self-care management. With patient empowerment and increased confidence levels, they experience reduced depression and anxiety levels. Effective patient-oriented education must also embrace their perceived learning needs, values and beliefs. The diverse teaching and education approaches notwithstanding, individualized patient education potentially assists cardiac practitioners in preparing patients adequately during discharge. The literature review answers the research questions, affirming the need to evaluate whether similar practices are commonplace in Saudi Arabian. If not, what gaps require filling to ensure responsive patient-centered educational programs to cater to the diverse needs of the country's demographics. By answering the PICOT question, the research will justify the Saudi Arabian health agencies to allocate resources towards developing discharge planning approaches that meet the needs of cardiac patients after CABG. The study would facilitate a benchmarking process across a similar educational model targeting cardiac patients after CABG surgery, settling on an educational intervention plan that reflects the needs and expectations of the Saudi Arabian population.

An Education Program for Patients

The plan-Do-Study Act (PDSA) is a four-phased guide that breaks down the thinking process into steps. The model is insightful when implementing change. The PDSA model has its roots in the Japanese, who

based it on Deming's JUSE seminars in 1950, which was historically applied in the implementation and compliance (Coury et al., 2017). The PDSA cycle is used for testing and implementation, making it applicable to in-patient education programs after CABG surgery.

The PDSA framework

The Plan-Do-Study-Act (PDSA), a four-phase process improvement tool, is commonly used in health care settings (Coury et al., 2017). The tool traces its roots in industry and Walter Shewhart and Edward Deming's shaping of iterative procedures (Taylor et al., 2013). As for this tool, practitioners employ small tests of change for optimal outcomes. The tool is the most plausible for implementing person-centered education programs in Saudi Arabia because it will allow the clinicians to assimilate evidence-based interventions in their discharge planning for patients post-CABG surgery. Such an analogy holds because the PDSA tool will enhance the Saudi Arabian health practitioners' ability to test change through the development of a plan to test the implementation of patient-centered educational program (Plan), executing the educational plan (DO), and observing and learning from its impact on patients' post-CABG and determining the necessary modifications that must be made to align the program to patient beliefs, values and health needs. The tool has been successfully employed elsewhere across health care settings, making it a suitable tool for advancing this proposal's objective.

A patient-oriented education program requires a well-thought process to ensure effectiveness. The use of the PDSA model will be critical in shaping the patient education program for patients after CABG surgery. The PDSA cycle would involve brief testing to let the change team know it is working; once the feedback confirms positivity, the project team can replicate the results to incorporate the entire practice.

Plan

In this phase, the project aims to develop an effective patient-centered education program. As for this phase, the project aims to achieve an at least 85 % reduction in 30-day readmission rates after CABG surgery. The population of interest will be all patients who have undergone CABG surgery within a 12-month project period.

Do

The project team will expose patients to an education plan that factors into the needs and expectations of each patient and their family members. After the education program, the project team will record data concerning readmission trends. The team will note any gaps in the implementation and determine whether it requires modification.

Study

This phase will involve the evaluation of results, utilizing the data collected to determine whether the project achieved an 85% reduction in readmission.

Act

The results of the implementation process of the education plan will determine whether the educational plan worked. If the program achieves the set goal, the project team will uphold it as an effective method for enhancing the quality of life for patients after CABG surgery, providing grounds for spreading it across the entire practice. If the project team fails to achieve the projected results, they will brainstorm on what can be done differently in the next cycle.

II. Methodology

Choosing an appropriate educational approach enhances the post-CABG recovery process, reducing the possibility of readmissions associated with complications while improving the patient's quality of life (Morris & O'Riordan, 2017). A significant part of patients' recovery occurs at home; hence, incorporating a patient education program is necessary after CABG surgery. Cardiac surgery exposes patients to a new condition characterized by various changes (Sanaie et al., 2016). Most of these changes are lifelong, necessitating patient awareness of self-management during recovery (Fredericks et al., 2021). An education program is critical to enhancing compliance with the post-CABG care plan to improve the knowledge and skills necessary for patient self-management care. Post-CABG education program establishes a caring relationship, promotes psychological and physical support, and facilitates knowledge sharing, which is crucial for empowering them in care (Fredericks et al., 2021). To this end, this project methodology seeks to situate an education program post-CABG surgery allowing patients to learn self-care activities. The approach corresponds with evidence from existing literature that incorporating patients in an education program, post-CABG surgery acknowledges and respects their rights, enhancing trust (Bidwell et al., 2018) and adherence to self-care and treatment plans.

In this project process improvement, data will be collected before and after the project to understand the trend in complications and readmission rates, and patient quality of the process. A benchmarking process against data before and after the assignments and targeting patients after CABG surgery will offer insights necessary for

answering the PICOT question: How do CABG patients age 35-60 (P) exposed to education programs (I) compared to no educational intervention (C) impact their level of awareness (O) after one-month discharge.

This approach is the most plausible for this process improvement because it will offer data on readmission rates, lending an objective weight to the benchmarking exercise. The project results will highlight the need to adopt the proposed change in the hospital facility and replicate the evidence in other care settings. The education program factors all relevant indicators contributing to poor health outcomes that lead to hospital readmissions. Therefore, a reduction in such a trend would indicate the effectiveness of the education plan.

The data collected will also help answer the research question below:

1. Do patient-oriented educational programs delivered post-CABG surgery increase the quality of life for Saudi Arabian patients aged 35-60?
2. Do patient-centered educational programs offered to Saudi Arabian patients post coronary artery bypass graft for ages 35-60 minimize complications?
3. Does a person-oriented educational program provided to Saudi Arabian patients post CABG surgery reduce the cost of readmission in KSA?

Sampling

The project uses purposeful sampling to select the sample population. The recruitment will occur in a government-sponsored health care facility in the country's capital city. The inclusion criteria will consist of all patients aged between 35-and 60 years. The project team will retrieve the names and contacts of the invited participants from the cardiac Surgery Center in the hospital facility, which is the project setting. The patients must have been released within one month before this capstone project kick-off. All participants must be able to read, write and communicate in Arabic. Blinding would be a challenge in this study due to the nature of the recruitment process.

Procedure and materials for the Education project

The project will require a projector, patient writing materials to keep the necessary information for use at home, computer software, and a classroom. After CABG surgery, patient training and counseling would be completed in person, along with printed materials and application-based strategies. The sessions, which will be tailored to meet the demands of each training topic, will take between 30 -and 40 minutes. It will include procedures and goals to help manage stress levels and acquaint patients with proper diet and exercise skills, self-management, and medication adherence.

The project's effectiveness will depend on continuance attendance of the training sessions because non-optimal adherence will translate to missed sessions, restricting the participants' ability to gain knowledge across all topics. Therefore, this would affect the final results because they would reflect how well the participants utilized the knowledge gained in training to enhance care. The project lacks a mechanism to factor in the effect of non-attendance of all sessions by the participants.

Self-management post CABG

This project acknowledges that care after CABG surgery is critical for reducing the risk factors for heart disease. The education sessions for this topic were conducted through three sessions, each taking approximately 20-30 minutes, providing the patients with knowledge and skills for self-management. The instructor utilized an Arabic knowledge illustrated booklet as a teaching aid across all sessions. In the first session, an introductory phase, the instructor and the participants will establish a relationship and orient the participants concerning the importance, content, and the program schedule (Miri et al., 2016). Therefore, the sessions on this topic would cover strategies to raise awareness for patients concerning controlling blood pressure, terminating smoking, reducing weight and weight management, and wound care.

The instructor will encourage participants to keep all the information together and handy throughout the recovery journey. Therefore, the project committee will provide a folder to all participants to maintain the self-care instructions organized. The patients will be encouraged to pursue the custodian role, helping them master each self-management step and helping execute the complicated processes.

Exercise, maintain a healthy weight, and diet

A team of social sports trainers and an experienced nutritionist will facilitate sessions on these topics. In the nutrition training, the instructor will inform the patients about sodium's role in controlling high blood pressure and the mechanisms of reducing its consumption. The nutritionists will also promote the theme of Mediterranean dietary patterns. The social sports trainers will take the participants through the importance of exercise and the effects of non-compliance, motivating the participants to stick to exercise recommendations (Barnason et al., 2017). The social sports trainer will consider each patient's health status and work out a customized exercise plan that fits the needs of different participants.

Management of stress

A psychologist specializing in stress management will introduce participants to the progressive muscle relaxation technique in the first session. The instructions would be recorded on digital devices to enhance home adherence to the approaches. Each of the performances would last for 20-25 minutes. The psychologist will take patients through 15-day compliance with the technique as mentioned earlier in the second session. The psychologist will also train the participants in performing diaphragmatic respirations while discussing problem-solving techniques. During the third session, the psychologist will engage participants through discussions on the role of time management, equipping them with the relevant coping strategies during levels of perceived stress (Barnason et al., 2017). These sessions were crucial in preparing participants with stress management skills, which is a negative issue that causes adverse health outcomes after CABG surgery.

Adherence to the medications

Secondary prevention medicines such as angiotensin receptor blockers, ACE angiotensin, antiplatelet agents, statins, and beta-blockers are standard prescriptions for coronary artery disease patients. However, non-adherence has been a challenge limiting the overall benefits, leading to poor health outcomes, lower quality of life, and increased readmissions (Watson et al., 2018). Some studies report non-adherence for the CAD patients to range from 33-50%, increasing demand for hospitalization and rising mortality rates (Khatib et al., 2019; Watson et al., 2018). Such statistics make education plans that promote knowledge on adherence.

The education program for this topic will take shape through 2 sessions. In the first session, patients will be taken through different secondary prevention drugs and the benefits and risks of non-adherence. This is a necessary approach to ensure the participants acquire the essential knowledge that would serve as a cognitive shortcut during intake. Often, non-adherence is a factor in patients (Pietrzykowski et al., 2020). The second session would entail factors that contribute to non-adherence and how to overcome at-home settings. For instance, the aspect of forgetfulness is a common theme for non-adherence; therefore, patients will be encouraged to use their cellphones to set alarms that remind them of the exact time to take their prescriptions. The third session on this topic will cover side effects associated with each drug and information on necessary actions whenever complications appear.

Ethical Considerations

Before the conduction of this project, an official letter was submitted to the Ethics Committee of Prince Sultan Cardiac Center & IRB (quality department), which approved this project before recruitment and data collection from the participants. All participants will be required to sign a written informed consent for study participation after the project team explains the project's purpose and the benefits and risks involved in participation. The participants will be guaranteed their information confidentiality.

Concisely, the education program has different aspects that influence the recovery journey. Engaging patients was necessary for ensuring their input in the education plan. The education plan acknowledges that patients require adequate information for self-managing their condition after CABG surgery. With such support, patients remain responsive to their self-care needs, taking appropriate actions concerning their health to facilitate the recovery process. Lack of awareness of the identified factors in the education plan is associated with adverse effects on patients, prompting the need to introduce evidence-based interventions to counter increasing complications and rates of readmission in hospitals. Patient satisfaction is critical in any treatment plan; incorporating an education plan would help achieve such a goal post-CABG surgery.

Data Analysis

With the objective of this project being the reduction of readmission rates after CABG surgery associated with complications, the evaluation criteria will assume the exact dimensions. Therefore, the researcher will follow up with the patients after the complete project to establish adherence to the patient education program. This approach will allow the researcher to constantly engage with the participants, answering any questions concerning areas covered during the patient education program they might have forgotten. Also, follow-up with the participants will be critical in reducing gaps attributed to nonadherence to the patient education program. The descriptive statistics data will be illustrated through visual presentations such as tables and pie charts. They will be generated via Excel, illustrating its usage in both statistical calculations and data presentation (Aron,2017).

The percentage of patients experiencing no complications that lead to readmission will be evaluated to determine the efficacy of the patient education program. Suppose the readmission rate among the patients participating in the patient education program is low. In that case, such a trend supports the efficacy of the patient education program, providing grounds for integrating it into healthcare policies.

Evaluation

The research will follow up with the patient's post-project to determine whether they are sticking to the education plan. This approach will be necessary for reducing the impact of confounding factors that may introduce bias in the outcome (Stewart, 2020). The researcher anticipates that non-adherence, forgetfulness, or other issues associated with CABG surgery may influence how participants utilize the knowledge they have gained from the education program, situating the need to implement the follow-up plan. The follow-up plan will take shape by using technology mechanisms such as calls and patient-oriented text messages, ensuring a constant check on their utilization of the education program knowledge.

The researcher will evaluate the number of patients who get better, helping ascertain the efficacy of the education program. The rate will be calculated as a percentage, providing a platform for comparing the outcome. A higher percentage of patients with no readmission in the hospital post-CABG surgery will indicate the educational program efficacy, satisfying the patient education program as a valuable plan worth sustaining in the hospital.

Patients will be enrolled in an online WhatsApp group to receive updates concerning their concerns and questions. The platform will also help build an online community where members can discuss issues, motivating each other to persist with utilizing the knowledge acquired during the education program. This approach will effectively overcome potential barriers because the research can identify emerging issues from the participant's feedback. With members remaining in constant touch with their peer patients, the approach will motivate them to persist with applying the knowledge gained. According to Hardcastle et al. (2015), low-efficacy relates to low confidence and feelings that a person lacks the resources to produce a desirable behavior. Using a WhatsApp group, a cost-effective method for connecting all individuals helps overcome such attitudes, which would be a barrier to participants' utilization of the acquired knowledge during the education plan.

Sustainability

The educational program serves as the model cell, providing a platform for experimentation, learning, and modeling new approaches in the cardiovascular department. After the findings of this educational program are established, the level of the patient's independence will determine its success. The organization will institute a policy framework to guide its implementation while articulating resource sources to sustain the program. This approach will help the organization's leadership standardize the work process by introducing the education program to the cardiovascular unit, ensuring it is embedded in their clinical process (Mate & Rakover, 2016). The organization will also train and assign roles to nurses and other team members working within the unit, ensuring accountability in the process management and nurturing a quality culture. The Program Sustainability Assessment Tool (PSAT) would be critical in assessing the program's sustainability capacity, facilitating efficient program planning and improvement. The tool assumes a consistent structure appropriate for training and can also be utilized for program monitoring, evaluation, and strategic planning (Michener & Briss, 2019). The organization will sustain the education program post CABG with such an approach.

III. Discussion

The research proposal aims to reduce readmission rates associated with complications following CABG surgery by providing a patient-centered education program. This research proposal expects that self-care knowledge after the CABG surgery will be low among the patients before implementing the project. However, after the performance of the interventional education program, there would be a significant increase in the level of knowledge of the participants. It is expected that the pooled admission rates will be similar after the participants are grouped according to different characteristics (Özdemir&Önler 2021, p. 127). A large part of the readmissions will be due to no cardiac causes, including respiratory complications and postsurgical infections due to insufficient knowledge on care after the surgery (Fredericks and Yau 2017, p.46). The study's findings suggest that the readmission rates after CABG surgery are primarily influenced by patients' understanding of taking care of themselves post-surgery.

The anticipated findings of this study are similar to those of a survey conducted in Iraq, which analyzed the pre-operative education of patients. The study reported a significant statistical difference in self-care behavior and knowledge among the subjects who received individualized education and those offered standardized teaching (Ghonaem, Ali, and Mosbah 2018, p.10). Additionally, the expected findings of this project are consistent with those of Mohsenipouya, Majlessi, Forooshani, and Ghafari (2018, p.6255). The study found that the development and implementation of a training program founded on a health promotion model can enhance self-care behaviors among CABG surgery patients, thereby reducing the rate of hospital admissions. Health education specialists play a crucial role in improving patients' health by teaching them appropriate behaviors for self-care. With the patient-centered education intervention, the behaviors will be identified, and a planned strategy will be developed to ensure self-care behaviors, which will lead to improved quality of life of patients post CABG surgery.

The findings of this study will show that the education intervention can effectively convince the patients to conduct behavioral changes and adhere to the lifestyle and medication regimens. This study will show that patients who engage in an educational intervention program demonstrate a remarkable improvement in their knowledge after comparing their scores for pre-test and post-test. The comparison of the scores of the knowledge test of the study group after three months after conducting the operation will indicate significant variance. Özdemir and Önlü (2021, p.124) confirm the expected outcomes of this study since they found out that a structured patient education plan for patients who have undergone CABG improves their level of knowledge and their quality of life. Fredericks and Yau (2017, p.44) also provided similar sentiments since their findings suggested that individualized education for patients post CABG surgery was associated with a favorable impact on readmission rates. The conclusions of this study are expected to confirm that patient-oriented education improves patients' knowledge of self-care post CABG surgery, leading to improvement in life quality.

Project Limitations

The study may have potential limitations when implemented. The study will be conducted in a government health facility in the country's capital city. Using one facility may fail to produce a sufficient and representative sample size that will help in drawing valid conclusions. Larger sample size and one that is representative of the entire population help obtain precise results. Another possible limitation of this study is time constraints. The participants required for the study will be obtained from the cardiac surgery center records, and they must have been released one month before the project. The time taken to connect with the participants and conduct the study might be constrained by factors such as the unavailability of participants during a specific period. Additionally, the study will be based on an intervention model, which is subject to biases and might be influenced by the estimates of the model. Furthermore, there is the potential for cultural prejudice and personal issues from the subjects. The cultural backgrounds of the participants may influence the legitimacy of the study. In Saudi Arabia, the population tends to be conservative. It is possible to encounter biases toward the outcomes and data that only support the arguments and prejudices of the authors.

Suggestions for Future Research

The study will prove that a patient-centered education program for patients who have undergone CABG surgery improves their knowledge regarding their condition. The patients become aware of self-care strategies and the behavioral changes they need to adapt to prevent the occurrence of a new event or hospital admission. Future research should focus on the best method for recovery that should be adopted by patients who have undergone bypass surgery. Sticking to the plan and enrolling in a rehabilitation program are options considered in future research. The research should examine the impact of attending regular appointments with a heart specialist or an internal medicine practitioner. An individual who has undergone a CABG surgery has an increased chance of experiencing additional cardiac events, including heart failure, heart attack, recurring chest discomfort, and a greater risk of death. Although personalized education is significant, follow-up care should be critical, and future research should consider its impact.

Implications and Recommendations

The rates of hospital readmissions after CABG surgery remain a health concern. Post-surgery complications are due to poor self-management since the patients have inadequate knowledge of caring for themselves. Appropriate patient-centered education programs effectively minimize the rates of readmissions, leading to improved quality of life (Fredericks and Yau 2017, p.47). This research project could be significant in the Saudi Arabian healthcare facilities since it would ensure that the patients are well educated on proper self-management after CABG surgery. The patient education program should be adopted in cardiac centers as an evidence-based strategy that could minimize the complications experienced by patients post CABG surgery, leading to numerous hospital readmissions. Most of the health problems are related to their lifestyles and the roles played by the family. Health educators play a significant role in modifying the behaviors of their patients. Health conditions such as diabetes, hypertension, and mental health require a behavior change attributed to proper patient education (Özdemir and Önlü 2021 p. 125). There is a need to collaborate between policymakers, healthcare officials, health facilities, and research centers. The collaboration enhances the benefits of implementing a more extensive educational intervention program to reduce recurrent health conditions and unhealthy behaviors and reduce healthcare costs (Fredericks and Yau, 2017). Such an educational program would ensure the effective promotion of the quality of life of most patients.

The recommendations for this research project include routine assessment of CABG patients to monitor their health status. Additionally, the education program should be reinforced during follow-up sessions to ensure that the patient's needs are suited. Health educators should adopt various teaching methods to ensure that the pre-operative education program is implemented accurately with the educational program (Ghonaem, Ali, and Mosbah 2018, p.15). The patients should not only be taught about the disease but also specific instructions

concerning discharge. The patients must comply with the clinical follow-up visits to determine the progress of their condition and detect any possibilities of occurrence of complications. Finally, healthcare facilities should be equipped with educational centers for patients with appropriate materials, audio-visual aids, and media to ensure that all CABG victims are taught various coping mechanisms.

IV. Conclusion

The proposal contributes to the existing literature by highlighting the importance of patient education post-CABG surgery. Lack of patient knowledge contributes to increased complications and readmission rates, adversely affecting the patient quality of life and cost of care and rising hospital costs. The objective of health care facilities is to offer quality and affordable care. However, with increased complications and hospital admissions, health care institutions cannot achieve such an end. Self-management skills post-CABG surgery empowers patients in managing their recovery journey. Patient education programs are critical in equipping patients with efficient self-management skills. With optimal knowledge of self-management, patients will understand the need for lifestyle changes such as avoiding smoking and eating healthy foods with high fruit and vegetable content while limiting cholesterol intake. The education program will empower patients to adhere to medications and report any emerging complications during recovery. One of them is severe pain, a wound that takes longer to heal, and breathing challenges. The study is unique because it emphasizes the need to adopt individualized patient education programs post-CABG surgery, cultivating a culture that permeates the cardiovascular department. This would help hospitals in Saudi Arabia adopt patient-oriented education post - CABG surgery as an evidenced approach that supports patient recovery, reducing complications and hospital readmissions.

References

- [1]. Abd EL Aziz, S. et al., 2017. Home self-care management program for patients with open heart surgery in Kalyubia governorate. *Menoufia Nursing Journal*, 2(2), pp.57–66.
- [2]. Akbari, M. & Celik, SS, 2015. The effects of discharge training and counseling on post-discharge problems in patients undergoing coronary artery bypass graft surgery. *Iranian Journal of Nursing and Midwifery Research*, 20(4), p.442.
- [3]. AHRQ, 2022. Plan-do-study-act (PDSA) directions and examples. AHRQ. Available at: <https://www.ahrq.gov/health-literacy/improve/precautions/tool2b.html> [Accessed April 1, 2022].
- [4]. Akbari, M. & Celik, SS, 2015. The effects of discharge training and counseling on post-discharge problems in patients undergoing coronary artery bypass graft surgery. *Iranian Journal of Nursing and Midwifery Research*, 20(4), p.442.
- [5]. Alburikan, K.A. & Nazer, R.I., 2017. Use of the guidelines directed medical therapy after coronary artery bypass graft surgery in Saudi Arabia. *Saudi Pharmaceutical Journal*, 25(6), pp.819–822.
- [6]. Alghafees, M.A. et al., 2020. Thirty-day readmission rates and associated risk factors after coronary artery bypass grafting. *Journal of Taibah University Medical Sciences*, 15(4), pp.292–297.
- [7]. Alsaqri, S.H. et al., 2020. Saudi myocardial infarction patients' learning needs: Implications for cardiac education program. *Clinical Epidemiology and Global Health*, 8(4), pp.1208–1212.
- [8]. Aron, A. 2017. 'Study Guide and Computer Workbook for Statistics for Psychology', Statistics, 27, p.15
- [9]. Aydin, A. & Gürsoy, A., 2019. The care needs and care dependency of coronary artery bypass graft (CABG) patients after hospital discharge. *Journal of Education and Research in Nursing*
- [10]. Bax, L. et al., 2021. Prevalence and outcome after CABG in patients with history of prior CABG surgery. *The Thoracic and Cardiovascular Surgeon*.
- [11]. Barnason, S. et al., 2017. Evidence for therapeutic patient education interventions to promote cardiovascular patient self-management: A scientific statement for healthcare professionals from the American Heart Association. *Circulation: Cardiovascular Quality and Outcomes*, 10(6).
- [12]. Bax, L. et al., 2021. Prevalence and outcome after CABG in patients with history of prior CABG surgery. *The Thoracic and Cardiovascular Surgeon*.
- [13]. Brennan, W., 2016. Family involvement in treatment and discharge planning. *Psychiatric News*, 51(21), pp.1–1.
- [14]. Bidwell, J. T., Lyons, K. S., & Lee, C. S. 2017. Caregiver Well-being and Patient Outcomes in Heart Failure: A Meta-analysis. *The Journal of cardiovascular nursing*, 32(4), 372–382. <https://doi.org/10.1097/JCN.0000000000000350>
- [15]. Coury, J. et al., 2017. Applying the plan-do-study-act (PDSA) approach to a large pragmatic study involving safety net clinics. *BMC Health Services Research*, 17(1).
- [16]. Dalirirad, H., Seyedfatemi, N. & Najafi, T., 2021. Effect of an educational support programme on caregiver burden among the family members of patients undergoing coronary artery bypass graft surgery. *Sultan Qaboos University Medical Journal [SQUMJ]*, 21(2).
- [17]. Defibaugh, S., 2018. Erratum to: Nurse Practitioners and the performance of professional competency: Accomplishing patient-centered care. *Nurse Practitioners and the Performance of Professional Competency*.
- [18]. Fredericks, S. et al., 2021. An examination of current patient education interventions delivered to culturally diverse patients following CABG surgery.
- [19]. Fredericks, S. & Yau, T.M., 2021. Relationship between postoperative Patient Education and Hospital Readmission: A preliminary examination.
- [20]. Fredericks, S. and Yau, T 2017, Clinical effectiveness of individual patient education in heart surgery patients: A systematic review and meta-analysis, *international journal of nursing studies*, 65, pp.44-53.
- [21]. Ghonaem, S.E., Ali, M.M. and Mosbah, S.K 2018, Effectiveness of planned discharge instructions on patients' recovery following coronary artery bypass graft surgery, *IOSRJNHS*, 7(6), pp.8-16.
- [22]. Halm, M.A., 2017. Age and gender influences on the needs, concerns and strategies of CABG caregivers. *Heart & Lung*, 46(3), pp.159–165.

- [23]. Hardcastle, S. J., Hancox, J., Hattar, A., Maxwell-Smith, C., Thøgersen-Ntoumani, C., & Hagger, M. S. (2015). Motivating the unmotivated: How can health behavior be changed in those unwilling to change? *Frontiers in Psychology*, 6. <https://doi.org/10.3389/fpsyg.2015.00835>
- [24]. Hu, X. et al., 2016. Effect of a multidisciplinary supportive program for family caregivers of patients with heart failure on caregiver burden, quality of life, and depression: A randomized controlled study. *International Journal of Nursing Studies*, 62, pp.11–21.
- [25]. Janjua, H. et al., 2021. Defining the relative contribution of health care environmental components to patient outcomes in the model of 30-day readmission after Coronary Artery Bypass Graft (CABG). *Surgery*, 169(3), pp.557–566.
- [26]. Khatib, R. et al., 2019. Adherence to coronary artery disease secondary prevention medicines: Exploring modifiable barriers. *Open Heart*, 6(2).
- [27]. Liljeroos, M. et al., 2016. Long-term effects of a dyadic psycho-educational intervention on caregiver burden and morbidity in partners of patients with heart failure: A randomized controlled trial. *Quality of Life Research*, 26(2), pp.367–379.
- [28]. Masoumeh, Z. et al., 2018. The Effect of Supportive Educational Intervention On Sleep Before Coronary Artery Bypass Graft Surgery. *Iranian Journal of Cardiovascular Nursing*, pp.15–25.
- [29]. Mate, K., & Rakover, J. (2016, November 9). 4 steps to sustaining improvement in health care. *Harvard Business Review*. <https://hbr.org/2016/11/4-steps-to-sustaining-improvement-in-health-care>
- [30]. McAllister, M., 2016. Shared decision making, Health Literacy, and patient empowerment. *Shared Decision Making in Health Care*, pp.234–238.
- [31]. Medalion, B. & Park, S.J., 2016. Coronary artery bypass grafting saves lives! *Journal of Thoracic Disease*, 8(9).
- [32]. Mendes, M., 2016. Is there a role for cardiac rehabilitation after coronary artery bypass grafting? *Circulation*, 133(24), pp.2538–2543.
- [33]. Michener, J. L., & Briss, P. (2019). Health systems approaches to preventing chronic disease: New partners, new tools, and new strategies. *Preventing Chronic Disease*, 16. <https://doi.org/10.5888/pcd16.190248>
- [34]. Miri, J. et al., 2016. The effect of chronic disease self-management program on health status of patients undergoing coronary artery bypass graft surgery. *Journal of Critical Care Nursing*, 9(1).
- [35]. Mohsenipouya, H. et al., 2018. The effects of Health Promotion Model-based educational program on self-care behaviors in patients undergoing coronary artery bypass grafting in Iran. *Electronic Physician*, 10(1), pp.6255–6264.
- [36]. Mohsenipouya, H., Majlessi, F., Forooshani, A.R. and Ghafari, R 2018, The effects of health promotion model-based educational program on self-care behaviors in patients undergoing coronary artery bypass grafting in Iran. *Electronic physician*, 10(1), p.6255.
- [37]. Moosaviean, Z. et al., 2021. The effect of Orem Self-care program on sleep quality, daily activities, and lower extremity edema in patients undergoing coronary artery bypass graft surgery. *Advanced Biomedical Research*, 10(1), p.29.
- [38]. Morris, R. & O’Riordan, S., 2017. Prevention of falls in hospital. *Clinical Medicine*, 17(4), pp.360–362.
- [39]. Murshid, S.J., Al Garmoushi, O.Z. & Aljezani, K.S., 2020. Post-cardiac surgery health related quality of life: A Saudi Cross-Sectional Study in Jeddah. *World Family Medicine Journal/Middle East Journal of Family Medicine*, 18(1), pp.119–124.
- [40]. Mussa, M.I., 2021. Effect of health education program on knowledge and self-care ability of the patients regarding coronary artery bypass surgery at Khartoum State 2015-2019. *Texila International Journal of Nursing*, 7(2), pp.1–12.
- [41]. Osailan, A. & Abdelbasset, W.K., 2020. Exercise-based cardiac rehabilitation for post coronary artery bypass grafting: Its effect on hemodynamics response and functional capacity using incremental shuttle walking test: A retrospective pilot analysis. *Journal of the Saudi Heart Association*, 32(1).
- [42]. Özdemir, B. and Önler, E 2021, The effect of a structured patient education intervention on the quality of life for coronary artery bypass grafting patients: A prospective randomized controlled study, *Journal of Perioperative Practice*, 31(4), pp.124-131.
- [43]. Pietrzykowski, L. et al., 2020. Medication adherence and its determinants in patients after myocardial infarction. *Scientific Reports*, 10(1).
- [44]. Rushton, M. et al., 2017. Person-centered discharge education following Coronary Artery Bypass Graft: A critical review. *Journal of Clinical Nursing*, 26(23-24), pp.5206–5215.
- [45]. Salvador-Oliván, J.A., Marco-Cuenca, G. & Arquero-Avilés, R., 2019. Errors in search strategies used in systematic reviews and their effects on information retrieval. *Journal of the Medical Library Association*, 107(2).
- [46]. Sanaie, N. et al., 2016. The effect of family-centered empowerment model on treatment plans adherence of patients undergoing coronary artery bypass graft. *Journal of Critical Care Nursing*, In Press (In Press).
- [47]. Shah, R.M. et al., 2019. Incidence, cost, and risk factors for readmission after coronary artery bypass grafting. *The Annals of Thoracic Surgery*, 107(6), pp.1782–1789.
- [48]. Shaughnessy, K. et al., 2020. The effect of remote patient monitoring on discharge outcomes in post-coronary artery bypass graft surgery patients. *Journal of the American Association of Nurse Practitioners*, 33(8), pp.580–585.
- [49]. Shawon, M.S. et al., 2021. Patient and hospital factors associated with 30-day readmissions after Coronary Artery Bypass Graft (CABG) surgery: A systematic review and meta-analysis. *Journal of Cardiothoracic Surgery*, 16(1).
- [50]. Siddaway, A.P., Wood, A.M. & Hedges, L.V., 2019. How to do a systematic review: A best practice guide for conducting and reporting narrative reviews, meta-analyses, and meta-syntheses. *Annual Review of Psychology*, 70(1), pp.747–770.
- [51]. Taylor, M.J. et al., 2013. Systematic review of the application of the plan-do-study-act method to improve quality in healthcare. *BMJ Quality & Safety*, 23(4), pp.290–298.
- [52]. Watson, K.E., Guo, Y. & Sahni, S., 2018. Secondary prevention of coronary artery disease. *Chronic Coronary Artery Disease*, pp.479–487.
- [53]. YamanAktas, Y., GokUğur, H. & SevcinOrak, O., 2021. A randomized controlled study on the effectiveness of discharge training in patients following cardiac surgery. *Central European Journal of Nursing and Midwifery*, 12(1), pp.225–234.
- [54]. Yu, H. & Guo, Q., 2018. Effect of early cardiac rehabilitation therapy on patients after coronary artery bypass surgery: A three-armed randomized controlled trial. *Annals of Physical and Rehabilitation Medicine*, 61.

Appendix

- Informed letter to participants and informed consent
- Permission letter G

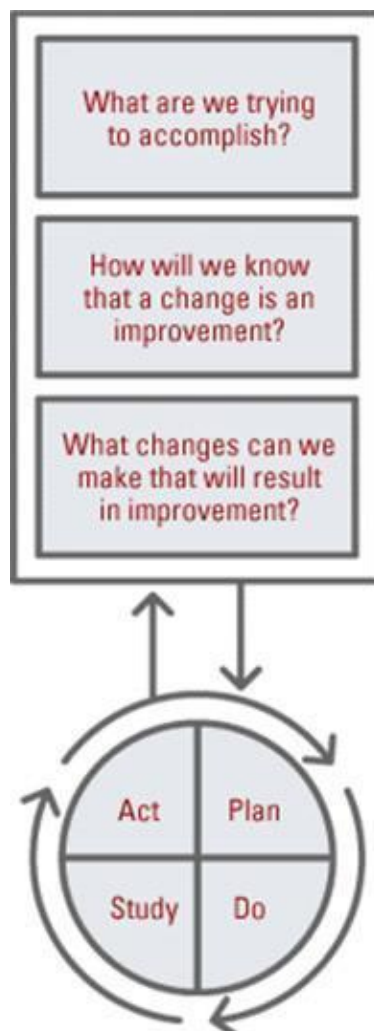
TOOLS

Projector

Patients writing materials

Computer software

Classroom



Source: (AHRQ, 2022)

Consent and Informational Letter for Participants

Date: July 2022

My name is Amani Helal Almutairi from Dublin City University Masters in Nursing program and I am conducting a research study about (An education program for patients post Coronary Artery Bypass Graft (CABG) for ages between 35-60 male/female in Saudi Arabia). The purpose of this research is to Minimize readmission for patients post CABG at age 35-60 male/female in Saudi Arabia. This research will help health care providers learn about increasing quality of life for post CABG surgery, Minimize complications after CABG surgery and Reduce the cost of readmission in KSA . The aim of this research is to increase evidence on the importance of patient-centered education programs during discharge after cardiac surgery, this study aims to pursue such a theme reinforcing the existing literature. All documents related to the study will be kept completely confidential in locked storage and only accessible to the researchers. In addition, please sign below to consent to participate.

An education program for patients post Coronary Artery Bypass Graft (CABG) for age between ..

If you have any questions regarding this research, please contact me-- at (00966555044103) or by (amani.almutairi7@mail.dcu.ie). If you have any questions regarding your rights as a research subject, please contact the University Division of Research at (phone/+966118220011).

Amani Almutairi

Master of Science in Nursing Advanced Practice

School of Nursing, Psychotherapy and Community Health

Dublin, Ireland

Email: Amani.almutairi7@mail.dcu.ie

Cell phone 0966555044103

Informed Consent Signature

I, Amani Helal Almutairi hereby consent to participate in this study about An education program for patients post Coronary Artery Bypass Graft (CABG) for ages between 35-60 male/female in Saudi Arabia. I have been informed of the purpose, risks, and benefits of the study and understand I may withdraw from this study at any time.

Amani Almutairi. "An education program for patients post Coronary Artery Bypass Graft (CABG) for age between 35-60 male/female in Saudi Arabia." *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, 12(1), 2023, pp. 07-19.