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Original Research Article

EFFECTS OF NURSING INTERVENTIONS ON SELF CARE AND WOUND MANAGEMENT AMONG POST-CORONARY ARTERY BYPASS GRAFTING PATIENTS

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Abstract: *Coronary Artery Bypass Grafting (CABG) is a standard cardiac procedure with potential post-operative challenges, including wound management and self-care deficiencies. The role of nursing interventions in improving self-care among these patients remains crucial. This study aimed to determine the effects of nursing interventions on self-care and wound management among post-coronary artery bypass grafting patients. Employing a quasi-experimental design, the study conducted pre-post comparisons in a single group of 36 post-CABG patients. The participants, predominantly middle-aged with a mean age of 61, were profiled based on various demographic and health parameters. Nursing interventions were assessed using pre-defined scales and the Bates-Jensen Wound Assessment Tool to determine the pre- and post-intervention status of the individuals. The interventions revealed significant improvements in several care dimensions: Physical Care improved from a pre-intervention mean score of 51.61 (SD=1.82) to 61.97 (SD=2.55), witnessing a mean difference of -10.36 (95% CI: -10.79 to -9.93, p=0.000). Emotional care experienced a surge from 31.61 (SD=1.82) to 38.72 (SD=2.34), resulting in a mean difference of -7.11 (95% CI: -7.42 to -6.80, p=0.000). Spiritual care enhanced from 43.64 (SD=1.82) to 50.94 (SD=2.70) with a mean difference of -7.31 (95% CI: -7.78 to -6.84, p=0.000). Workplace Self-Care marked an increase from 36.61 (SD=1.82) to 45.06 (SD=2.03), having a mean difference of -8.44 (95% CI: -8.90 to -7.99, p=0.000). Balance scores bettered from 5.06 (SD=0.98) to 7.58 (SD=0.73), showing a mean difference of -2.53 (95% CI: -2.70 to -2.36, p=0.000). In contrast, Psychological Care saw a decline from 51.11 (SD=2.38) to 41.61 (SD=1.82) with a mean difference of 9.50 (95% CI: 9.06 to 9.94, p=0.000). The nursing interventions positively affected several self-care dimensions, aiding in the holistic recovery of post-CABG patients. However, a decrease in psychological care scores suggests the necessity for an integrated approach that equally addresses all care dimensions, including psychological care.*

Keywords: Coronary Artery Bypass Grafting, Nursing Interventions, Self-Care, Wound Management, Quasi-Experimental, Bates-Jensen Wound Assessment Too

Introduction

Coronary artery disease (CAD) is primarily driven by atherosclerosis, which leads to the accumulation of plaques, limiting blood flow to the heart and potentially causing various cardiac issues like heart attacks, heart failure, and arrhythmias. Multiple risk factors, both modifiable and non-modifiable, influence an individual's susceptibility to CAD, such as hypertension, cholesterol levels, lifestyle choices, age, and genetic predispositions. The severity and management of CAD might necessitate interventions like Coronary Artery Bypass Grafting (CABG) (Doenst et al., 2022). CAD can damage the heart muscle, leading to heart failure, abnormal heart rhythms, and sudden cardiac death. Symptoms may not always be noticeable, and risk factors include high blood pressure, elevated cholesterol levels, smoking, diabetes, obesity, physical inactivity, and a family history of heart disease. Early detection and treatment can help prevent complications and improve quality of life (Ren et al., 2023). Coronary artery disease (CAD) is caused by atherosclerosis, where plaque builds up inside the coronary arteries. This results in the narrowing of the arteries, which restricts the flow of oxygen-rich blood to the heart muscle and can lead to dangerous situations like blood clots. Risk factors that make a person more susceptible to CAD can be modifiable (such as smoking, high blood pressure, high cholesterol, diabetes, obesity, sedentary lifestyle, poor diet, and excessive alcohol intake) or non-modifiable (such as age, gender, family history, and ethnicity) (Davidson et al., 2022). Chronic stress, untreated sleep apnea, and high sensitivity C-reactive protein (hs-CRP) are some risk factors linked to heart disease. Modifiable risk factors can be managed to reduce the chances of developing CAD. Coronary artery bypass grafting (CABG) is a surgical procedure that creates a bypass around the blockage in the coronary artery (Akbari and Al-Lamee, 2022).

Coronary artery bypass graft surgery (CABG) is a critical intervention for severe cases of coronary artery disease. It involves creating a pathway bypassing a blocked artery to restore blood flow to the heart muscle. The surgery is designed for patients with significant stenosis of the left main coronary artery, triple vessel disease, failed medical or catheter-based therapies, and other complications post-heart attack. There are different methods for CABG, including traditional CABG, off-pump CABG, and minimally invasive direct coronary artery bypass (MIDCAB) (Forrest et al., 2023). A common method for treating coronary artery disorders (CAD) is coronary artery bypass graft surgery (CABG). Recent advancements have improved the success rate of CABG procedures, but they are insufficient to completely eradicate the physical, psychological, and social issues people confront after discharge (Montrief et al., 2018). CABG surgery patients described post-operative

discomfor (Keegan and Panebianco, 2022). the leading causes of mortality globally, coronary heart disease kills 17.5 million people yearly, 80% of whom live in low- and middle-income nations (Lopez and Mathers, 2006). Although coronary artery bypass graft (CABG) surgery might save lives, it can also have extremely negative physical and psychological effects (Dalirirad et al., 2021; Roman et al., 2017). As a result, patients frequently need much care leading up to, during, and after surgery and for a long time afterward. Because of recent healthcare reforms and technological breakthroughs that have reduced the length of hospital stays (McDonald et al., 2017).

Families provide various services to patients with chronic diseases, such as financial and emotional support during hospital stays and practical and administrative chores linked to dietary and lifestyle adjustments (Sautter et al., 2014). These duties cause the caregiver to be more stressed, which might be harmful to their health and lead to chronic illnesses (Alzahrani et al., 2017; Park et al., 2013). Few studies have evaluated the burden of patients during post-operative self-care, particularly in the Middle East, even though the majority of patients following CABG surgery mainly fall on patients or family members (Moieni et al., 2014; Willis et al., 2016). All earlier qualitative investigations examined the burden and negative effects of CABG patients' self-care. The researchers identified four themes, including a lack of knowledge about health care, physical exhaustion, psychosocial exhaustion, and a lack of support, and they emphasized the need to give patients managing and caring for their post-operative duration program more effective social, informational, and professional support (Bahrami et al., 2014). Three key elements are required for effective patient education: self-care techniques, problem-solving techniques, and preventative management. A patient's comprehension of the healing process may also significantly enhance wound healing. Patients could not comprehend, for instance, that wounds should mend from the surface to the base.

Hand washing, wound cleaning, and changing clothes are crucial self-care skills. Patients should avoid using cytotoxic or irritating agents. The wrong cleaner can prevent healing. Healthcare professionals should educate patients and caregivers about the benefits of moist wound healing (Kahook et al., 2019). If the wound gets too dry, the provider should encourage the patient to follow up so they may talk about the need for a change in dressing. Education on changing dressings and when is also necessary for patients and caregivers. Wounds should be cleansed and examined after every dressing change. For patients and caregivers to promptly seek medical help, providers should study the signs and symptoms of infection. Negative alterations include increased exudate, changes in exudate type (such as pus vs. serous discharge), edema, heat, peri-wound discoloration, and bad odor. Patients and caregivers must also be vigilant of systemic infection signs such as as fever, chills, nausea, and malaise (Baig et al., 2022).

Written materials and demonstrations should ideally supplement patient training. According to theoretical frameworks for changing health behavior, patients should get training tailored to their needs in terms of health literacy, language, culture, and particular issues, when healthcare professionals stress the importance of information in light of patient goals, treatment outcomes increase (Voljč and Semenič, 2021).

Following heart surgery, the effectiveness of typical or conventional patient education treatments in promoting self-care habits has been assessed (Wu et al., 2019). The findings showed that education had little to no impact on following self-care recommendations related to mobility, ambulation, body care/movement, and symptom frequency. The uniform character of the intervention has been directly linked to these insignificant results (Corregidor-Sánchez et al., 2021).

In this study, we sought to evaluate the efficacy of self-care and wound management education programs among CABG patients. Through such an efficient program of self-care and interventional treatment, we may reduce wound infection and other complications that place a burden on hospitals and also on family members, and properly controlling can lead to decreases in morbidity and mortality. Regarding self-care and wound treatment among patients undergoing coronary artery bypass surgery, no statistical information is known in Pakistan.

The necessity for tailored patient education treatments is reinforced by studies showing that considering patients' perceived learning requirements when designing patient education interventions leads to substantial benefits like improved knowledge and decreased symptoms (Pihlaja et al., 2018).

Many patients who undergo CABG surgery report feeling unprepared for the responsibilities and demands of providing for themselves, or it is noted with great concern that occasionally, patients are capable of providing for themselves but that this prolongs the chronic phase of the disease and results in negative outcomes like wound infection (Halm, 2017)**.**

Limited research exists on the effects of nursing interventions on self-care and wound management in post-CABG patients. This study aims to fill this gap and provide valuable data to optimize nursing interventions for better patient outcomes. With the growing prevalence of cardiovascular diseases and the aging population, understanding the impact of nursing interventions becomes increasingly important. This study will also contribute to patient-centered care by developing personalized care plans based on individual needs.

Thus, this study aimed to determine the effects of nursing interventions on self-care and wound management among post-coronary artery bypass grafting patients.

Methodology

In this quasi-experimental study, the research design employed a pre-post comparison framework to evaluate the influence of an educational program focused on self-care and wound management among patients who had undergone coronary artery bypass grafting (CABG). The investigation took place at the Cardiac Care Hospital in Lahore and was extended over nine months following approval from the Research Ethics Committee (REC) of the University of Lahore.

The study's design primarily adopted a quasi-experimental approach, focusing on pre-post comparisons. The research site was the Cardiac Care Hospital in Lahore, Pakistan, and

the study spanned nine months after securing ethical approval from the University of Lahore's Research Ethics Committee (REC).

To ensure that the research yielded statistically significant results, the initial sample size calculation yielded several participants below 30. Consequently, the sample size was adjusted to a minimum of 30 using a universal sampling approach. Additionally, a 20% buffer was included to account for potential participant dropouts or non-completions, ultimately resulting in a final adjusted sample size of 36.

Purposive sampling was the chosen technique for participant selection, focusing on specific characteristics relevant to the population of interest. This approach helped ensure that the sample represented the study's objectives.

Inclusion criteria encompassed patients who had undergone CABG surgery and were subsequently discharged from the cardiac Care Hospital in Lahore. The study welcomed participants of all age groups and genders, including males, females, and transgender individuals. Conversely, exclusion criteria involved patients receiving professional nursing care post-operatively, readmission within two weeks of surgery, those who underwent re-do bypass surgeries or heart surgeries other than CABG, and individuals diagnosed with terminal illnesses or severe mental health disorders such as dementia, delirium, amnesia, or severe depression.

Data collection involved utilizing a "Self-care Worksheet" questionnaire, inspired by Norton's work in 1996, and a comprehensive 36-item wound assessment tool adapted from Bates-Jensen to assess the condition of participants' wounds.

The study implemented a structured four-phase educational program: program assessment, planning, implementation, and evaluation. Patients' baseline knowledge was evaluated through a pretest during the assessment phase. The planning phase consisted of developing intervention materials and conducting educational sessions over a 6-8 weeks. In the implementation phase, patients received training through multimedia presentations and demonstrations, with evaluations conducted at intervals post-intervention to gauge the program's effectiveness.

Ethical approval was secured from the Research Ethics Committee (REC) of the University of Lahore to safeguard participants' rights and privacy. Informed consent was obtained from each participant, emphasizing transparency and trust in the study's ethical conduct.

The researchers used the Statistical Package for the Social Sciences (SPSS), version 25.0 for data analysis. Quantitative variables were summarized using the mean and standard deviation. Descriptive statistics, such as frequencies and percentages, were calculated for categorical variables. The choice of the appropriate statistical test hinged on the data distribution, which was assessed using the Kolmogorov-Smirnov test. When data exhibited normal distribution, a repeated measures analysis of variance (ANOVA) was employed to compare self-care and wound scores before and after educational intervention. For non-normally distributed data, the study turned to the Friedman ANOVA to analyze differences in self-care and wound scores across the three distinct measurements, ensuring a meticulous and accurate analysis and interpretation of the study's findings.

Results

The investigation results showed that the majority of participants were male, accounting for 75.0% (n=27) of the total sample, while females made up the remaining 25.0% (n=9). Most participants (50.0%, n=18) belonged to the middle socioeconomic status group, while 30.6% (n=11) were classified as lower and 19.4% (n=7) as upper. Most participants (77.8%, n=28) lived in urban areas, while only 22.2% (n=8) were from rural areas. In terms of comorbidities, 66.7% (n=24) of the participants had systemic comorbidities, 27.8% (n=10) had orthopedic conditions, and only 5.6% (n=2) reported having no comorbidities. This numerical analysis provides a detailed and concise overview of the participants' demographic and health-related characteristics, laying a solid foundation for further statistical examination and interpretation of findings.

Table 1 **Demographics Characteristics of Categorical Variables (n=36)**

Characteristic	Category	*f*	Percent (%)
Gender	Male	27	75.0
	Female	9	25.0
Socioeconomic Status	Upper	7	19.4
	Middle	18	50.0
	Lower	11	30.6
Living Situation	Urban	28	77.8
	Rural	8	22.2
Comorbidities	Systemic	24	66.7
	Orthopedic	10	27.8
	None	2	5.6

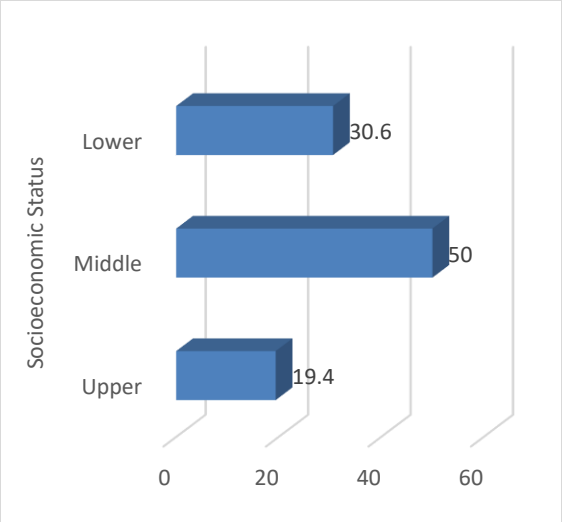

Figure 1 shows the socio-economic status of the study population

The investigation showed that most participants were male, accounting for 75.0% (n=27) of the total sample, while females made up the remaining 25.0% (n=9). Most participants (50.0%, n=18) belonged to the middle socioeconomic status group, while 30.6% (n=11) were classified as lower and 19.4% (n=7) as upper. Most participants (77.8%, n=28) lived in urban areas, while only

22.2% (n=8) were from rural areas. In terms of comorbidities, 66.7% (n=24) of the participants had systemic comorbidities, 27.8% (n=10) had orthopedic conditions, and only 5.6% (n=2) reported having no comorbidities. This numerical analysis provides a detailed and concise overview of the participants' demographic and health-related characteristics, laying a solid foundation for further statistical examination and interpretation of findings.

Table 2 Demographic Quantitative Variables (n=36)

Statistics	Mean	Median	Std. Deviation
Age	61.000	60.500	6.563
Weight	74.416	72.500	11.351
Height	173.441	175.300	7.061
Body Mass Index	27.430	27.250	1.813
On a scale of 1-10	6.305	6.500	1.283

Table 2 shows the average age of the participants is 61 years, with a standard deviation of approximately 6.56, suggesting a spread of ages around this mean. The median age is slightly lower at 60.5 years, indicating that half of the participants are above this age and half are below.

On average, the participants weigh about 74.42 kilograms. The median weight, 72.5 kilograms, gives a sense that the central weight distribution is slightly lower than the mean. The standard deviation of 11.35 suggests a relatively moderate spread in weight values around the average. The participants, on average, have a height of approximately 173.44 cm. The median height is slightly greater at 175.3 cm, hinting at a larger number of participants being taller than the average. The standard deviation of 7.06 indicates a relatively narrow spread of heights around the mean, suggesting most participants are close to this average height. The average BMI of the participants is 27.43, categorizing them as being on the higher end of the 'Normal weight' category and bordering 'Overweight' according to standard BMI categories. The median BMI is 27.25, very close to the mean, reinforcing that a large portion of the participants fall around this value. The standard deviation of 1.81 indicates a relatively narrow spread of BMI values around the mean. When asked to rate their mental health on a scale of 1 to 10, participants gave an average score of approximately 6.31. The median score is slightly higher at 6.5. The standard deviation of 1.28 suggests some variability in the ratings, but most are relatively close to the average.

Table 3 captures the difference in means from pre-intervention to post-intervention for a series of variables related to patient care and knowledge. Each variable—Physical Care, Psychological Care, Emotional Care, Spiritual Care, Workplace Self-Care, Balance, Bates-Jensen Wound Assessment, Knowledge, and Care—displays pre-intervention and post-intervention mean values (± standard deviation), as well as the calculated mean difference between these two phases. For instance, Physical Care increased from a mean of 51.61 ± 1.82 pre-intervention to 61.97 ± 2.55 post-intervention, reflecting a mean difference of 10.36. Conversely, Psychological Care decreased from 51.11 ± 2.38 to 41.61 ± 1.82, indicating a negative mean difference if you consider the reduction as negative (-9.50). Comprehensive variations are noted across all variables, with the largest mean difference witnessed in care (30.12), transitioning from 36.43 ± 4.899 pre-intervention to 66.55 ± 8.615 post-intervention. This summarised data can facilitate an understanding of where interventions have elicited notable changes and guide further investigation into the efficacy and impact of interventions on various aspects of patient care and knowledge following a Coronary Artery Bypass Graft (CABG).

Table 4 data depicts the pre-intervention and post-intervention mean scores (± standard deviation) for various outcome variables, alongside the t-value and p-value, which denote the statistical significance of the observed changes. For example, "Physical Care" displayed a mean increase from pre-intervention (51.61 ± 1.82) to post-intervention (61.97 ± 2.55), with a t-value of -49.01 and p-value < 0.001, indicating a statistically significant improvement. Similar patterns of statistical significance ($p < 0.001$) are evident across all variables, with notable variations in pre- and post-intervention mean scores such as in "Psychological Care" (pre: 51.11 ± 2.38; post: 41.61 ± 1.82) and "Bates-Jensen Wound Assessment" (pre: 42.19 ± 5.66; post: 52.06 ± 5.54). However, it's crucial to note the direction of change (increase or decrease) in scores across variables, particularly for those like "Psychological Care," where post-intervention scores are lower, versus others like "Bates-Jensen Wound Assessment," where it's higher, potentially indicating improvements or deteriorations in respective aspects. This data collectively serves as a robust baseline for further exploration and inferential analyses.

Table 3 Comparison before and after Intervention (mean values and mean differences)

Variables	Pre-intervention mean ± SD	Post-intervention mean ± SD	Mean Difference
Physical Self Care	51.61 ± 1.82	61.97 ± 2.55	10.36
Psychological Self Care	51.11 ± 2.38	41.61 ± 1.82	9.50
Emotional Self Care	31.61 ± 1.82	38.72 ± 2.34	7.11
Spiritual Self Care	43.64 ± 1.82	50.94 ± 2.70	7.31
Workplace Self-Care	36.61 ± 1.82	45.06 ± 2.03	8.44
Balance	5.06 ± 0.98	7.58 ± 0.73	2.53
Bates-Jensen Wound Assessment	42.19 ± 5.66	52.06 ± 5.54	9.86
Knowledge	5.97 ± 2.708	16.12 ± 1.920	10.15
Care	36.43 ± 4.899	66.55 ± 8.615	30.12

Table 4 Comparison before and after intervention (n=36)

Variables	Pre-intervention mean ± SD	Post-intervention mean ± SD	t	P value
Physical Self Care	51.61 ± 1.82	61.97 ± 2.55	-49.01	0.000
Psychological Self Care	51.11 ± 2.38	41.61 ± 1.82	43.90	0.000
Emotional Self Care	31.61 ± 1.82	38.72 ± 2.34	-46.43	0.000
Spiritual Self Care	43.64 ± 1.82	50.94 ± 2.70	-31.53	0.000
Workplace Self-Care	36.61 ± 1.82	45.06 ± 2.03	-37.80	0.000
Balance	5.06 ± 0.98	7.58 ± 0.73	-29.96	0.000
Bates-Jensen Wound Assessment	42.19 ± 5.66	52.06 ± 5.54	-46.65	0.000
Knowledge	5.97 ± 2.708	16.12 ± 1.920	-25.230	0.000
Care	36.43 ± 4.899	66.55 ± 8.615	-27.014	0.000

Discussion

We analyzed CABG patients' post-operative nuances, including sociodemographic background, physical attributes, and mental health. Males were overrepresented in the sample size, highlighting the need for gender balance in future studies. Participants from urban settings were more prevalent, suggesting tailored approaches for urban and rural populations. Many participants had a higher normal BMI, which could emphasize integrating weight management into nursing interventions for a holistic approach toward patient recovery.

Turning our attention to the mental health rating, there appears to be a modest self-assessment score, reflecting a moderate level of mental well-being amongst the participants. Given the intrinsic connection between mental and physical health, integrating psychological interventions might be warranted to elevate the efficacy of nursing interventions. Taking cues from the earlier studies undertaken in Oman, there is a clear expression of the necessity to address learning needs post-CABG from both the nurse's and the patient's perspectives, with a particular emphasis on wound care and medication management (Al-Maskari et al., 2021; Almaskari et al., 2019). Our current study echoes this necessity, where most participants exhibited systemic and orthopedic conditions, necessitating a nuanced understanding and management of wound care post-surgery. The marked improvement in physical care post-intervention in our study corroborates with the perceived learning needs highlighted in the earlier studies, suggesting that when interventions are aligned with learning needs, positive outcomes are indeed achievable.

The study shows that nursing interventions can enhance the post-operative parameters for CABG patients, but a more holistic and personalized approach to healthcare is needed. The study also highlights the interplay between socioeconomic and educational statuses and the dynamics of health literacy and quality of care. The employment status emerged as a determinant harboring statistical significance in steering the overall patient experiences, thereby sowing seeds for a more equitable, patient-centered care paradigm that is responsive to socioeconomic diversities. (Aloh et al., 2020).

Delving further, exploring physician perspectives based in Connecticut unfurls a complex tapestry of conflicting views on the role a patient's socioeconomic status (SES) plays in clinical management decisions. While physicians navigate a spectrum of beliefs regarding the impact of SES-influenced clinical management alterations on patient outcomes, there is an underlying consensus on the necessity of such alterations grounded in the patient's best interests. Nevertheless, a reflective outlook unveils physicians' stressful undercurrents when grappling with the dichotomy of adhering to established standards of care while catering to the feasibility spectrum as per the patient's SES (Keenan et al., 2008).

Therefore, threading the narratives from different geographical and demographic canvases, we unearth a global consensus on socioeconomic and educational factors' undeniable influence on the perception and delivery of healthcare services. While on one end, there is a call for personalized, patient-centric approaches reverberating from the African subcontinent, the murmurs from the more developed geographical regions echo the internal dilemmas healthcare professionals face in tailoring the healthcare provisions according to the SES of the patients.

The insights recommend a shift towards a more inclusive healthcare system that integrates socioeconomic backgrounds into its dynamics. The study highlights the impact of urban living and systemic conditions on post-operative management for individuals undergoing CABG surgery. The importance of primary care practitioners is emphasized for navigating patient management and advocating for outpatient care. The role of BMI in operative mortality is also discussed, providing a better understanding of the risk factors associated with CABG surgery.(Filardo et al., 2018).

The undercurrent of lifestyle alterations reverberates throughout the analysis, emphasizing the imperative of home self-care management programs and a healthy lifestyle adherence to usher in an enhanced quality of life post-CABG (Holcomb et al., 2023; Nair et al., 2020). The highlighted potential of weight as a pivotal risk factor echoes the urgency of integrating lifestyle practices and healthy weight management in the post-operative self-care panorama (Goncharov et al., 2021; Jiang et al., 2016). The converging narratives from diverse studies coalesce to underline the imperativeness of weaving residential and health patterns into the fabric of patient care strategies. They conjure a vivid panorama urging an integrated approach towards healthcare, tuned finely to the individual nuances of the patients, thereby steering towards wwwell-beingc well-being post-CABG surgery. The overarching narrative nudges towards a more personalized, responsive, and aware healthcare landscape grounded in the intricate mesh of residential and health patterns, interlaced with anthropometric realities and mindful self-care regimes. It

highlights a pressing call for a mmmmmulti-faceted, patient-centric approach to healthcare, underlined with diligence and empathy, envisioning a landscape of holistic well-being and enhanced life quality post-surgery.

The studies delve deep into the intricate labyrinth of mental well-being in the realm of post-operative recovery, showcasing the undeniable nexus between mental health and the trajectory of recovery. The observed average mental health rating of about 6.31, a moderate score on a scale of 1 to 10, becomes a focal point steering the discourse towards a nuanced understanding of the repercussions of mental health on self-care post-surgery. The moderate level of mental well-being portrayed in the sample group surfaces as a critical player influencing the dynamics of post-operative care and adherence to medical advisories.

As we traverse deeper into this terrain, research echoes the stark reality of escalated risks associated with subpar mental health conditions in the context of bariatric surgery, underlining the grave repercussions, including heightened vulnerability to weight gain post-surgery. The shadow of depression lurks menacingly, presenting itself as a potential aftermath of surgeries, thereby necessitating an urgent response to facilitate effective coping strategies and timely interventions (AbuRuz, 2019).

Underscoring the importance of fortified mental well-being, the studies advocate for meticulous home care post cardiac surgeries, orchestrating successful symptom management, which stands pivotal in curbing readmission rates and enhancing functional survival. The centrality of robust mental health unravels as the bedrock facilitating adherence to healthy lifestyle norms, a potent factor promising improved quality of life post coronary artery bypass grafting (CABG) surgery (Horn et al., 2022).

This deep dive into the mental landscapes of patients underlines the critical role of primary care practitioners as the guardians steering the patients safely through the delicate pathways of the post-surgery phase, holding the beacon of mental well-being high. Their role transcends beyond mere clinical interventions to encompass a deeply empathetic approach sensitive to the mental health contours of the patients. Taking a holistic view, it emerges that a home self-care management program emerges not merely as a beneficial avenue but almost as a necessity for patients recovering from open-heart surgeries, nurturing them in an environment cognizant of the mmmmmulti-faceted interplay of physical and mental well-being (Kim et al., 2022).

As the narrative unfolds, it beckons a healthcare landscape that embraces mental health not as a peripheral element but as a core pillar in shaping post-operative care strategies. It nudges towards a paradigm where mental health is not an afterthought but a harmonious symphony playing in tune with physical recovery, orchestrating a holistic healing process. The emphasis is on forging a path where medical interventions walk hand in hand with psychological wwellwwell-beingshering in a future where the sanctity of mental health is revered, fostering a nurturing ground for wholesome recovery grounded in empathy, understanding, and informed medical care. It brings to light the intricate tapestry of recovery, weaving in the threads of physical healing with the golden threads of mental well-being, crafting a mosaic of holistic health and well-being post-surgery. Starting with physical and emotional care, post-intervention insights from the study speak to a notawwell-beingt in the well-being of monitored individuals. When we focus on the research conducted by Fortmann et al., in 2023, we see a pattern where self-management interventions can indeed usher in improvements in patients' quality of life (Boovarahan et al., 2023). This essentially parallels the observed increase in physical care scores post-intervention in the study in discussion. However, the Xu et al., 2021 study goes further, emphasizing that specially designed psychological interventions can significantly alleviate negative emotions, further reinforcing the argument for improved emotional care.

The decrease in psychological care scores in the post-intervention phase, as outlined in the intervention, opens up a space for a rich discourse (Mahmood et al., 2020). The scenario depicted here contrasts with the generally positive outlook presented in the Fortmann et al., 2023 and Xu et al., 2021 studies. This indicates a gap in understanding and addresses the essential matter of sustaining psychological well-being post-surgery, urging a more grounded approach in handling psychological care with as much emphasis as physical care.

Moving forward to spiritual and workplace self-care, the positive swing in spiritual self-care, as recorded in the post-intervention phase, finds resonance in Fortmann et al. 's 2023 study. This study voices the vital role of spiritual care in total recovery, supporting the intervention's observations. The intervention bolsters the workplace self-care discussion, highlighting improved scores that are generally overlooked in wider research, thus spotlighting a critical area for future explorations (Fortmann et al., 2023).

Drawing our attention to the Bates-Jensen Wound Assessment Tool, there is an agreement in the discourse that self-management is beneficial. Athanasuleas et al., 2004 affirm this, supporting the positive outcomes seen in wound management following the intervention, albeit indirectly, thus asserting the necessity for personal management in wound care (Athanasuleas et al., 2004).

While the term 'Balance' hasn't been fleshed out expansively in wider studies, it stands to reason that the positive tendencies observed in studies by Fortmann et al., 2023 and Scott et al., 2004 around self-management and overall well-being might align with the enhanced 'Balance' scores witnessed post-intervention, inviting further inquiries into defining and understanding 'Balance' in this context more clearly (Athanasuleas et al., 2004; Fortmann et al., 2023).

The literature and intervention studies show that post-surgery care is improved by focusing on physical, emotional, and spiritual care. However, psychological care scores have decreased, prompting further inquiry. The COVID-19 pandemic has highlighted the critical need for nurses to prioritize their mental health. The Healthy Nurse, Healthy Nation initiative advocates for self-care to replenish compassion and empathy, improving patient care. Neglecting self-care can lead to burnout, compromised empathy, and patient safety risks.

A meticulously crafted self-care plan is proposed to nurture the intrinsic and reciprocal relationship between personal and professional growth — emphasized in provision 5.6 of the Code of Ethics. The initial step advocates a sincere self-reflection and assessment, canvassing various facets of one's life, including physical, mental, and spiritual dimensions. Following this, Mason suggests identifying growth avenues, perhaps marked by deficits in spiritual or

self-care attentiveness and subsequently deciding on appropriate interventions to address these.

Each area of life warrants a distinct approach, be it attending regular health screenings for physical care, employing relaxation techniques for mental well-being, or nurturing important relationships on a personal front. Mason impresses upon the need for nurses to champion their well-being, drawing attention to the beneficial recommendations housed in the Healthy Nurse, Healthy Nation Grand Challenge by the ANA (Ball, 2018).

Turning towards the pivotal role nurse managers hold in fostering a culture of self-care, the discussion promotes actively modeling self-help behaviors, such as establishing healthy boundaries and nurturing well-being. Furthermore, the advocacy extends to providing accessible self-care resources and fostering open lines of communication to address stress and mental health constructively. In a strategic effort to further support nurse self-care, nurse leaders are encouraged to facilitate a work environment grounded in mindfulness, incorporating reasonable work hours to avert burnout and fostering workshops focused on balanced sleep and stress mitigation. In conclusion, an open communication paradigm, characterized by regular meetings to address concerns and enhance job performance, is a cornerstone for fostering a nurturing work ecosystem, a necessity underscored in a study by Chikwe et al., 2020 (Chikwe et al., 2019).

Through a multi-faceted lens, this article navigates the pressing call for a radical shift towards prioritizing nurse self-care, presenting a roadmap infused with empathy, awareness, and proactive strategies, aiming to steer towards a healthier future, one nurse at a time.

The study has some limitations to consider. The sample size of 36 participants might not represent the wider population, and there was a gender imbalance with 75% males. While most measures had near-normal distributions, not all strongly conformed to normality, which could affect the robustness of the statistical analyses. The absence of a control group limits the ability to attribute improvements to the intervention definitively. The intervention seemed to focus more on physical care, potentially overlooking other areas of holistic well-being. The use of self-reported measures introduces potential bias. Lastly, the inclusion of data on pregnant women seems misplaced and does not provide a clear understanding of its relevance to the study outcomes.

Conclusion

This study highlights the effectiveness of nursing interventions in enhancing post-operative self-care and wound management following Coronary Artery Bypass Grafting. Despite a decrease in psychological care scores, significant improvements were observed in balance, wound management, and various self-care dimensions. The consistency of these outcomes across diverse demographics underlines the potential of these interventions for broad application in post-surgical care.

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department Concerned.

Consent for publication

Approved

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Conflict of interest

The authors declared an absence of conflict of interest.

References

AbuRuz, M. E. (2019). Pre-operative depression predicted longer hospital length of stay among patients undergoing coronary artery bypass graft surgery. *Risk management and healthcare policy*, 75-83.

Akbari, T., and Al-Lamee, R. (2022). Percutaneous Coronary Intervention in Multi-Vessel Disease. *Cardiovasc Revasc Med* **44**, 80-91.

Al-Maskari, A., Al-Noumani, H., and Al-Maskari, M. (2021). Patients' and nurses' demographics and perceived learning needs post-coronary artery bypass graft. *Clinical Nursing Research* **30**, 1263-1270.

Almaskari, A. A., Al Noumani, H., Al-Omari, K., and Al Maskari, M. A. (2019). Patients' and nurses' perceptions of post-coronary artery bypass graft learning needs in two omani hospitals. *Sultan Qaboos University Medical Journal* **19**, e122.

Aloh, H. E., Onwujekwe, O. E., Aloh, O. G., and Nweke, C. J. (2020). Is bed turnover rate a good metric for hospital scale efficiency? A measure of resource utilization rate for hospitals in Southeast Nigeria. *Cost Effectiveness and Resource Allocation* **18**, 1-8.

Alzahrani, S. H., Fallata, E. O., Alabdulwahab, M. A., Alsafi, W. A., and Bashawri, J. (2017). Assessment of the burden on caregivers of patients with mental disorders in Jeddah, Saudi Arabia. *BMC psychiatry* **17**, 1-8.

Athanasuleas, C. L., Buckberg, G. D., Stanley, A. W., Siler, W., Dor, V., Di Donato, M., Menicanti, L., Almeida de Oliveira, S., Beyersdorf, F., and Kron, I. L. (2004). Surgical ventricular restoration in the treatment of congestive heart failure due to post-infarction ventricular dilation. *Journal of the American College of Cardiology* **44**, 1439-1445.

Bahrami, M., Etemadifar, S., Shahriari, M., and Farsani, A. K. (2014). Caregiver burden among Iranian heart failure family caregivers: A descriptive, exploratory, qualitative study. *Iranian journal of nursing and midwifery research* **19**, 56.

Baig, M. S., Banu, A., Zehravi, M., Rana, R., Burle, S. S., Khan, S. L., Islam, F., Siddiqui, F. A., Massoud, E. E. S., and Rahman, M. (2022). An Overview of Diabetic Foot Ulcers and Associated Problems with Special Emphasis on Treatments with Antimicrobials. *Life* **12**, 1054.

Ball, L. K. (2018). Healthy Nurse, Healthy Nation [TM]. *Nephrology Nursing Journal* **45**, 241-243.

Bates-Jensen, B. M., McCreath, H. E., Harputlu, D., and Patlan, A. (2019). Reliability of the Bates-Jensen wound assessment tool for pressure injury assessment: The pressure ulcer detection study. *Wound Repair and Regeneration* **27**, 386-395.

Boovarahan, S. R., Kale, S. B., Prem, P. N., Ravindran, S., Arthanarisami, A., Rengaraju, J., Ali, N., Ramalingam, S., Mohany, M., and AlAsmari, A. F. (2023). CABG Patients Develop Global DNA Hypermethylation, That Negatively Affect the Mitochondrial Function and Promote Post-Surgical Cognitive Decline: A Proof of Concept in Small Cohort. *Journal of Clinical Medicine* **12**, 4146.

Chikwe, J., Sun, E., Hannan, E. L., Itagaki, S., Lee, T., Adams, D. H., and Egorova, N. N. (2019). Outcomes of second arterial conduits in patients undergoing multivessel coronary artery bypass graft surgery. *Journal of the American College of Cardiology* **74**, 2238-2248.

Corregidor-Sánchez, A. I., Segura-Fragoso, A., Rodríguez-Hernández, M., Jiménez-Rojas, C., Polonio-López, B., and Criado-Álvarez, J. J. (2021). Effectiveness of virtual reality technology on functional mobility of older adults: systematic review and meta-analysis. *Age and Ageing* **50**, 370-379.

Dalirirad, H., Najafi, T., and Seyedfatemi, N. (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* **21**, e266.

Dati, S., and Yulistiani, M. (2020). Validity of Bates-Jensen Modification Wound Assessment Format. *Jurnal Keperawatan* **12**, 555-566.

Davidson, L. J., Cleveland, J. C., Welt, F. G., Anwaruddin, S., Bonow, R. O., Firstenberg, M. S., Gaudino, M. F., Gersh, B. J., Grubb, K. J., Kirtane, A. J., Tamis-Holland, J. E., Truesdell, A. G., Windecker, S., Taha, R. A., and Malaisrie, S. C. (2022). A Practical Approach to Left Main Coronary Artery Disease: JACC State-of-the-Art Review. *J Am Coll Cardiol* **80**, 2119-2134.

Dimeling, G., Bakaeen, L., Khatri, J., and Bakaeen, F. G. (2021). CABG: When, why, and how? *Cleveland Clinic journal of medicine* **88**, 295-303.

Doenst, T., Thiele, H., Haasenritter, J., Wahlers, T., Massberg, S., and Haverich, A. (2022). The Treatment of Coronary Artery Disease. *Dtsch Arztebl Int* **119**, 716-723.

Eriksson, E., Liu, P. Y., Schultz, G. S., Martins-Green, M. M., Tanaka, R., Weir, D., Gould, L. J., Armstrong, D. G., Gibbons, G. W., and Wolcott, R. (2022). Chronic wounds: Treatment consensus. *Wound repair and regeneration* **30**, 156-171.

Farahani, M., and Shafiee, A. (2021). Wound healing: From passive to smart dressings. *Advanced Healthcare Materials* **10**, 2100477.

Filardo, G., Damiano, R. J., Ailawadi, G., Thourani, V. H., Pollock, B. D., Sass, D. M., Phan, T. K., Nguyen, H., and Da Graca, B. (2018). Epidemiology of new-onset atrial fibrillation following coronary artery bypass graft surgery. *Heart* **104**, 985-992.

Forrest, I. S., Petrazzini, B. O., Duffy, Á., Park, J. K., Marquez-Luna, C., Jordan, D. M., Rocheleau, G., Cho, J. H., Rosenson, R. S., Narula, J., Nadkarni, G. N., and Do, R. (2023). Machine learning-based marker for coronary artery disease: derivation and validation in two longitudinal cohorts. *Lancet* **401**, 215-225.

Fortmann, S. D., Patton, M. J., Frey, B. F., Tipper, J. L., Reddy, S. B., Vieira, C. P., Hanumanthu, V. S., Sterrett, S., Floyd, J. L., and Prasad, R. (2023). Circulating SARS-CoV-2+ megakaryocytes are associated with severe viral infection in COVID-19. *Blood Advances* **7**, 4200-4214.

Goncharov, M., Mejia, O. A. V., Perez de Souza Arthur, C., Orlandi, B. M. M., Sousa, A., Praca Oliveira, M. A., Atik, F. A., Coelho Segalote, R., Gradim Tiveron, M., and Melo de Barros e Silva, P. G. (2021). Mortality risk prediction in high-risk patients undergoing coronary artery bypass grafting: Are traditional risk scores accurate? *Plos one* **16**, e0255662.

Gupta, S., Srivastava, A., Malhotra, R., Chadha, M., and Aggarwal, A. N. (2023). Wound Assessment Using Bates Jensen Wound Assessment Tool in Acute Musculoskeletal Injury Following Low-Cost Wall-Mounted Negative-Pressure Wound Therapy Application. *Indian Journal of Orthopaedics* **57**, 948-956.

Halm, M. A. (2017). Age and gender influences on the needs, concerns and strategies of CABG caregivers. *Heart & Lung* **46**, 159-165.

Holcomb, R. M., Zil-E-Ali, A., Gonzalez, R., Dowling, R. D., Shen, C., and Aziz, F. (2023). Depression is Associated With Non-Home Discharge After Coronary Artery Bypass Graft. *Journal of Surgical Research* **290**, 232-240.

Horn, N., Laferton, J. A., Shedden-Mora, M. C., Moosdorf, R., Rief, W., and Salzmann, S. (2022). Baseline depressive symptoms, personal control, and concern moderate the effects of preoperative psychological interventions: the randomized controlled PSY-HEART trial. *Journal of Behavioral Medicine* **45**, 350-365.

Jaarsma, T., Hill, L., Bayes-Genis, A., La Rocca, H. P. B., Castiello, T., Čelutkienė, J., Marques-Sule, E., Plymen, C. M., Piper, S. E., and Riegel, B. (2021). Self-care of heart failure patients: practical management recommendations from the Heart Failure Association of the European Society of Cardiology. *European journal of heart failure* **23**, 157-174.

Jiang, L., Shestov, A. A., Swain, P., Yang, C., Parker, S. J., Wang, Q. A., Terada, L. S., Adams, N. D., McCabe, M. T., and Pietrak, B. (2016). Reductive carboxylation supports redox homeostasis during anchorage-independent growth. *Nature* **532**, 255-258.

Johnson, A., and Long, D. (2020). The importance of education in self-care in social care work programmes for the professionalisation of social care work. *Irish Journal of Applied Social Studies* **20**, 8.

Kahook, M. Y., Serle, J. B., Mah, F. S., Kim, T., Raizman, M. B., Heah, T., Ramirez-Davis, N., Kopczynski, C. C., Usner, D. W., and Novack, G. D. (2019). Long-term safety and ocular hypotensive efficacy evaluation of netarsudil ophthalmic solution: rho kinase elevated IOP treatment trial (ROCKET-2). *American journal of ophthalmology* **200**, 130-137.

Keegan, P., and Panebianco, C. (2022). Safe Recovery after Valvular Heart Surgery. *In* "Valvular Heart Disease", pp. 193-214. Springer.

Keenan, P. S., Normand, S.-L. T., Lin, Z., Drye, E. E., Bhat, K. R., Ross, J. S., Schuur, J. D., Stauffer, B. D., Bernheim, S. M., and Epstein, A. J. (2008). An administrative claims measure suitable for profiling hospital performance on the basis of 30-day all-cause readmission rates among patients with heart failure. *Circulation: Cardiovascular Quality and Outcomes* **1**, 29-37.

Kim, H., Bae, S. H., Lim, S.-H., and Park, J.-H. (2022). Predictors of health-related quality of life after coronary artery bypass graft surgery. *Scientific Reports* **12**, 16119.

Lopez, A. D., and Mathers, C. D. (2006). Measuring the global burden of disease and epidemiological transitions: 2002–2030. *Annals of Tropical Medicine & Parasitology* **100**, 481-499.

Mahmood, E., Matyal, R., Mahmood, F., Xu, X., Sharkey, A., Chaudhary, O., Karani, S., and Khabbaz, K. (2020). Impact of left atrial appendage exclusion on short-term outcomes in isolated coronary artery bypass graft surgery. *Circulation* **142**, 20-28.

Maia, L. O., Beaussant, Y., and Garcia, A. C. M. (2022). The therapeutic potential of psychedelic-assisted therapies for symptom control in patients diagnosed with serious illness: A systematic review. *Journal of Pain and Symptom Management* **63**, e725-e738.

Martinotti, S., and Ranzato, E. (2020). Scratch wound healing assay. *Epidermal cells: methods and protocols*, 225-229.

Masson-Meyers, D. S., Andrade, T. A., Caetano, G. F., Guimaraes, F. R., Leite, M. N., Leite, S. N., and Frade, M. A. C. (2020). Experimental models and methods for cutaneous wound healing assessment. *International journal of experimental pathology* **101**, 21-37.

McDonald, J., McKinlay, E., Keeling, S., and Levack, W. (2017). Complex home care: challenges arising from the blurring of boundaries between family and professional

care. *Kōtuitui: New Zealand Journal of Social Sciences Online* **12**, 246-255.

Modolo, R., Chichareon, P., Kogame, N., Dressler, O., Crowley, A., Ben-Yehuda, O., Puskas, J., Banning, A., Taggart, D. P., and Kappetein, A. P. (2019). Contemporary outcomes following coronary artery bypass graft surgery for left main disease. *Journal of the American College of Cardiology* **73**, 1877-1886.

Moieni, M., Poorpooneh, Z., and Pahlavanzadeh, S. (2014). Investigating the effect of family-focused nursing intervention on caregiver burden of the family members of the patients undergoing coronary bypass surgery in Isfahan Shahid Chamran Hospital during 2012. *Iranian journal of nursing and midwifery research* **19**, 187.

Montrief, T., Koyfman, A., and Long, B. (2018). Coronary artery bypass graft surgery complications: A review for emergency clinicians. *The American journal of emergency medicine* **36**, 2289-2297.

Nair, M., Martin, W. P., Zhernovkov, V., Elliott, J. A., Fearon, N., Eckhardt, H., McCormack, J., Godson, C., Brennan, E. P., and Marai, M. (2020). Characterization of the renal cortical transcriptome following Roux-en-Y gastric bypass surgery in experimental diabetic kidney disease. *BMJ Open Diabetes Research and Care* **8**, e001113.

Park, E. O., Yates, B. C., Schumacher, K. L., Meza, J., Kosloski, K., and Pullen, C. (2013). Caregiving demand and difficulty in older adult spousal caregivers after coronary artery bypass surgery. *Geriatric Nursing* **34**, 383-387.

Pihlaja, S., Stenberg, J.-H., Joutsenniemi, K., Mehik, H., Ritola, V., and Joffe, G. (2018). Therapeutic alliance in guided internet therapy programs for depression and anxiety disorders–a systematic review. *Internet interventions* **11**, 1-10.

Ren, C., Yu, J., Zhang, J., Wang, S., Zhu, E., Guo, H., Sun, D., Tang, B., Cui, H., and Lai, Y. (2023). Prevalence of Coronary Artery Disease in Patients Undergoing Valvular Heart Surgery. *Heart Surg Forum* **26**, E141-e147.

Roman, D. D., Holker, E. G., Missov, E., Colvin, M. M., and Menk, J. (2017). Neuropsychological functioning in heart transplant candidates. *The Clinical Neuropsychologist* **31**, 118-137.

Sautter, J. M., Tulsky, J. A., Johnson, K. S., Olsen, M. K., Burton-Chase, A. M., Hoff Lindquist, J., Zimmerman, S., and Steinhauser, K. E. (2014). Caregiver experience during advanced chronic illness and last year of life. *Journal of the American Geriatrics Society* **62**, 1082-1090.

Subramanian, M., Hoang, A. T., Kalidasan, B., Nižetić, S., Solomon, J. M., Balasubramanian, D., Subramaniyan, C., Thenmozhi, G., Metghalchi, H., and Nguyen, X. P. (2021). A technical review on composite phase change material based secondary assisted battery thermal management system for electric vehicles. *Journal of Cleaner Production* **322**, 129079.

Theobald, K., and McMurray, A. (2004). Coronary artery bypass graft surgery: discharge planning for successful recovery. *Journal of advanced nursing* **47**, 483-491.

Voljč, T., and Semenič, D. (2021). Contribution of Topical Agents to Wound Healing. *In* "Recent Advances in Wound Healing". IntechOpen.

Willis, D. G., Sullivan-Bolyai, S., Knafl, K., and Cohen, M. Z. (2016). Distinguishing features and similarities between descriptive phenomenological and qualitative description research. *Western journal of nursing research* **38**, 1185-1204.

Wu, M.-P., Wu, S.-F. V., Lee, M.-C., Peng, L.-N., Tsao, L.-I., and Lee, W.-J. (2019). Health-promotion interventions enhance and maintain self-efficacy for adults at cardiometabolic risk: A randomized controlled trial. *Archives of gerontology and geriatrics* **82**, 61-66.

Yan, J., Qin, Y., Zhao, H., Sun, Y., Gong, F., Li, R., Sun, X., Ling, X., Li, H., and Hao, C. (2021). Live birth with or without preimplantation genetic testing for aneuploidy. *New England Journal of Medicine* **385**, 2047-2058.

Zayac, R. M., Van Stratton, J. E., Ratkos, T., Williams, M., Geiger, A., and Paulk, A. (2021). A Preliminary Assessment of the Qualities and Behaviors of Exemplary Practitioners: Perspectives From US-Based Behavior Analysts. *Behavior Analysis in Practice* **14**, 342-351.