Original Study

Outcomes of Patients Who Underwent Standard Risk Coronary Artery Bypass Graft (CABG) Surgery Under the Philippine Health Insurance Corporation Z Benefit Package in a Single Private Center in the Philippines

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Abstract

BACKGROUND OF THE STUDY: Coronary artery disease (CAD) poses a significant global health challenge. In the Philippines, despite increased availability of coronary artery bypass grafting (CABG), cost remains a barrier to access. This research evaluates key factors such as all-cause death, cardiovascular death, repeat revascularization and quality of life post-CABG under the Philippine Health Z Benefit Package (PZBP). Its findings provide critical insights for shaping clinical practices, policymaking and advocating for broader implementation of the PZBP to improve healthcare access and quality of life for post-CABG patients.

METHODS: This retrospective cross-sectional study explores the outcomes of post-coronary artery bypass grafting (CABG) patients enrolled under the PZBP. The study, conducted at Perpetual Succour Hospital in Cebu City from December 2018 to September 2023, included patients diagnosed with CAD based on ACC/AHA 2021 guidelines. Using a complete enumeration strategy, the research employed descriptive statistics for demographic and clinical profiling, and measured quality of life using the World Health Organization Quality of Life Brief Version (WHOQOL-BREF) tool.

RESULTS: The study analyzed 29 patients who underwent CABG through the PZBP, presenting detailed demographic and clinical data. Most patients (41.4%) fell within the 51-60 age range, with males comprising 75.9%. Diabetes mellitus type II was prevalent (58.6%) and 86.2% had three-vessel diseases. The quality of life assessed with WHOQOL-BREF yielded positive scores across physical, mental, social and environmental domains, indicating favorable outcomes. Notably, no cardiovascular deaths, all-cause deaths, or repeat revascularizations were reported during the study, highlighting the effectiveness of CABG under PZBP.

CONCLUSION: The study on post-CABG patients under the PZBP shows promising outcomes with no all-cause death, cardiovascular death, or repeat revascularization. This indicates the program's effectiveness in delivering accessible, high-quality healthcare, enhancing long-term survival rates and overall well-being. However, addressing underutilization is crucial, highlighting the importance of raising awareness and utilization to further improve post-CABG patients' outcomes and quality of life.

KEYWORDS: Philippine Health Insurance Corporation, Philippine Health Insurance Z Benefit Package (PZBP), coronary artery bypass graft (CABG), WHOQOL-BREF, coronary artery disease (CAD)

BACKGROUND OF THE STUDY

Coronary artery disease (CAD) is the third leading cause of mortality worldwide and is associated with 17.8 million deaths annually.[1] In the Philippines, it is the leading cause of mortality accounting for 32% of all Filipino deaths.[2] In recent years, the advent of percutaneous coronary intervention (PCI), a non-invasive management of CAD enabled patients to undergo revascularization without open heart surgery or coronary artery bypass grafting (CABG). But

in some cases, CABG remains to be a class I indication for patients who are suitable candidates for CABG. These include patients with a significant or >70% diameter stenosis in three major coronary arteries with or without left main stenosis, those with complex CAD and a syntax score of >33, has left ventricular ejection fraction (LVEF) of less than or equal to 35% or in patients with diabetes mellitus.[3] More centers in the Philippines have now made available open-heart surgery to patients in need of CABG, but the cost remains prohibitive resulting in lower enrollment and continued disease burden.

The Philippine Health Insurance Corporation (PHIC) started implementing the PHIC Z Benefits Package (PZBP) on June 21, 2012, per PhilHealth Board Resolution (PBR) No. 1629 s. 2012.[4] They published Case Type Z Benefit Package services and rates for members with CAD requiring CABG surgery through Philhealth Circular No. 0002, s.2013. They offer financial risk coverage to qualifying individuals, safeguarding them from illnesses deemed both medically and financially devastating. This is particularly impactful for numerous Filipinos, especially those within the underserved segments of society.

The PHIC has granted several contracted healthcare providers (HCP) in different regions across the country to provide state of the art treatment and quality of care at par with current standards of practice. To date, there are a total of 288 contracted centers with 165 government contracts and 68 private contracts. Twenty-three centers have been contracted to provide CABG Z benefit packages, 15 of which are private and 8 are government centers. In the Visayas regions, there are only three (3) contracted centers with Perpetual Succour Hospital - Cebu Heart Institute (PSH-CHI) being the only private center which has been in operation since 2018.

We primarily determined the outcomes of standard risk patients enrolled under the PZBP program who underwent CABG. We focused on the incidence of all-cause death, cardiovascular death, rate of revascularization and quality of life (QoL) of these patients discharged within the prescribed period based on the CABG Pathway. Previous research on mortality post CABG reported numerous factors contributing to the variation in post-surgical outcomes. Fewer deaths are reported in patients with favorable case mix characteristics, including those who are younger and have normal ejection fractions.[5,6] Aside from mortality and major morbidity rates after cardiac surgery, there has been an increasing focus on patient QoL as an integral part in medicine.[7,8] It was defined by the World Health Organization as "not only the absence of disease and infirmity, but also the presence of physical, mental and social well-being."[4,9] There is a strict selection criteria for patients under PZBP (Appendix A), that might be a huge factor in the outcomes of these patients postoperatively.

Currently, PSH-CHI is receiving a number of referrals in the Visayas region due the increase in number of patients diagnosed with CAD with the need of CABG under PZBP. The need for a thorough investigation into the postoperative experiences of CABG patients enrolled under the PZBP arises from the intersection of clinical, policy and patient-centered considerations. Understanding the dynamics of all-cause death, cardiovascular death, repeat revascularization and QoL in this specific patient population is crucial for several reasons. First, is its clinical efficacy. The impact of CABG goes beyond the operating room, encompassing postoperative care and continuous support. Evaluating results, such as overall mortality, cardiovascular-related mortality and the need for repeat revascularization, offers crucial insights into the clinical effectiveness of the PZBP in maintaining long-term cardiovascular well-being.

Next is its impact on policy evaluation. The PZBP signifies a focused initiative aimed at enhancing healthcare results for individuals undergoing CABG. Assessing the program's influence contributes to the continuous discussion on healthcare policy, assisting policymakers in making informed choices regarding resource allocation and the improvement of existing initiatives. The patient's well-being is also influenced as the multifaceted nature of postoperative recovery encompasses the QoL. Analyzing the QoL in post-CABG patients participating in the PZBP offers a comprehensive insight into the overall impact of the program on the individuals' daily experiences, extending beyond clinical endpoints. Lastly, the results of this study have the potential to play a crucial role in raising public awareness regarding the advantages of participating in the PZBP program. Equipping individuals with information about successful healthcare initiatives promotes active involvement in programs aimed at enhancing health outcomes.

As of this writing, this is the first study that focuses on the outcomes of post-CABG patients enrolled under the PZBP in the Visayas region. Despite the program's decade-long implementation, a significant number of Filipino physicians remain uninformed about the PZBP leading to its underutilization. This study also seeks to contribute to the promotion of the PHIC Z benefit, aiming to enhance the utilization of this program.

RESEARCH QUESTION

What are the outcomes in terms of cardiovascular and all-cause mortality, rate of repeat revascularization and QoL of patients enrolled under the PZBP who underwent isolated CABG?

GENERAL OBJECTIVE

This research will investigate the outcomes and QoL of post-CABG patients enrolled under the PHIC PZBP in Perpetual Succour Hospital - Cebu Heart Institute from December 2018 to September 2023.

SPECIFIC OBJECTIVES

Specifically, this study aims to:

1. Describe the clinical profile of patients enrolled under the PZBP who underwent CABG from December 2018 to September 2023
   - 1.1 Age
   - 1.2 Gender
   - 1.3 Risk factors for CAD (diabetes, hypertension, dyslipidemia, smoking)

1.4 Number of diseased vessels with or without left main coronary involvement
1.4.1 2-vessel disease
1.4.2 3-vessel disease
2. Incidence of cardiovascular mortality, all-cause mortality, repeat revascularization and QoL will be recorded

REVIEW OF RELATED LITERATURE

CAD burden remains to be a major cause of morbidity and mortality worldwide. According to the Philippine Statistics Authority (PSA), CAD remains to be the top cause of death in the Philippines based on the PSA data, from January 2022 to December 2022, ischemic heart diseases were the leading cause of death with 121,558 cases or 18.3% of the total deaths in the country.[2]

CABG remains to be a class I indication for suitable candidates with significantly greater than 70% diameter stenosis in three major coronary arteries with or without left main stenosis with complex CAD and a syntax score of >33, with LVEF of less than or equal to 35% or in patients with diabetes mellitus. Risk factors for the development of CAD include hypertension, diabetes, dyslipidemia and smoking. A study conducted by the Philippine Society of Hypertension (PSH) estimated 21% or 10 million Filipinos to be hypertensive, while about 3.9 million diabetes cases were reported by the International Diabetes Federation (IDF) last 2020.[10]

Although, survey results showed that tobacco use decreased from 29.7% in 2009 and 23.8% in 2015 to 19.5% in 2021, still one in five or 15.1 million Filipino adults aged 15 years and older are current tobacco users. The percentage of adults using tobacco was eight times higher among males (34.7%) than females (4.2%).[11]

Previous research on mortality post CABG reported numerous factors contributing to this variation of outcomes postoperatively. In a study done by Pawhay C, et al. in a single center in the Philippines, elevated preoperative creatinine levels, prolonged bypass and ischemic time increased the rate of mortality on post-CABG patients.[12] Fewer deaths are reported in patients with favorable case mix characteristics, including those who are younger and have normal ejection fractions.[5,6] There are strict selection criteria for patients under PZBP (Appendix A) that might be a huge factor in the long-term outcomes of these patients postoperatively.

In recent years, the advent of PCI, a non-invasive management of CAD enabled patients to undergo revascularization without open heart surgery or CABG. But in patients with higher disease burden and lesion complexity, CABG remains to be a class I indication for suitable candidates with significantly greater than 70% diameter stenosis in three major coronary arteries with or without left main stenosis with complex CAD and a syntax score of >33, with LVEF of less than or equal to 35% or in patients with diabetes mellitus.

But the cost has been prohibitive, especially in low to moderate income countries like the Philippines. The average cost of CABG surgery in the Philippines is around 700,000 to 1,000,000.[13]

The average middle class Filipino income is as low as 18,000 per month which makes a major surgery like CABG insurmountable.[14] As such, in 2012 the PHIC identified patients who need expensive therapies for their life or limb threatening conditions and were classified as Case Type Z. These include cases of selected cancers, congenital heart diseases, CABG for standard risk CAD patients, kidney transplants among others.

Beyond longevity and morbidity, the impact of cardiac surgery on day-to-day functioning is incredibly important not only to patients, but also to their families. WHO defines QoL as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.

The WHOQOL is a QoL assessment developed by the WHOQOL Group with 15 international field centers, simultaneously, in an attempt to develop a QoL assessment that would be applicable cross-culturally. The World Health Organization Quality of Life Brief Version (WHOQOL-BREF) stands as a widely employed tool for evaluating the QoL in diverse cultural and health contexts. Originating as a condensed version derived from the WHOQOL-100, it was specifically crafted to enhance practicality in both research and clinical settings. Developed by the WHO, the WHOQOL-BREF reflects the organization's dedication to comprehensively understand and promote individuals' well-being.[15]

Initiated in the 1990s, the creation of WHOQOL-BREF involved collaboration among researchers from various cultural and linguistic backgrounds, ensuring its applicability and relevance across diverse populations. The primary objective of WHOQOL-BREF is to furnish a concise yet comprehensive measure of QoL, covering domains such as physical health, psychological well-being, social relationships and environmental factors.

Comprising 26 items, the questionnaire spans four key domains: physical health, psychological health, social relationships and environment. Respondents employ a Likert scale to rate perceived QoL and satisfaction across various aspects of their lives. The WHOQOL-BREF has undergone translation into numerous languages and cultural adaptations for use in different regions, establishing itself as a valuable tool for international research and cross-cultural comparisons.

SIGNIFICANCE OF THE STUDY

There has been paucity of data regarding the outcomes of post-CABG patients who were enrolled under the Z benefit program of the PHIC. As of this writing, there has been no data on the QoL, cardiovascular and all-cause mortality and incidence of repeat revascularization post open-heart surgery of these standard risk patients.

This study holds substantial significance as it systematically evaluates post- CABG patients enrolled under the PZBP. By assessing critical outcomes such as all-cause death, cardiovascular death, repeat revascularization and QoL, the research contributes to the existing body of knowledge in several impactful ways. Gaining insights into the absence of all-cause death, cardiovascular death and occurrence of repeat revascularization is crucial for assessing the effectiveness of the PZBP in enhancing long-term survival and alleviating cardiovascular burden in post-CABG patients. These findings directly impact clinical practice, shaping decision-making processes and strategies for patient care.

The results also illuminate the effectiveness of the PZBP in fostering favorable clinical outcomes. This data provides a foundation for healthcare policymakers to enhance current policies and endorse broader adoption of the PZBP. By raising awareness and promoting the utilization of this program, there is potential for improved healthcare access and enhanced quality of care.

A thorough evaluation of QoL through validated measures offers a comprehensive insight into the influence of the PZBP on overall well-being of patients. This data is essential for healthcare professionals in customizing interventions that not only target clinical outcomes, but also contribute to improvement of the daily lives of post-CABG patients. By emphasizing the favorable effects of the PZBP on patient outcomes, it provides individuals with insights into successful healthcare programs and encourages them to actively seek and engage in such initiatives, fostering a proactive approach to cardiovascular health.

OPERATIONAL DEFINITION OF TERMS

Z benefits: Benefit packages that focus on providing relevant financial risk protection against illness perceived as medically and financially catastrophic

Quality of life: An individual's perception of their position in life in context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.

WHOQOL-BREF: Quality of life assessment questionnaire addressing four quality of life domains: physical health, psychological health, social relationships and environment

Cardiovascular mortality: Includes deaths that result from an acute myocardial infarction (AMI), sudden cardiac death, death due to heart failure (HF), death due to stroke, death due to cardiovascular (CV) procedures, death due to CV hemorrhage, and death due to other CV causes

All-cause mortality: Death of any cause

Repeat revascularization: It is defined as repeating the intervention which could be PCI or coronary artery bypass grafting (CABG) for restoring blood flow to the coronary arteries once a patient has been discharged after first or index CABG.

Contracted Health Care Partners (HCP): A PhilHealth accredited health facility that enters into a contract with PhilHealth for the provision of specialized care

Multidisciplinary/Interdisciplinary Team (MDT) Approach: An approach to patient care involving team members from different backgrounds or work disciplines, with each member providing specific services while working collaboratively together towards the goal of providing the best care to the patient

Primary endpoint/outcomes: Quality of life, incidence of cardiovascular death, all-cause death and repeat revascularization in patients who underwent CABG under the Philippine Health Insurance Corporation Z benefit program.

MATERIALS AND METHODS

This is a retrospective cross-sectional study which investigated the outcomes of post-CABG patients enrolled under PZBP. Pre-admission logbook and evaluation forms of patients in PSH-CHI from December 2018 up to September 2023 were reviewed. PSH-CHI is a tertiary hospital in Cebu City mostly receiving referrals from the Visayas regions.

The protocol was approved by a level 3 Philippine Health Research Ethics Board (PHREB) accredited Research Ethics Committee (REC) of Perpetual Succour Hospital and conducted in compliance with the ethical principles set forth in the Declaration of Helsinki and National Ethical Guideline for Health and Health-related Research (2017).

Patients aged 19 years old and above who were diagnosed with CAD by coronary angiography with Class I and Class IIA indication for revascularization by CABG based on the ACC/AHA 2021 guidelines,[16] enrolled under the Z benefit package, and who underwent CABG from December 2018 until September 2023 were included in the study. All patients included underwent screening for eligibility under the PZBP for standard risk CABG surgery (Appendix A). Each case was presented by the attending physician to a panel composed of at least three cardiologists and one thoracic and cardiovascular surgeon utilizing the multidisciplinary approach strategy. Patients who were not subjected to screening, deemed ineligible by the panel, or did not proceed with surgery for various reasons (such as death or personal choice) were excluded from the study.

Eligible patients were contacted by the researcher through phone calls and verbal consent was procured for participation in the study (Appendix C). The researcher identified herself with her full name and name of her institution. To verify the identity of the researcher, she identified the patient by his full name and date of CABG procedure. To verify identification of the patient, the researcher asked the patient his full name and birthday before proceeding with the interview. Once identification was verified and consent was secured, baseline clinical data including age, gender, risk factors for CAD (diabetes, hypertension, dyslipidemia and history of smoking) and number

of coronary vessels involved were documented using their pre-admission forms. Incidence of cardiovascular and all-cause mortality including the incidence of repeat revascularization was recorded. Patients were then be asked by the researcher to answer a QoL questionnaire in their local dialect to assess their quality of life (Appendix B). All the needed information for the patient's clinical profile was recorded in the data collection form (DCF) as appended. The DCF did not have any identifier that may reveal the patient's identity (Figure 1).

Sample Size and Sampling Design

This paper utilized a complete enumeration strategy, aiming to comprehensively encompass all eligible participants. Specifically, it encompassed all adult patients aged 19 years and above who had been diagnosed with CAD through coronary angiography and had a Class I and Class IIA indication for revascularization by CABG, in accordance with the ACC/AHA 2021 guidelines. These patients were enrolled under the Z benefit package and underwent CABG from 2018 until September 2023. This approach ensured a thorough and representative analysis of the population under consideration, enabling more precise and broadly applicable results.

Data Management and Analysis

Descriptive statistics were employed to assess the demographic and clinical profile of patients, including their CAD risk factors and the number of coronary artery vessels involved. Specifically, for quantitative variables, frequency and percentage were used to present an overview of distribution of responses among patients, providing insights into the prevalence and distribution of various characteristics within the study population. In the case of qualitative variables, mean and standard deviation were calculated to offer insights into central tendencies and the degree of variability within datasets.

Furthermore, the patient's QoL were measured using the four domains of the WHOQOL-BREF tool - Physical Component Summary (PCS), Mental Component Summary (MCS), Social Component Summary (SCS) and Environmental Component Summary (ECS).

The patient's scores were converted in 0-100 scale using this formula,

*Converted Score = (Score in each Domain - 4) * (100/16)*

After which, the interpretation is done using Table 1 given below.

Table 1. Interpretation of WHOQOL-BREF Converted Score

Converted Score	Interpretation
0 – 20	Quality of life is POOR
21 – 40	Quality of life is MODERATE
41 – 60	Quality of life is GOOD
61 – 80	Quality of life is VERY GOOD

Table 1. Demographic and Clinical Profile of CABG Patients under PHIC - Z Package

Age (years)	Frequency (%)
<40	1 (3.4%)
41-50	3 (10.3%)
51-60	12 (41.4%)
61-70	11 (37.9%)
71-80	2 (6.9%)
>80	0 (0.0%)
Gender	
Male	22 (75.9%)
Female	7 (24.1%)
CAD Risk Factors	
Hypertension	9 (31%)
DM Type II	17 (58.6%)
Dyslipidemia	11 (37.9%)
Hx Smoking	11 (37.9%)
No. of coronary artery vessel involved	
2-vessel disease	4 (13.8%)
3-vessel disease	25 (86.2%)

RESULTS

All 29 patients who underwent CABG under PZBP were included in this study. Table 1 outlines a detailed demographic and clinical snapshot of individuals who underwent CABG under the PHIC - Z Package. Notably, the majority of CABG patients fall within the 51-60 age range, constituting a significant 41.4% of the total, followed closely by the 61-70 age group at 37.9%. Patients aged 41-50 make up 10.3%, while those under 40 and between 71-80 account for 3.4% and 6.9%, respectively; however, there are no patients over 80 in this dataset. In terms of gender distribution, the majority are male, comprising 75.9% of the total, with females making up 24.1%. Diabetes mellitus Type II emerges as a prominent risk factor affecting 58.6% of patients, while hypertension was present in 31%, and both dyslipidemia and a history of smoking are reported in 37.9% of cases.

Regarding the number of coronary artery vessels involved, a substantial 86.2% of patients exhibited 3-vessel diseases, while 2-vessel disease is less prevalent, representing 13.8%. This comprehensive profile offers valuable insights into the age, gender and clinical characteristics of CABG patients under the PHIC - Z Package, aiding in a nuanced understanding of this specific patient population for healthcare professionals.

Table 2 presents an analysis of the QoL among participants, measured across different domains using the WHOQOL-BREF. The Physical Component Summary demonstrates a mean score of 77.15, with a standard deviation of 11.14, indicating a moderate level of variability among respondents. The scores

Table 2. Quality of Life using WHOQOL-BREF 4 Domains with Interpretation

Domains	Mean +/- Std. dev.	Min	Max	Interpretation				
				Very Good	Good	Moderate	Poor	Very Poor
Physical Component Summary	77.15 +/-11.14	50.	92.9	24 (96%)	1 (4%)	-	-	-
Mental Component Summary	77.75 +/-7.53	56.3	91.7	24 (96%)	1 (4%)	-	-	-
Social Component Summary	71.32 +/-14.44	33.3	100	19 (76%)	5 (20%)	1 (4%)	-	-
Environmental Component Summary	79.75 +/-6.13	68.8	93.8	25 (100%)	-	-	-	-

Table 3. Frequency of Outcomes of the Patients

Outcomes	Frequency
Cardiovascular Death	0 (0%)
All-cause Death	0 (0%)
Repeat Revascularization	0 (0%)

range from a minimum of 50.00 to a maximum of 92.88, suggesting a broad spectrum of physical well-being within the surveyed population. In terms of the Mental Component Summary, the mean score is 77.75, with a lower standard deviation of 7.53. This implies a more consistent response in the mental well-being domain, ranging from 56.25 to 91.69. The Social Component Summary exhibits a mean score of 71.32, indicating a moderate level of satisfaction in the social aspects of life. However, the higher standard deviation of 14.44 suggests a wider range of social QoL experiences, ranging from a minimum of 33.31 to a maximum of 100.00. Lastly, the Environmental Component Summary displays a mean score of 79.75, with a relatively low standard deviation of 6.13. This suggests a higher degree of consistency in the environmental QoL, with scores ranging from 68.75 to 93.75.

The table also provides an interpretation of the WHOQOL-BREF domains based on the participants' responses. In the Physical Component Summary, the majority of respondents (96%) fall under the "Very Good" category, indicating a high level of satisfaction with their physical well-being. Similarly, the Mental Component Summary reveals that 96% of participants also classify in the "Very Good" category, reflecting a positive mental QoL. Moving to the Social Component Summary, the distribution is more varied, with 76% falling into the "Very Good" category, 20% in the "Good", and 4% in the "Moderate" category, suggesting an overall positive social QoL for a significant majority. For the Environmental Component Summary, all respondents (100%) report a "Very Good" status, highlighting a widespread positive perception of their environmental QoL. Notably, there are no respondents in the "Poor" or "Very Poor" categories across any domain.

In summary, the table indicates an overwhelmingly positive assessment of the participants' QoL across physical, mental, social and environmental domains, with the majority characterizing their experiences as "Very Good."

Table 3 presents the frequency of various outcomes among a group of patients, providing valuable insights into their health status. The outcomes considered are cardiovascular death, all-cause death, and repeat revascularization. Remarkably, the frequency for each outcome is reported as 0 (0%). This indicates that, within the observed patient population, none experienced cardiovascular death, all-cause death, or repeat revascularization during the specified period. The percentages, all set at 0%, emphasize the absence of these events among the subjects under study. This information suggests a positive scenario where, at least within the observed time frame or conditions, the patients did not encounter severe cardiovascular events, all-cause mortality, or the need for repeat revascularization procedures.

Importantly, while there was a singular case of a patient diagnosed with dementia, the overall results affirm the efficacy of selecting patients for the CABG procedure under the PHIC Z benefit, demonstrating a positive and favorable long-term outcome. This underscores the effectiveness of the chosen patient cohort and underscores the positive impact of the procedure within this specific healthcare context.

DISCUSSION

Baseline Demographics and Clinical Characteristics

The baseline demographics of patients enrolled under the PZBP program highlight important characteristics that are instrumental in understanding the cardiovascular health profile of the population. The predominance of males in the age group of 51-60 years suggests a demographic at higher risk for CAD, aligning with the well-established trend of increased CAD incidence with age.[17]

The identification of diabetes as the most prevalent comorbidity underscores the interplay between metabolic factors and

cardiovascular health. Given the association of diabetes with an elevated risk of CAD, it emphasizes the need for targeted interventions to manage glycemic control and mitigate cardiovascular complications among this cohort.[18]

Furthermore, the presence of dyslipidemia, smoking and hypertension as common comorbidities indicates a clustering of modifiable risk factors for CAD.[19,20] These findings stress the importance of adopting a holistic approach within the PZBP program, focusing not only on cardiac interventions but also on comprehensive strategies addressing lifestyle modifications, smoking cessation and blood pressure and lipid level management.

Tailoring interventions to address these modifiable risk factors is crucial in the primary and secondary prevention of CAD. The baseline demographics serve as a valuable foundation for designing targeted and effective healthcare strategies within the PZBP program to improve overall cardiovascular health outcomes for this specific patient population. Ongoing surveillance of these demographic factors is crucial for adjusting interventions to changing health trends and guaranteeing continued efficacy of the program.

Outcomes

The research findings on the absence of all-cause death, cardiovascular death and the incidence of repeat revascularization among post-CABG patients enrolled under the PZBP program after 5-year follow-up present encouraging outcomes.

The observed absence of all-cause death and cardiovascular death within the specified period suggests a positive impact of the PZBP program on long-term survival and cardiovascular health of post-CABG patients. This aligns with the goals of comprehensive healthcare initiatives aimed at improving patient outcomes and reducing mortality associated with CAD.[15]

The notable absence of repeat revascularization is significant, signifying prolonged efficacy of the initial CABG procedure. This observation implies that the PZBP program, by facilitating access to and endorsing post-CABG care, plays a role in sustained success of revascularization interventions.

While these results are promising, it is essential to acknowledge potential contributing factors and further investigate aspects such as adherence to medication, lifestyle modifications and ongoing cardiovascular management. Additionally, longer-term follow-ups could provide insights into trends beyond the initial 5-year period, ensuring a comprehensive understanding of post-CABG patient outcomes under the PZBP program.

Importantly, while there was a singular case of a patient diagnosed with dementia, the overall results affirm the efficacy of selecting patients for the CABG procedure under the PHIC Z benefit, demonstrating a positive outcome.

Quality of Life

QoL is an integral part of postoperative CABG patients. It is multifactorial in that it assesses physical, psychological, social and environmental well-being. The WHO QoL-BREF is a 26-item scale distributed across four domains: physical health, psychological, social and environmental. The research results indicating generally good outcomes in QoL among post-CABG patients enrolled under the PZBP, as assessed by the WHOQOL-BREF questionnaire, are noteworthy. The positive findings across physical, mental, social and environmental domains suggest a comprehensive impact of the PZBP program on the well-being of these individuals.

Comparing these outcomes with existing studies, the results align with research emphasizing the multifaceted nature of QoL improvements after CABG. Studies like the one conducted by Rumsfeld, et al. (1999) and Serruys, et al. (2003) have highlighted significant enhancements in various QoL domains following CABG procedures. The PZBP program's success in positively influencing the physical domain is consistent with studies emphasizing improvement in symptoms, functional capacity and overall health status post-CABG.[21] The favorable outcomes in mental well-being align with findings indicating reduced anxiety and depression levels in the post-CABG period.[22] Furthermore, the noted positive influence on social and environmental domains aligns with research stressing the significance of social support and a conducive environment in the postoperative recovery phase.[23]

These collective findings underscore the effectiveness of the PZBP program in promoting a holistic improvement in the QoL for post-CABG patients, aligning with broader literature on the positive impact of coronary revascularization on patients' well-being.

Notably, there are no respondents in the "Poor" or "Very Poor" categories across any domain. This noteworthy observation indicates that according to the surveyed individuals, there are no significant detriments or challenges categorized as "Poor" or "Very Poor" in various aspects of their lives assessed by the domains under consideration. This absence underscores a positive trend in the perceived well-being of post-CABG patients participating in the PZBP program.

CONCLUSION

The study on post-CABG patients under the PHI Z Benefit program reveals promising outcomes with a notable absence of all-cause death, cardiovascular death and repeat revascularization within the observed period. This implies the effectiveness of the program in delivering accessible and high-quality healthcare for patients undergoing CABG, thereby promoting favorable long-term survival rates and diminishing the necessity for repeat interventions. Nevertheless, ongoing monitoring and further research are advised to substantiate and maintain these positive trends over an extended period.

Our study also showed a generally good QoL across physical, mental, social and environment domains assessed by the WHOQOL-BREF questionnaire. This suggests that the program not only addresses cardiovascular aspects effectively but also positively impacts patients' overall well-being. These findings underscore the importance of comprehensive healthcare initiatives in enhancing the diverse dimensions of QoL within the Philippine Health Insurance Z benefit program.

Despite these notable benefits, it is crucial to address the underutilization of the PZBP. The program's success in improving long-term survival, reducing cardiovascular events and enhancing overall QoL makes a compelling case for increased awareness and utilization. Encouraging healthcare providers, policymakers and the community to actively promote and utilize the PZBP can lead to more widespread access to quality care for post-CABG patients.

This study emphasizes the importance of bridging the gap between the potential benefits offered by the PZBP and its current underutilization. By promoting awareness, advocating for broader implementation and fostering collaboration among stakeholders, we can enhance the reach and impact of the PZBP, ultimately improving outcomes and QoL for a larger population of post-CABG patients. Addressing underutilization becomes pivotal in realizing the full potential of this beneficial healthcare initiative.

LIMITATIONS

This study is an initial effort to explore the outcomes of post-CABG patients enrolled under the Z benefit program of PHIC.

One limitation of the research could be the sample size, as a small sample might limit generalizability of the findings.

Another limitation of the study was the relatively short follow-up time on post-CABG patients. Certain complications or changes in health may emerge beyond the 5-year mark, limiting the ability to capture the full spectrum of post-surgical effects. Another potential limitation of the study using the WHOQOL-BREF questionnaire is the subjective nature of self-reported data. Participants may provide responses influenced by personal biases or perceptions, impacting the objectivity of the QoL assessment.

RECOMMENDATIONS

To enhance the robustness of the research, we recommend conducting a follow-up study with a larger and more diverse participant pool. This could provide a broader perspective on the topic and increase external validity of the study. We likewise recommend extending the follow-up period to a longer duration, such as 10 to 15 years to provide a more comprehensive understanding of sustained outcomes and potential late complications of post-CABG patients. To enhance the self-reported data, it is suggested to integrate objective measures or employ additional qualitative methods to triangulate findings. This mixed methods approach can provide a more holistic comprehension of participants' QoL, mitigating potential biases linked to self-reporting.

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APPENDIX

Republic of the Philippines
PHILIPPINE HEALTH INSURANCE CORPORATION
Citystate Centre, 709 Shaw Boulevard, Pasig City
Call Center: (02) 8441-7442 | Trunkline: (02) 8441-7444
www.philhealth.gov.ph

PRE-AUTHORIZATION REQUEST
Standard Risk Elective Coronary Artery Bypass Graft (CABG) Surgery

DATE OF REQUEST (mm/dd/yyyy):

This is to request approval for provision of services under the Z benefit package for

_____ in _____
(Patient's *last, first, suffix, middle name*) (Name of *HCP*)
under the terms and conditions as agreed for availment of the Z Benefit Package.

The patient is aware of the PhilHealth policy on co-payment and agreed to avail of the benefit package (please tick appropriate box):
☐ *Without co-payment*
☐ *With co-payment, for the purpose of:* _____

Certified correct by:	Certified correct by:
(Printed name and signature) Attending Cardiologist	(Printed name and signature) Attending Cardiovascular Surgeon
PhilHealth Accreditation No.	PhilHealth Accreditation No.

Conforme by:	Certified correct by:
(Printed name and signature) Patient	(Printed name and signature) Executive Director/Chief of Hospital/ Medical Director/ Medical Center Chief
	PhilHealth Accreditation No.

(For PhilHealth Use Only)

☐ APPROVED
☐ DISAPPROVED (State reason/s) _____

_____
(Printed name and signature)
Head or authorized representative, Benefits Administration Section (BAS)

INITIAL APPLICATION			**COMPLIANCE TO REQUIREMENTS**		
Activity	**Initial**	**Date**	☐ APPROVED ☐ DISAPPROVED (State reason/s) _____ *(Printed name and signature)* *Head or authorized BAS representative*		
Received by LHIO/*BAS*:					
Endorsed to BAS (if received by LHIO):					
☐ Approved ☐ Disapproved			**Activity**	**Initial**	**Date**
Released to *HCP*:			Received by BAS:		
This pre-authorization is valid for one hundred eighty (180) calendar days from date of approval of request.			☐ Approved ☐ Disapproved		
			Released to *HCP*:		

Courtesy of www.philhealth.gov.ph.

Case No. _____

Annex "A – CABG"

HEALTHCARE *PROVIDER (HCP)*		
ADDRESS OF *HCP*		
A. PATIENT	1. Last Name, First Name, Suffix, Middle Name	*SEX* ☐ *Male* ☐ *Female*
	2. PhilHealth ID Number ☐☐ - ☐☐☐☐☐☐☐☐☐ - ☐	
B. MEMBER	☐ *Same as patient* *(Answer the following only if the patient is a dependent)* 1. Last Name, First Name, Suffix, Middle Name	
	2. PhilHealth ID Number ☐☐ - ☐☐☐☐☐☐☐☐☐ - ☐	

Fulfilled selections criteria ☐ **Yes** If yes, proceed to pre-authorization application
☐ **No** If no, specify reason/s and encode
_____

PRE-AUTHORIZATION CHECKLIST
Standard Risk Elective Coronary Artery Bypass Graft (CABG) Surgery

Place a check mark (✓)

QUALIFICATIONS	YES
At least 19 years of age	

ATTESTED BY ATTENDING CARDIOLOGIST or CARDIOVASCULAR SURGEON

Place a check mark (✓)

QUALIFICATIONS	YES
1. Stable coronary artery disease requiring ELECTIVE ISOLATED CABG with indication based on coronary anatomy, symptom severity, left ventricular function, and/or viability tests; non-invasive testing completed and discussed with patient	
2. Check current medical status: a. NOT in severe decompensated heart failure by New York Functional Classification (NYFC IV)	
b. NOT with severe angina by Canadian Cardiovascular Society (CCS Class IV)	
c. NO other cardiac/vascular procedures/interventions planned to be done with coronary artery bypass graft surgery during this admission	
d. NO history of dialysis and NO current requirement of dialysis	

Revised as of *November 2021*

PhilHealthofficial teamphilhealth actioncenter@philhealth.gov.ph

Place a check mark (✓)

QUALIFICATIONS	YES
3. Based on past history: a. NO previous thoracic/cardiac surgery through median sternotomy	
b. NO previous transcutaneous cardiac intervention within 30 days before contemplated schedule of coronary artery bypass graft surgery	
4. ONLINE EUROSCORE II and Society of Thoracic Surgeons (STS) scoring predictive of low mortality risk (< 5%)	

Place a check mark (✓)

DIAGNOSTICS*	YES	DATE DONE (mm/dd/yy)
1. Coronary Angiography: coronary anatomy amenable for CABG and consistent with Class I and IIa indications for CABG surgery and discussed with patient		
2. Current status of myocardial viability consistent with benefit from CABG and discussed with patient		

*Must be done at least within one fiscal (1) year from date of receipt of pre-authorization checklist and request by the Local Health Insurance Office (LHIO) or the PhilHealth Regional Office (PRO).

Certified correct by:	Certified correct by:
(Printed name and signature) Attending Cardiologist	(Printed name and signature) Attending Cardiovascular Surgeon
PhilHealth Accreditation No. ____-____-____	PhilHealth Accreditation No. ____-____-____
Date signed (mm/dd/yyyy)	Date signed (mm/dd/yyyy)

Conforme by:
(Printed name and signature) Patient
Date signed (mm/dd/yyyy)

Note:
Once approved, the contracted *HCP* shall print the approved pre-authorization form and have this signed by the patient, parent or guardian and health care providers, as applicable. This form shall be submitted to the LHIO or PRO when filing the first tranche.

There is no need to attach laboratory results. However, these should be included in the patient's chart and may be checked during the field monitoring of the Z Benefits. Please do not leave any item blank.

WHOQOL-BREF

Para sa mga Respondent

Una'ng pagpahibalo usa magsugod ug tubag sa mga pangutana. Kini ma-o ang mga una'ng pangutana nga kinahanglan tubagon bahin sa imo'ng kaugalingun. Ang mao'ng mga pangutana mahimo insirkulan o butanga'g tubag.

1. Unsa ang imo'ng sekswalidad? Lalaki Babaye

2. Kanus-a ang imo'ng adlaw nga natawhan? _____/_____/ _____
   adlaw buwan tuig

3. Unsa ang pinakataas nga edukasyon nga Imuha'ng nalampus?
   Wala
   Elementarya
   Hiskul
   Kolehiyo

4. Unsa ang imo'ng *marital status*?
   Single Separated
   Married Divorced
   Living as married Widowed

5. Naa baka'y gipamati nga sakit sa lawas? Naa Wala

6. Kung na-a kay gipamati sa imo'ng lawas karun, unsa ma'y suspetsa nimo? _____
   sakit/problema

PAMA-AGI

Ang kini nga *questionnaire* mangutana bahin sa kalidad sa imo'ng kinabuhi, panglawas, o uban pa'ng mga aspeto sa imo'ng kinabuhi. Palihug lang ug tubag sa mga nakabutang nga pangutana. Kung dili sigurado sa ibutang nga tubag, mahimu'ng pili-on ang pinakaha-um nga tubag. Dako'g posibilidad nga ang imo'ng una'ng natubag ma-o ang insakto.

Palihug ibutang sa huna-huna ang imo'ng sukdanan, pagla-um, kalingawan/kagustuhan ug pagpakabana. Dapat tan-awn nimo ang ni-aging duha ka mga semana sa imo-ng kinabuhi sa pagtubag ani'ng mga pangutanaha.

Sampol:

Nataga-an ba ka og supporta nga imo'ng gikinahanglan sa mga taw?

(Please circle the number)				
Not at all	A little	Moderately	Mostly	Completely
1	2	3	4	5

Imo dapat insirkulan and insaktung numero nga nitubag sa pangutana nga nataga-an baka og suporta nga imo'ng gikinahanglan sa mga taw sa ni-aging duha ka mga semana sa imo'ng kinabuhi. Dapat imong insirkulan ang 4 (kwatro) kun *mostly* o kasagaran kung nataga-an kag hapit makumpleto'ng suporta nga imo'ng gikinahanglan.

Nataga-an baka og suporta nga imo'ng gikinahanglan sa mga taw?

(Please circle the number)				
Not at all	A little	Moderately	Mostly	Completely
1	2	3	(4)	5

Imoha sad insirkulan ang 1 (uno) kun *not at all* o wala gyud kung wala gyud kay nadawat nga suporta nga imung gikinahanglan sa mga taw sa niaging duha ka mga semana.

Nataga-an baka og supporta nga imo'ng gikinahanglan sa mga taw?

(Please circle the number)				
Not at all	A little	Moderately	Mostly	Completely
(1)	2	3	4	5

Palihug ko'g basa sa mga pangutana, sukda ang imo'ng gibati, og insirkuli ang numero nga gahatag ug pinaka ha-um nga tubag.

1. Unsa-un nimo pagsukod ang kalidad sa imo'ng kinabuhi?

(Please circle the number)				
Very poor	Poor	Neither poor nor good	Good	Very Good
1	2	3	4	5

2. Unsa ka ka-kuntento sa imo'ng ma-ayu'ng panglawas?

(Please circle the number)				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
1	2	3	4	5

Ang sunod nga mga pangutana kabahin sa ka-grabe sa imong eksperyensa sa mga

butang sa niagi'ng duha ka mga semana.

3. Unsa'y sukod sa imo'ng gibati nga sakit sa lawas nga nakapugong nimo sa mga importante nga panglihok o buluhaton?

(Please circle the number)				
Not at all	A little	Moderately	Mostly	Completely
1	2	3	4	5

4. Unsa ka grabe ang imo'ng panginahanglan og pagpanambal para makalihok sa pang-adlaw-adlaw sa imu'ng kinabuhi.

1 2 3 4 5

5. Unsa ka ka-malipayun sa imo'ng kinabuhi?

1 2 3 4 5

	(Please circle the number)				
6. Unsa kadako ang imo'ng gibati o pagtu-o nga ang imo'ng kinabuhi makahulugan?	Not at all	A little	Moderately	Mostly	Completely
	1	2	3	4	5

	(Please circle the number)				
7. Unsa ka ma-ayo ang imo'ng konsentrasyun?	Not at all	A little	Moderately	Mostly	Completely
	1	2	3	4	5

8. Unsa ka ka-protektado sa imong pang-adlaw-adlaw nga kinabuhi?	1	2	3	4	5

9. Unsa kahimsog ang imong panglawas ug ang palibot ni-ini?	1	2	3	4	5

Ang sunod nga mga pangutana kabahin sa ka-kompleto sa imo'ng eksperyensya o imo'ng nabuhat nga tarung sa niaging duha ka mga semana.

	(Please circle the number)				
	Not at all	A little	Moderately	Mostly	Completely
10. Na-a ba ka'y sakto nga enerhiya sa pang-adlaw-adlaw nga kinabuhi?	1	2	3	4	5
11. Nakadawat ba ka sa imo'ng pisikal nga panglawas?	1	2	3	4	5
12. Na-a baka'y sakto nga kwarta para pang-gastos sa imo'ng mga gikinahanglan?	1	2	3	4	5
13. Na-a ba ka tanan nga impormasyun para sa imo'ng adlaw-adlaw na panginahanglan?	1	2	3	4	5
14. Na-a ba ka'y opurtunidad nga maka-apil sa ganahan nimo nga mga aktibidad?	1	2	3	4	5

15. Unsa ka ma-ayo sa pagsuruy-suruy sa imo'ng palibot?

(Please circle the number)				
Very poor	Poor	Neither poor nor well	Well	Very well
1	2	3	4	5

Ang sunod nga mga pangutana kabahin sa ka-kontento sa imo'ng gibati sa mga

lain-laing aspeto sa imo'ng kinabuhi sa ni-aging duha ka mga semana.

16. Unsa ka ka-kontento sa imo'ng tulog?

(Please circle the number)				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
1	2	3	4	5

17. Unsa ka ka-kontento sa imo'ng abilidad nga muperpormar o mulihuk sa adlaw-adlaw nga aktibidad?

1 2 3 4 5

18. Unsa ka ka-kontento sa imo'ng kapasidad sa trabaho?

1 2 3 4 5

19. Unsa ka ka-kontento sa imo'ng kaugalingon?

(Please circle the number)				
Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
1	2	3	4	5

20. Unsa ka ka-kontento sa imo'ng personal nga mga relasyon?	1	2	3	4	5
21. Unsa ka ka-kontento sa imong *sex life*?	1	2	3	4	5
22. Unsa ka ka-kontento sa suporta nga gihatag sa imo'ng mga higala?	1	2	3	4	5
23. Unsa ka ka-kontento sa mga kondisyon sa imo'ng puy-anan?	1	2	3	4	5
24. Unsa ka ka-kontento sa imo'ng pag-gamit sa health services.	1	2	3	4	5
25. Unsa ka ka-kontento sa imo'ng paglakbay o pagsakay?	1	2	3	4	5

Ang sunod nga mga pangutana kabahin sa makapila nimu mabati o ma-eksperensya sa mga nagkalain-laing butang ni-agi'ng duha ka mga semana.

26. Makapila ka makasinati og negatibo nga mga pagbati sama sa *blue mood*, langiob, kabalaka, og depresyon?

(Please circle the number)				
Never	Seldom	Quite often	Very often	Always
1	2	3	4	5

Na-a ba'y nitabang nimo sa pagtubag ni-ini'ng questionnaire? Naa Wala

Unsa kadugay ang pagtubag nimo sa ni-ini'ng *questionnaire*? _____

DAGHAN'G SALAMAT SA PAGTUBAG