Predictors of 30Day Heart Failure Readmissions: A Retrospective Logistic Regression Analysis

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Abstract

Background
Hospital readmissions remain a major quality and cost concern in healthcare. Heart failure (HF) is one of the leading causes of 30-day readmissions among Medicare beneficiaries. Identifying modifiable predictors of readmission can guide nursing-led interventions that strengthen transitional care and improve patient outcomes.

Objective
Identifying predictors of increased 30-day readmissions may have important implications for designing interventions to improve patient outcomes and reduce costs. This study's objective was to retrospectively identify predictors of 30-day recurrent ED visits among Medicare patients diagnosed with heart failure (HF).

Methods
A retrospective quantitative chart review was conducted for Medicare patients aged 65 years and older who were readmitted within 30 days of discharge during a six-month period from January to June. Logistic regression analysis examined the relationship between demographic, clinical, and behavioral variables and 30-day readmission. Variables included hypertension, diabetes, obesity, smoking, medication non-compliance, lack of follow-up, age, and gender.

Results
This retrospective study reports predictors independently associated with 30-day readmissions for heart failure. Among 120 patients, 37% were readmitted within 30 days. Logistic regression revealed two significant predictors: medication non-compliance (OR = 3.64, 95% CI [1.42–9.30], p = .007) and lack of follow-up within 7 days (OR = 2.78, 95% CI [1.12–6.92], p = .027). Other clinical factors such as hypertension, diabetes, and obesity were not independently significant.

Conclusion
Medication non-compliance and lack of early follow-up remain strong predictors of heart failure readmissions. Both are modifiable through nursing interventions focused on education, follow-up coordination, and patient engagement. Nurse-led transitional care programs are critical to reducing readmissions and improving outcomes in this high-risk population.

Relevance to Clinical Practice
Recognizing key readmission drivers enables nurses to enhance discharge planning, patient teaching, and care coordination for at-risk rural populations.

Keywords: Heart Failure, Hospital Readmissions, Predictors, Nursing, Transitional Care, Medication Adherence

1. Introduction

Heart failure (HF) continues to be a major cause of hospitalization and 30-day readmission among older adults in the United States (Agency for Healthcare Research and Quality [AHRQ], 2023). Despite national initiatives such as the Centers for Medicare & Medicaid Services' (CMS, 2023) Hospital Readmissions Reduction Program (HRRP), which penalizes hospitals with excess readmissions, rates remain high across both urban and rural healthcare systems. Readmissions following HF discharge often reflect complex interactions between patient comorbidities, social determinants of health, and gaps in transitional care Lanham. Non-adherence to medication regimens and inadequate post-discharge follow-up have been repeatedly identified as

Volume - 4 Issue - 1

Citation: Go, S. (2026). Predictors of 30Day Heart Failure Readmissions: A Retrospective Logistic Regression Analysis. *J Epidemiol Public Health, 4*(1), 1-9.

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leading predictors of early readmission. Nurses play a pivotal role in mitigating these risks through discharge education, medication reconciliation, and follow-up coordination. According to Bandura's (1997) self-efficacy theory, an individual's belief in their ability to manage their health influences behaviors such as medication adherence and symptom monitoring. Strengthening patients' self-efficacy through nursing-led interventions can improve engagement and reduce preventable readmissions. This study builds on that theoretical foundation by identifying predictors of 30-day readmission among HF patients using a retrospective quantitative approach. Understanding these predictors provides evidence to guide nurse-led interventions that enhance self-efficacy and continuity of care [1-4].

2. Methods

2.1. Design
A retrospective quantitative research design was used to identify predictors of 30-day hospital readmissions among Medicare patients diagnosed with heart failure. This design allowed for the systematic analysis of existing patient data within the electronic health record (EHR) to determine relationships between selected variables and readmission outcomes. Retrospective chart reviews are widely recognized as an effective method for exploring real-world healthcare trends and evaluating adherence to evidence-based care processes. The study utilized logistic regression modeling to examine the association between demographic, clinical, and behavioral variables and the likelihood of hospital readmission within 30 days of discharge. This analytic approach was chosen because it estimates the probability of a dichotomous outcome (readmitted versus not readmitted) based on multiple predictor variables while controlling for potential confounding factors. Independent variables included age, gender, comorbidities (hypertension, diabetes, and obesity), smoking history, medication compliance, and documentation of follow-up care within seven days after discharge. This design was appropriate for addressing the study aim—to determine modifiable factors contributing to unplanned readmissions—and to generate evidence that can inform nursing interventions focused on improving self-management, medication adherence, and continuity of care. By leveraging existing hospital data, the study provides a cost-effective and ethically sound approach to understanding readmission risk in a real-world clinical context.

2.2. Setting
The study was conducted at a small regional community hospital located in the western United States. The facility serves a medically and socioeconomically diverse population, including a large proportion of Medicare beneficiaries aged 65 years and older. The hospital provides inpatient cardiac, medical-surgical, progressive care, and intensive care services, with an average annual census of approximately 12,000 discharges. The organization operates within a mixed urban–rural catchment area, offering a representative sample of community-dwelling older adults with chronic cardiovascular conditions, including heart failure. Discharge planning and transitional care are

coordinated primarily by registered nurses, case managers, and advanced practice nurses. The hospital participates in national quality improvement initiatives, including the Centers for Medicare & Medicaid Services (CMS, 2023) Hospital Readmissions Reduction Program (HRRP), which monitors 30-day readmission rates for conditions such as heart failure, acute myocardial infarction, and pneumonia. The setting was appropriate for this study because it reflects the clinical reality of small to mid-sized hospitals that face resource limitations, yet carry a high burden of heart failure readmissions. Examining predictors in this environment provides valuable insights into nursing and system-level opportunities to strengthen transitional care within similar institutions nationwide.

2.3. Participants
The study population consisted of Medicare beneficiaries aged 65 years and older who were admitted to the hospital with a primary diagnosis of heart failure and subsequently discharged during the six-month study period from January to June. Medical records were selected through a systematic query of the hospital's electronic health record (EHR) and administrative database, using International Classification of Diseases (ICD-10) codes corresponding to heart failure (I50.x series). A total of 120 patient records met inclusion criteria and were reviewed for analysis. Inclusion criteria required that patients (a) had a confirmed diagnosis of heart failure as the principal reason for admission, (b) were discharged to home or a community setting, and (c) were readmitted or at risk for readmission within 30 days of discharge. Exclusion criteria included patients admitted for hospice care, psychiatric illness, or palliative care, as well as those transferred to another acute-care facility or long-term care institution, because these cases typically follow different clinical pathways and discharge processes. The sample represented a typical Medicare heart failure cohort, with a mean age of 77 years, moderate comorbidity burden, and a diverse ethnic and socioeconomic composition reflective of the hospital's service area. This diversity enhances the external validity of the findings and their applicability to broader nursing practice settings [5-8].

2.4. Variables
The study examined one dependent variable and several independent variables representing demographic, clinical, and behavioral factors previously associated with hospital readmissions among patients with heart failure

2.4.1. Dependent Variable
The dependent variable was 30-day hospital readmission, defined as any unplanned rehospitalization for any cause within 30 days of discharge from the index heart failure admission. Readmission status was coded dichotomously as yes (readmitted within 30 days) or no (not readmitted). This definition aligns with the Centers for Medicare & Medicaid Services (CMS, 2023) Hospital Readmissions Reduction Program (HRRP) benchmark used to evaluate hospital quality and reimbursement performance.

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2.4.2. Independent Variables

Eight independent variables were selected based on prior literature demonstrating their influence on readmission risk and their relevance to nursing care and transitional outcomes. Each variable was operationalized using data abstracted from the electronic health record (EHR) or nursing follow-up documentation.

1. Age: Continuous variable representing patient age in years at the time of discharge.

Older age has been associated with increased readmission risk due to frailty, polypharmacy, and comorbidity burden

2. Gender: Categorical variable coded as male or female. Gender differences may affect health-seeking behavior, medication adherence, and caregiver support. Hypertension Dichotomous variable (yes/no) based on documentation of a physician-confirmed diagnosis in the admission history and physical or discharge summary. Hypertension contributes to HF exacerbation through fluid retention and increased cardiac workload

3. Diabetes Mellitus: Dichotomous variable (yes/no), coded when listed as an active diagnosis. Poor glycemic control has been linked to higher readmission risk and longer hospital stays

4. Obesity: Dichotomous variable (yes/no) defined as a body mass index (BMI) ≥ 30 kg/m^2 documented in nursing or physician admission assessments. Obesity contributes to HF symptom burden, reduced mobility, and delayed recovery.

5. Smoking Status: Dichotomous variable (yes/no), based on self-reported smoking history documented at admission or within the last year. Smoking is a known modifiable risk factor that exacerbates cardiovascular dysfunction and readmission risk.

6. Medication Non-Compliance: Dichotomous variable (yes/no) abstracted from nursing discharge notes, follow-up call documentation, or case management records.

Non-compliance was recorded when patients were documented as having missed doses, being unable to fill prescriptions, or expressing confusion about medication regimens. This behavioral variable is directly linked to Bandura's (1997) self-efficacy theory, emphasizing the role of perceived confidence and knowledge in managing one's condition.

Lack of Follow-Up Appointment Within 7 Days Dichotomous variable (yes/no) indicating absence of a scheduled or attended follow-up visit with a primary care provider or cardiologist within seven days after discharge. Early follow-up has been shown to significantly reduce readmission risk [1-5].

2.5. Conceptual Rationale

These variables were chosen to capture both clinical predictors (e.g., comorbidities, age, obesity) and behavioral predictors (e.g., adherence, follow-up engagement) of readmission. Nursing practice directly influences several of these factors—particularly patient education, self-management support, and transitional follow-up coordination. By modeling these predictors together using logistic regression, the study aimed to isolate modifiable factors that can inform nursing-led interventions to reduce 30-day readmissions.

2.6. Data Sources and Variable Definitions

Data for this study were abstracted from the hospital's electronic health record (EHR) and associated clinical documentation systems. Sources included nursing admission assessments, physician progress notes, discharge summaries, case management records, and post-discharge nursing follow-up call logs. Each source was reviewed to identify variables relevant to demographic, clinical, and behavioral predictors of 30-day readmission. All data were extracted retrospectively using a standardized Medical Record Audit Tool, designed by the investigator to ensure consistency and accuracy of variable coding. The audit tool incorporated evidence-based criteria from the Agency for Healthcare Research and Quality (AHRQ, 2023) and the Centers for Medicare & Medicaid Services (CMS, 2023) Hospital Readmissions Reduction Program (HRRP), which defines readmission as any unplanned hospitalization within 30 days of discharge for any cause. Medication adherence and follow-up documentation were primarily drawn from nursing and case management records, which reflect direct patient communication during discharge and transitional care processes. These records included the facility's standardized Discharge Follow-Up Phone Call sheet, typically completed within 72 hours of discharge. Data from this sheet captured whether the patient had filled prescribed medications, understood dosing instructions, and scheduled or attended a follow-up appointment. The use of structured nursing follow-up documentation is supported by prior evidence as a reliable source of post-discharge behavioral information Medication adherence was coded as non-compliant when the record indicated that the patient missed doses, was unable to obtain prescriptions, or demonstrated confusion about the prescribed regimen. This operationalization aligns with Bandura's (1997) self-efficacy theory, which suggests that patients with low confidence or understanding of their health behaviors are less likely to adhere to complex medication regimens [6].

2.7. Follow-Up Appointment Data Were Coded in Two Categories

1. Scheduled follow-up – A documented appointment with a primary care provider or cardiologist within seven days after discharge.

2. Attended follow-up – A verified visit completion noted in the EHR scheduling module or confirmed through claims or encounter documentation.

These definitions are consistent with recent studies showing that early outpatient contact within seven days of discharge significantly reduces the risk of heart failure readmissions. To enhance reliability, all data were reviewed by the investigator and cross-verified with the hospital's quality management database. Any unclear documentation was coded as "missing" rather than inferred, ensuring data integrity for statistical analysis. No patient identifiers were included in the dataset, and each record was assigned a unique code number for analysis. This approach ensured comprehensive capture of both clinical factors (e.g., comorbidities, age, and

obesity) and behavioral factors (e.g., adherence, follow-up, and self-care engagement) that are directly influenced by nursing practice and transitional care processes.

2.8. Data Analysis

Data analysis was performed using IBM SPSS Statistics Version 29. Prior to statistical testing, all data were screened for accuracy, missing values, and outliers. Continuous variables (e.g., age) were assessed for normality using the Shapiro–Wilk test, while categorical variables were evaluated using frequency distributions. Missing data were minimal (<5%) and were handled through casewise deletion to maintain model integrity, consistent with standard statistical practices for retrospective analyses Descriptive statistics were first computed to summarize demographic and clinical characteristics of the study sample. Frequencies and percentages were reported for categorical variables, and means and standard deviations were calculated for continuous variables. Comparisons between readmitted and non-readmitted patients were performed using independent-sample t-tests for continuous variables and chi-square (χ^2) tests for categorical variables. These analyses provided an initial understanding of variable distributions and potential relationships with 30-day readmission status. To determine independent predictors of readmission, binary logistic regression was conducted. Logistic regression was chosen because it is appropriate for modeling dichotomous outcome variables (readmitted vs. not readmitted) and estimating the likelihood of an event occurring based on multiple predictor variables (Lanham & Leykum, 2021). Predictor variables entered into the model included age, gender, hypertension, diabetes, obesity, smoking, medication non-compliance, and lack of follow-up within seven days. A block entry method was applied in two stages. In Block 1, demographic and clinical variables (age, gender, hypertension, diabetes, obesity, and smoking) were entered to control for patient characteristics that may influence readmission risk. In Block 2, behavioral and system-level variables (medication non-compliance and lack of follow-up) were added to assess their incremental predictive value beyond demographic and clinical factors. This hierarchical approach allowed examination of whether nursing-sensitive variables explained additional variance in readmission outcomes after accounting for baseline risk Model adequacy was assessed using several indicators. The Hosmer–Lemeshow goodness-of-fit test evaluated calibration between predicted and observed outcomes, with p > .05 indicating good model fit. The Nagelkerke R^2 statistic estimated the proportion of variance explained by the model. The overall classification accuracy, sensitivity, and specificity were also examined to determine model performance. Multicollinearity among predictor variables was evaluated by examining variance inflation factors (VIFs) and tolerance values, ensuring that no predictor exceeded a VIF of 2.5. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated to quantify the strength and direction of associations between predictors and readmission risk. Statistical significance was defined as p < .05 for all tests. The results of the logistic regression provided a probability model identifying which demographic, clinical, and behavioral factors significantly predicted 30-day readmission. Interpretation of findings focused on modifiable predictors particularly medication adherence and early follow-up that can be directly addressed through nursing-led transitional care interventions [7,8].

2.9. Ethical Considerations

Administrative approval for this retrospective chart review was obtained from the participating hospital. The study was reviewed by the hospital's Institutional Review Board (IRB) and determined to be exempt from full review under federal guidelines for research involving existing data. All patient information was de-identified prior to analysis, and no direct patient contact occurred. Data were stored on a secure, password-protected server accessible only to the investigator, consistent with HIPAA and institutional privacy policies.

3. Results

3.1. Sample Characteristics

A total of 120 Medicare beneficiaries aged 65 years and older with a primary diagnosis of heart failure were included in the analysis. The mean age of the cohort was 77.4 years (SD = 8.2), with a range of 65–92 years. The majority were male (68%) and identified as Hispanic (61%). Most patients presented with multiple chronic conditions, including hypertension (82%), diabetes mellitus (74%), and obesity (71%). A history of smoking was documented for 64% of the sample.

Overall, 44 patients (37%) were readmitted within 30 days of discharge. The most common reasons for readmission included worsening heart failure symptoms, fluid overload, and medication non-adherence, consistent with prior findings among older adults with chronic cardiac conditions. Descriptive comparisons between readmitted and non-readmitted groups revealed that those readmitted were more likely to report medication non-compliance and lack of timely follow-up after discharge. Table 1 summarizes the demographic and clinical characteristics of the sample.

Varibles	Overall (%)	Readmitted (%)	P- Value
Hypertension	82	86	0.21
Diabaties Millitues	74	80	0.09
Obiesity	71	77	0.12
Smoking	64	70	0.08
Non – Compliance with medications	67	79	0.01
No Follow- up wth 7 Days	48	68	0.02
Age	77.4 +8.2	79.3+ 7.9	0.10
Male Gende	68	72	0.27

Table 1: Patient Characteristics and Readmission Status (n = 120)

3.2. Regression Model Summary

A binary logistic regression analysis was performed to identify independent predictors of 30-day readmission. The final model included all eight independent variables: age, gender, hypertension, diabetes, obesity, smoking, medication non-compliance, and lack of follow-up within seven days.

The overall model was statistically significant, $\chi^2(7, N = 120) = 18.47$, p = .01, indicating that the set of predictors reliably distinguished between patients who were readmitted and those who were not. The Hosmer–Lemeshow goodness-of-fit test was non-significant (p = .47), confirming an adequate fit between predicted and observed outcomes. The model explained 26.4% of the variance in 30-day readmission, as indicated by the Nagelkerke R^2, and correctly classified 78% of cases overall

3.3. Predictors of Readmission

Two predictors were statistically significant in the final logistic regression model

• Medication Non-Compliance: Patients identified as non-compliant with prescribed medications were 3.64 times more likely to be readmitted within 30 days compared to those who adhered to their regimen (OR = 3.64, 95% CI [1.42–9.30], p = .007).

• Lack of Follow-Up Appointment: Patients without a documented follow-up visit within seven days of discharge were 2.78 times more likely to be readmitted (OR = 2.78, 95% CI [1.12–6.92], p = .027).

Other clinical factors, including hypertension, diabetes, obesity, and smoking, were not significant independent predictors after controlling for other variables. Age and gender were also not associated with readmission risk. These findings are consistent with prior literature indicating that behavioral and system-level factors—particularly medication adherence and early post-discharge engagement—play a greater role in readmission than baseline clinical characteristics.

Predictor	B	SE	Wald	OR (95%Cl)	P
Hypertension	0.49	0.47	1.07	1.64 (0.68-4.15)	0.03
Diabaties Millitues	0.52	0.46	1.25	1.69 (0.65-4.23)	0.26
Obiesity	0.57	0.50	1.29	1.77 (0.66-4.73)	
Smoking	0.61	0.48	1.61	1.84 (0.71-4.75)	
Non – Compliance with medications	1.29	0.48	0.48	3.64 (1.42-9.30)	
No Follow- up wth 7 Days	1.02	0.46	5.01	2.78 (1.12-6.92)	
Constant	-2. 45	0.84	8.53	-	

Table 2: Logistic Regression Predicting 30Day Readmission

3.4. Model Performance and Interpretation

The logistic regression model demonstrated strong predictive accuracy, with a sensitivity of 81% (correctly identifying readmitted patients) and specificity of 74% (correctly identifying non-readmitted patients). The positive predictive value was 69%, and the negative predictive value was 84%, indicating that the model effectively differentiated between high- and low-risk patients. The results underscore that behavioral and follow-up factors—which are modifiable and within nursing control had a greater impact on

readmission outcomes than fixed demographic or clinical characteristics. These findings highlight opportunities for targeted nursing interventions such as discharge counseling, medication reconciliation, and structured follow-up calls to improve adherence and continuity of care. Figure 1. Predictors of 30-Day Readmission in Heart Failure Patients Description. Forest plot illustrating the odds ratios (ORs) and 95% confidence intervals (CIs) for predictors of 30-day hospital readmission among Medicare patients with heart failure. Variables positioned to the right of the vertical

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Citation: Go, S. (2026). Predictors of 30Day Heart Failure Readmissions: A Retrospective Logistic Regression Analysis. *J Epidemiol Public Health, 4*(1), 1-9.

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reference line (OR = 1.0) indicate increased likelihood of readmission. Medication non-compliance (OR = 3.64, 95% CI [1.42–9.30]) and lack of follow-up within seven days (OR = 2.78, 95% CI [1.12–6.92]) were statistically significant predictors. Other clinical variables, including hypertension, diabetes, obesity, and smoking, were not independently associated with readmission risk. Note. Logistic regression model $\chi^2(7, N = 120) = 18.47$, $p = .01$; Nagelkerke $R^2 = .26$; Hosmer–Lemeshow $p = .47$.
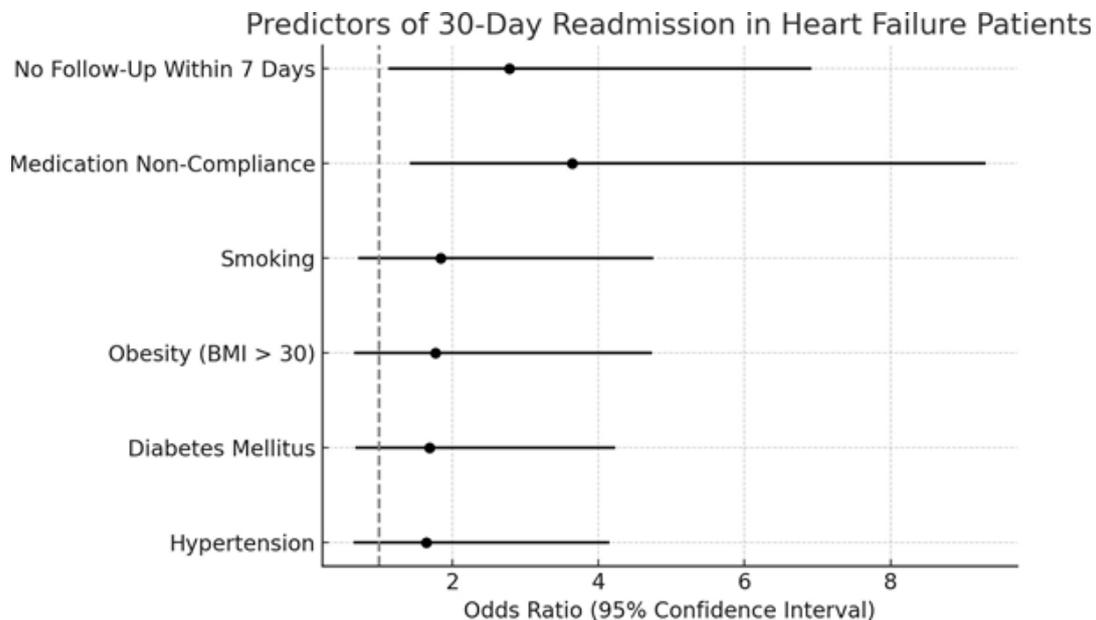

Figure 1: Predictors of 30 Days Readmission in Heart Failure Patients

4. Discussion

The purpose of this study was to identify predictors of 30-day hospital readmission among Medicare patients with heart failure using a retrospective quantitative design and logistic regression analysis. Findings revealed that medication non-compliance and lack of early follow-up within seven days of discharge were the two most significant predictors of readmission. Demographic and clinical factors—including age, hypertension, diabetes, obesity, and smoking—did not independently predict readmission once behavioral and system-level variables were considered. These results align with recent national data showing that heart failure readmissions are increasingly driven by modifiable behavioral and transitional care factors rather than unchangeable patient characteristics. Behavioral predictors such as medication adherence and follow-up attendance are directly influenced by the nurse's role in discharge education, care coordination, and self-management support [9].

4.1. Medication Adherence and Nursing Implications

Medication non-compliance was the strongest predictor of 30-day readmission in this sample. This finding reinforces prior studies demonstrating that patients who fail to take prescribed medications—due to cost, confusion, or perceived side effects—experience worsening symptoms and earlier decompensation. From a nursing perspective, adherence is not solely a matter of patient willpower but is shaped by education, confidence, and environmental support. According to Bandura's (1997) self-efficacy theory, individuals are more likely to perform health-promoting behaviors when they believe in their ability to succeed. Nurses can enhance medication adherence by improving patients'

self-efficacy through clear instruction, teach-back methods, and reinforcement of positive self-care behaviors. Tailored discharge education that focuses on medication purpose, dosing, and side effects, along with post-discharge phone follow-ups, can significantly reduce confusion and improve Nurse-led transitional care interventions have repeatedly shown effectiveness in reducing readmissions by combining education with ongoing monitoring and support. A recent meta-analysis by Sakashita et al. (2025) found that nurse-led program especially those incorporating follow-up calls or home visits—resulted in significantly lower readmission rates across multiple chronic disease populations, including heart failure. These programs allow nurses to identify early signs of medication mismanagement, reinforce education, and coordinate care promptly.

4.2. Follow-Up Care and Continuity of Transitions

The absence of a documented or attended follow-up visit within seven days of discharge was also a significant predictor of readmission. This mirrors findings from large-scale reviews indicating that early outpatient contact after discharge is one of the strongest protective factors against 30-day rehospitalization. Early follow-up facilitates medication reconciliation, reassessment of symptoms, and timely adjustments to treatment plans. For nurses, this underscores the critical importance of care coordination and transitional continuity. Nurse case managers and discharge planners play a pivotal role in ensuring that appointments are scheduled before discharge, transportation barriers are addressed, and patient understanding of follow-up importance is confirmed. A randomized trial by Carter et al. (2021) demonstrated that community health workers

who supported patients in attending early post-discharge visits achieved a 30% reduction in readmissions. Similarly, the inclusion of nurses in transition teams enhances the effectiveness of these models by providing clinical expertise and patient advocacy [10].

4.3. Comparison with Existing Literature

The current findings align with those reported by Glans et al. (2020), who identified behavioral factors, such as poor self-care and inadequate follow-up, as key contributors to readmission among older adults. However, unlike some earlier studies that emphasized comorbidity burden or disease severity (Sharma et al., 2018), this study highlights the increasing impact of behavioral and system-level determinants. As healthcare shifts toward value-based care and population health, these modifiable predictors are increasingly recognized as nursing-sensitive quality indicators. Meta-analyses and observational studies conducted over the past three years further support the role of transitional nursing interventions in reducing hospital readmissions. Higgins et al. (2023) analyzed 126 trials and confirmed that structured, multicomponent programs—especially those led by nurses achieved the largest reductions in 30-day readmissions. These programs typically combined education, medication reconciliation, and telephone follow-up, aligning closely with the modifiable predictors identified in the present study.

4.4. Theoretical Interpretation: Bandura's Self-Efficacy Framework

Bandura's (1997) theory provides a useful lens through which to interpret these results. Self-efficacy—defined as the belief in one's capacity to execute behaviors necessary to manage health—directly influences adherence and engagement. Patients with higher self-efficacy are more likely to take medications correctly, monitor symptoms, and seek help early. Nurses strengthen self-efficacy through four mechanisms: mastery experiences (successful medication use), vicarious learning (observing others succeed), verbal persuasion (encouragement and education), and physiological feedback (reduced symptoms reinforcing effective behavior).Applying this framework, the study suggests that nursing interventions that enhance patient self-efficacy—through individualized education, skill-building, and follow-up support can address the root causes of both medication non-adherence and missed follow-up. This conceptual grounding moves the interpretation of findings beyond correlation to understanding how and why nursing interventions can alter patient outcomes [11].

4.5. Implications for Nursing Leadership and Practice

The findings emphasize the need for institutional support of nurse-led transitional care programs that bridge hospital and community settings. Nurse leaders should prioritize resources that allow for structured discharge education, follow-up call systems, and interprofessional collaboration with primary care providers. Embedding these interventions within electronic discharge workflows can streamline communication and accountability. In smaller or resource-limited hospitals, where transitional coordination may be fragmented, empowering bedside nurses to engage in discharge teaching and medication reconciliation can provide immediate improvement in continuity of care. Aligning these initiatives with the CMS HRRP objectives not only supports patient outcomes but also enhances organizational performance under value-based reimbursement models. Furthermore, nurse educators can integrate findings like these into undergraduate and continuing education curricula to strengthen competencies in transitional care, self-efficacy-based teaching, and data-driven quality improvement.

4.6 Summary

In summary, this study contributes to growing evidence that behavioral and transitional factors—particularly medication adherence and early follow-up—are the most powerful predictors of heart failure readmission. These findings reinforce the essential role of nurses in preventing rehospitalizations through patient education, care coordination, and empowerment. By incorporating self-efficacy principles and evidence-based transitional care strategies, nurses can significantly influence outcomes and reduce the national burden of heart failure readmissions.

4.7. Limitations

This study was limited by its retrospective design and reliance on documentation in the electronic health record. Medication adherence and physician follow-up were determined from nursing follow-up calls, discharge planning notes, and case management records rather than direct patient interviews or observation. Although retrospective EHR reviews are commonly used to assess readmission predictors, underdocumentation may have led to misclassification of adherence or follow-up status Pharmacy dispensing and outpatient visit data were only available for patients using the hospital's affiliated networks, potentially underestimating actual adherence or follow-up completed elsewhere. Furthermore, the study did not capture psychosocial variables such as health literacy, transportation access, or social support, which have been shown to influence readmission risk Future studies incorporating linked pharmacy claims, regional health information exchange data, or patient self-reported surveys could improve the validity and completeness of post-discharge behavioral [9-11].

5. Conclusions

This retrospective quantitative analysis identified two modifiable predictors of 30-day readmission among Medicare patients with heart failure—medication non-compliance and lack of early follow-up within seven days of discharge. These findings indicate that readmissions are less influenced by fixed demographic or clinical factors and more by behavioral and system-level variables that are directly impacted by nursing care. Consistent with Bandura's (1997) self-efficacy theory, patients' confidence in managing their condition plays a central role in adherence and engagement with care. Nurses are uniquely positioned to strengthen this self-efficacy through targeted education, individualized discharge counseling, and ongoing post-discharge

support. Incorporating teach-back techniques, medication reconciliation, and proactive follow-up communication can improve patient understanding, confidence, and adherence. From a systems perspective, embedding nurse-led transitional care interventions such as structured discharge planning, follow-up phone calls, and coordination with community providers has demonstrated strong evidence in reducing avoidable readmissions. Nurse leaders and administrators should prioritize theseinterventions as part of hospital-wide quality improvement efforts that align with the CMS Hospital Readmissions Reduction Program (2023) and the broader goals of value-based care. Ultimately, this study reinforces that reducing heart failure readmissions is both a clinical and nursing leadership priority. By addressing modifiable risk factors through evidence-based nursing practice, health systems can enhance continuity of care, improve patient outcomes, and reduce the financial and emotional burden associated with rehospitalization.

Implications for Nursing Practice and Policy
The findings of this study have direct implications for both nursing practice and healthcare policy. Nurses are central to reducing preventable heart failure readmissions by identifying modifiable risk factors and implementing targeted interventions at the point of care. Medication adherence and timely post-discharge follow-up—identified as key predictors in this study are highly responsive to nursing intervention through patient education, self-management support, and coordinated transitions. Nurse leaders and policymakers should advocate for institutional integration of nurse-led transitional care models, including structured discharge teaching, medication reconciliation, and scheduled follow-up contact within seven days of discharge. These interventions not only improve patient outcomes but also align with national performance measures established by the Centers for Medicare & Medicaid Services (2023). Incorporating transitional care competencies and self-efficacy–based teaching strategies into nursing education and professional development can strengthen nurses' ability to influence long-term outcomes. Establishing policies that provide time, staffing, and technology support for discharge and follow-up processes can further enhance the effectiveness of nursing interventions and promote sustainable reductions in readmission rates.

Public Contribution
This study used patient data obtained through retrospective chart review, reflecting real-world patterns of heart failure management and follow-up behaviors. Although patients did not directly participate in the design or analysis, their documented experiences with medication adherence, self-care barriers, and post-discharge challenges informed the interpretation of findings. The results emphasize how patient engagement, confidence, and access to follow-up care influence readmission risk. Future research should include direct patient input through interviews or surveys to explore perceived barriers to medication adherence and follow-up attendance. Incorporating patient voices into transitional care program design can ensure that nursing interventions are person-centered, feasible, and responsive to individual needs.

Conflict of Interest
The author declares no conflicts of interest related to this study.

Funding
This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Ethical Approval
Administrative approval for the retrospective chart review was obtained from the participating hospital. All patient data were de-identified in accordance with HIPAA standards.

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Citation: Go, S. (2026). Predictors of 30Day Heart Failure Readmissions: A Retrospective Logistic Regression Analysis. *J Epidemiol Public Health, 4*(1), 1-9.

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