

Geriatric cardiology in clinical pathways: follow-up after transcatheter aortic valve implantation in older adults

Abstract

Objective: Analyze the clinical follow-up of older adults undergoing transcatheter aortic valve implantation (TAVI), highlighting survival rate, healthcare service utilization and clinical vulnerability markers, while discussing their implications for geriatric cardiology and palliative care.

Methods: An observational, retrospective, and descriptive study conducted in a tertiary military hospital that included 33 patients undergoing TAVI between January 2022 and January 2026. Age, sex, emergency department visits, and hospital admissions were also evaluated.

Results: The mean age was 82.5 years, with a median of 83 years; 69.7% of patients were ≥ 80 years old and 36.4% were ≥ 85 years old. There was a male predominance (57.6%). At the end of follow-up, 25 patients (75.8%) were alive. Eighteen patients (54.5%) had no emergency department visits and 20 (60.6%) were not hospitalized post-procedure. The eight patients who died represented 24.2% of the cohort, yet accounted for 48.8% of emergency department visits and 64.7% of hospital admissions.

Conclusion: A significant proportion of older adults demonstrated clinical stability and low need for hospital services post-TAVI. However, the concentration of adverse outcomes underscores the importance of identifying vulnerability, conducting geriatric cardiology evaluation, and implementing individualized care strategies. Integrating palliative care principles can contribute to symptom management, communication, and aligning therapeutic decisions with patient goals.

Keywords: older adults, transcatheter aortic valve replacement, geriatric cardiology, palliative care, aortic stenosis, mortality

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Giovanna Di Paola, Anna Beatriz Caprini,
Paula Meyer, Bruno Mendes, Jackson Ramos,
Raquel Vieira, Raphael Cruz, Anelise Fonseca
Marcílio Dias Naval Hospital, Rio de Janeiro, Brazil

Correspondence: Anelise Fonseca, Marcílio Dias Naval
Hospital, Cezar Zama Street, Rio de Janeiro, Brazil, Tel +55 21
2599 5599

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Introduction

Severe aortic stenosis represents one of the major valvular heart diseases associated with aging, carrying a significant impact on morbidity and mortality when symptomatic.¹ Historically, conventional surgical treatment was the primary therapeutic option available; however, transcatheter aortic valve implantation (TAVI) has emerged as an alternative, initially for patients at high surgical risk or considered inoperable, and subsequently expanding to other risk profiles.^{1,2} This technology substantially broadens therapeutic possibilities for populations previously excluded from intervention. Although periprocedural mortality and immediate complications constitute relevant outcomes, the evaluation of TAVI success must transcend these traditional markers. Studies demonstrate that outcome assessment should incorporate patient-centered endpoints, such as quality of life, functional capacity, and the need for rehospitalization.³ These aspects gain particular importance in the older population, in whom frailty and functional impairment are associated with worse outcomes after valve replacement.⁴ In this context, geriatric and palliative care principles such as defining goals of care, proportionality of interventions, communication, and shared decision-making, become particularly relevant in caring for older adults with advanced cardiovascular disease.⁵ Palliative care can be incorporated alongside disease modifying therapies and should not be understood as an approach restricted to end-of-life care.⁵ The present study aims to characterize the clinical follow-up and outcomes of older adults undergoing TAVI, with an emphasis on survival, healthcare service

utilization, and clinical vulnerability markers to assist professionals and patients in shared decision-making.

Material and methods

This is an observational, retrospective, and descriptive case series study conducted at a tertiary military hospital following the implementation of a geriatric cardiology clinical pathway of care designated as Heart Team. 33 individuals who underwent transcatheter aortic valve implantation (TAVI) between January 2022 and January 2026 were included. The demographic and clinical variables collected from institutional records included age, sex, vital status at the end of the follow-up period, number of emergency department visits, and number of hospital admissions post-procedure. Continuous variables were described using mean and median, and categorical variables using absolute and relative frequencies. Health service utilization during follow-up was evaluated by the number of emergency department visits and hospital admissions, also considering the occurrence of at least one event during the analyzed period. Outcomes were additionally described according to vital status at the end of the follow-up period, aiming to characterize different patterns of clinical trajectory post-TAVI.

Results

A total of 33 patients undergoing TAVI between January 2022 and January 2026 were included. The mean age was 82.5 years, with a median of 83 years; 69.7% of patients were aged ≥ 80 years and 36.4%

were ≥ 85 years. There was a slight male predominance, accounting for 19 patients (57.6%), while 14 (42.4%) were female Table 1. At the end of the follow-up period, 25 patients (75.8%) were alive and eight (24.2%) were deceased. During follow-up, 43 emergency department visits and 34 hospital admissions were recorded. Eighteen patients (54.5%) had no emergency department visits, and 20 (60.6%) had no hospital admissions after the procedure Table 2. It is important to highlight that there were no losses, as we focused exclusively on individuals over the age of 80, and the cardiology service provided frequent monitoring via telemedicine. A heterogeneous distribution of events was observed according to clinical progression. Among patients who remained alive, nine out of 25 (36.0%) had at least one emergency visit, and six (24.0%) had at least one hospital admission. Among the eight deceased patients, six (75.0%) had an emergency visit and seven (87.5%) were hospitalized at least once. Although representing 24.2% of the cohort, deceased patients accounted for 48.8% of all emergency department visits and 64.7% of admissions recorded during follow-up. The mean number of hospital admissions in this group was 2.75 per patient, compared with 0.48 among surviving patients at the end of follow-up.

Table 1 General characteristics of the sample

Variable	Value	%
Total patients	33	—
Start of series	01/11/2022*	—
End of series	01/07/2026*	—
Death	8	—
Mean age (years)	82.5	—
Median age (years)	83	—
Male sex (n)	19	57.60%
Female sex (n)	14	42.40%
Filled status (n)	33	100.00%
Alive between filled status (n)	25	75.80%
Registration number available (n)	33	100.00%

Table 2 Care Events

Indicator	Value	%
Mean emergency room visits	1.3	
Median emergency room visits	0	
Patients with ≥ 1 visit	15	45.50%
Total emergency room visits	43	
Mean hospitalizations	1	
Median hospitalizations	0	
Patients with ≥ 1 hospitalization	13	39.40%
Total hospitalizations	34	

Discussion

Population characteristics and survival

The mean age of 82.5 years, with approximately 70% of patients aged 80 years or older, reflects the profile of older patients frequently undergoing TAVI in contemporary clinical practice. The survival rate of 75.8% at the end of follow-up must be contextualized considering the advanced age and high burden of comorbidities frequently present in this population, factors that limit the indication for invasive interventions. The number of patients without the need for hospital services demonstrates that a significant portion of the population achieved sustained clinical stability post-procedure, reinforcing TAVI as a viable therapeutic option even in octogenarians and nonagenarians. However, in this population, therapeutic success

should be evaluated beyond isolated survival. Outcomes such as quality of life, functionality, and the need for rehospitalizations have been progressively incorporated into post-TAVI outcome evaluations.³ The PARTNER trial demonstrated the relevance of combining mortality and quality of life when characterizing unfavorable outcomes following the procedure.³

Clinical vulnerability and hospitalization patterns

Importantly, 54.5% of patients had no emergency department visits and 60.6% were not hospitalized post-procedure, suggesting that a substantial proportion of the population achieved clinical stability during follow-up.

However, the heterogeneous distribution of hospital events, with a disproportionate concentration of deceased patients, highlights the existence of distinct clinical trajectories. Patients who died represented 24.2% of the cohort but concentrated 48.8% of emergency visits and 64.7% of hospitalizations. Although the study design does not establish a causal relationship, this finding suggests greater clinical vulnerability in this subgroup. This observation aligns with studies identifying frailty and clinical vulnerability as key predictors of adverse outcomes after aortic valve replacement. In the FRAILTY-AVR Study, frailty was associated with one-year mortality and worsening disability, adding incremental prognostic information to traditional risk models.⁴

Comprehensive geriatric assessment (CGA) can add valuable insight into the risk stratification of these patients. Roca et al., in a prospective cohort of 114 patients over 70 years of age selected for TAVI by a Heart Team, demonstrated an association between worse outcomes and impairments across various components of geriatric assessment, including basic and instrumental activities of daily living, cognition, gait speed, and serum albumin.⁶

More recently, a systematic review evaluated the role of CGA and related interventions in older adults undergoing TAVI. Although the quality of available evidence is still insufficient to prove that these interventions directly improve post-TAVI outcomes, the authors emphasize the need for structured studies in this population, particularly among frail patients.⁷ The use of health services observed in our cohort also parallels recent studies on the end-of-life trajectory of TAVI patients. In a Danish nationwide cohort of 2,544 post-TAVI patients who subsequently died, 86.4% exhibited intermediate or high frailty, and 25.6% remained hospitalized for more than 28 days during their final year of life. The majority of hospitalizations occurred due to non-cardiovascular causes, reinforcing the need for a multidisciplinary approach during follow-up.⁸

Geriatric cardiology and palliative care

The results suggest that TAVI represents a viable therapeutic option in older adults, with a significant proportion achieving clinical stability post-procedure. However, outcome heterogeneity reinforces the need to refine risk stratification by incorporating not only traditional surgical risk markers, but also frailty, baseline functional status, cognition, and clinical vulnerability.^{4,6,7} In this context, the Geriatric Cardiology approach allows for broadening the evaluation of therapeutic benefit beyond procedural success alone. Particularly in patients who maintain high health service utilization after TAVI, recurrent hospitalizations and emergency visits may represent key opportunities to reassess clinical trajectory, symptom burden, and care goals. Integrating palliative care principles into this framework can foster more patient-centered care. In the context of cardiovascular disease, palliative care is not restricted to end-of-life situations; it can be integrated throughout the disease continuum alongside disease-

modifying therapies. This includes symptom management, effective communication, shared decision-making, and advance care planning.⁵

Structured and compassionate communication between healthcare professionals and the patient is an essential component of this process, particularly when therapeutic decisions involve prognosis, autonomy, and family involvement. Patient-centered communication strategies facilitate understanding of clinical status, preservation of autonomy, and help align decisions with personal values and preferences.⁹ The relevance of these aspects has also been demonstrated specifically among older adults undergoing TAVI. An integrative review in 2024 involving 12 qualitative studies of 353 older adults across 10 countries identified recurrent themes: the need for individualized care plans, family/caregiver support, communication and education, and management of persistent physical and psychosocial symptoms.¹⁰ In frail older adults, this approach becomes particularly critical given the co-occurrence of multimorbidity, functional decline, and increased vulnerability to adverse events. Palliative care, by its multidimensional nature, seeks to identify and alleviate physical, psychological, social, and spiritual suffering while preserving quality of life and autonomy whenever possible.¹¹ Despite these needs, the integration of palliative care into post-TAVI care remains limited. In a recent analysis of 188,629 procedures, only 4.7% of patients had documentation of palliative care consultation, with wide variation across centers (0% to 25%). The same study demonstrated an association between higher chronic disease burden and lower 1-year survival rate, although multimorbid patients also experienced meaningful improvements in quality of life after the procedure.¹²

Thus, the recurrent occurrence of hospitalizations or emergency visits post-TAVI can be interpreted not only as a marker of clinical vulnerability, but also as a potential signal to re-evaluate care needs and therapeutic goals. This interpretation should be treated with caution, as the present study did not directly measure symptom burden, functionality, quality of life, or palliative care needs. Prospective studies featuring systematic assessment of patient-centered outcomes, including quality of life, functionality, frailty, symptom burden, and hospital readmissions are essential to optimize candidate selection and personalize follow-up strategies. Incorporating indicators of palliative needs could help identify patients who would benefit most from an integrated approach combining cardiology, geriatrics, and palliative care.

Conclusion

This study contributes to the understanding of clinical outcomes following TAVI in a predominantly octogenarian population, demonstrating that a significant proportion of patients achieved clinical stability and low hospital service utilization during follow-up. These findings reinforce that interventional success should be evaluated beyond survival alone, taking into account the post-procedure clinical trajectory. On the other hand, the concentration of hospitalizations and emergency department visits among deceased patients highlights outcome heterogeneity and underscores the importance of identifying high-vulnerability profiles. In this scenario, evaluating frailty and functionality, paired with cardiological and geriatric follow-up, can contribute to individualizing care and early recognition of unfavorable clinical trajectories. Integrating palliative care principles can broaden this approach, particularly in the setting of clinical decline or recurrent health service utilization, facilitating symptom control, prognostic communication, and alignment of therapeutic decisions with the patient's values and goals. Prospective studies incorporating patient-centered outcomes and palliative need indicators will contribute to increasingly individualized and person-

centered post-TAVI follow-up models for older adults.

To finish this study provides a descriptive overview of the care events experienced by the studied population, highlighting a substantial burden of emergency department visits and hospitalizations among elderly patients. The findings underscore the relevance of continuous monitoring of care utilization in this age group, as well as the importance of communication and humanized care in supporting patients and their families throughout the care trajectory. There is the need for prospective studies assessing quality of life and functional outcomes. Longitudinal designs would allow a more comprehensive understanding of how care events impact patients' well-being over time, beyond the quantitative indicators presented here. Such studies could also evaluate the effectiveness of interventions aimed at improving care quality, patient satisfaction, and the overall experience of elderly patients and their families.

Acknowledgments

To ours patients, in special, Tito.

Conflicts of interest

The authors declared that there are no conflicts of interest.

References

1. Vahanian A, Beyersdorf F, Praz F, et al. 2025 ESC/EACTS Guidelines for the management of valvular heart disease. *Eur Heart J*. 2025.
2. Mack MJ, Leon MB, Thourani VH, et al. Transcatheter aortic-valve replacement with a balloon-expandable valve in low-risk patients. *N Engl J Med*. 2019;380(18):1695–1705.
3. Arnold SV, Reynolds MR, Lei Y, et al. Predictors of poor outcomes after transcatheter aortic valve replacement: results from the PARTNER trial. *Circulation*. 2014;129(25):2682–2690.
4. Afilalo J, Lauck S, Kim DH, et al. Frailty in older adults undergoing aortic valve replacement: the FRAILTY-AVR study. *J Am Coll Cardiol*. 2017;70(6):689–700.
5. Graven LJ, Kitko L, Saylor MA, et al. Palliative care and advanced cardiovascular disease in adults: not just end-of-life care: a scientific statement from the American Heart Association. *Circulation*. 2025;151(21):e1030–e1042.
6. Roca F, Durand E, Eltchaninoff H, et al. Predictive value for outcome and evolution of geriatric parameters after transcatheter aortic valve implantation. *J Nutr Health Aging*. 2020;24(6):598–605.
7. Chin K, Jones R, Lester E, et al. Comprehensive geriatric assessment, and related interventions, to improve outcomes for older patients undergoing transcatheter aortic valve implantation (TAVI): a systematic review. *Eur Geriatr Med*. 2024;15(6):1615–1630.
8. Strange JE, Holt A, Christensen DM, et al. End of life after transcatheter aortic valve replacement: a Danish nationwide cohort study. *JACC Cardiovasc Interv*. 2024;17(24):2936–2946.
9. Florêncio R, Cruz R, Paola GD, et al. A cry for help: emotion as a central element in communication with an elderly male patient with breast cancer. *Hosp Palliat Med Int J*. 2025;8(3):67–69.
10. Moreines LT, David D, Murali KP, et al. The perspectives of older adults related to transcatheter aortic valve replacement: an integrative review. *Heart Lung*. 2024;68:23–36.
11. Cherny NI, Fallon MT, Kaasa S, et al, editors. *Oxford Textbook of Palliative Medicine*. 6th edition. Oxford University Press; 2021.
12. Wessler BS, Stebbins A, Alkhouli M, et al. Chronic conditions and patient-centered outcomes after transcatheter aortic valve intervention. *JACC Adv*. 2025;4(11 Pt 1):102231.