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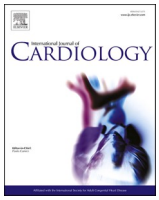

Outcomes of the Qatar Transcatheter aortic valve implantation- registry (QATAVI-registry) –first report 24/7/2024☆

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ABSTRACT

Background: Transcatheter aortic valve implantation (TAVI) is a therapeutic modality for high-surgical-risk patients with severe aortic stenosis. This study describes the outcomes of TAVI performed in Qatar.
Methods: The Qatar TAVI registry (QATAVI) was established to report the outcomes of TAVI procedures performed at Hamad Medical Corporation- Heart Hospital between October 2012 and December 2023. Data were collected both prospectively and retrospectively.
Results: 241 patients underwent TAVI, with a mean age of 73 ± 8 years. The device success rate was 98.8 %. In-hospital para-valvular leak (PVL) was as follows; mild 8.3 %, moderate 0.8 %, and severe 0.0 %. At 1-year, PVL was mild 2.9 %, moderate 0.4 %, and severe 0.0 %. At 2 years, 0.4 % had mild PVL, moderate 0.4 %, and severe 0.0 %. The incidence of stroke was 2.1 % during hospitalization, 2.1 % at 1 year, and 1.2 % at 2 years. For myocardial infarction, the in-hospital rate was 0.8 %, at 1 year 3.3 %, and 1.2 % at 2 years. 3.7 % developed heart failure during the hospital stay, 15.4 % at 1 year, and 4.6 % at 2 years. The 30-day mortality rate was 2.0 %, while a 1-year survival rate was 91 %. Among the 1-year mortality, 67 % died from non-cardiovascular causes.
Conclusion: The inaugural report of QATAVI demonstrates a success rate that matches international standards, favorable early and late valvular functions, and improved clinical outcomes related to major adverse cardiovascular events. Moreover, the survival rates observed in this cohort align with those reported in global registries, demonstrating the safety and effectiveness of the TAVI procedure in Qatar.

1. Introduction

Aortic stenosis (AS) is among the most common valvular heart diseases, primarily affecting the elderly [1]. Surgical aortic valve replacement (SAVR) is considered the gold standard treatment for severe AS [2], however, it is associated with high surgical risk for AS

Abbreviations: ACC, American College of Cardiology.; AF, Atrial fibrillation.; AS, Aortic stenosis;; AV, Aortic valve.; AVA, Aortic valve area.; AVR, Aortic valve replacement.; BAV, Bicuspid aortic valve; BMI, Body mass index.; Cath lab, Catheterization laboratory.; CKD, Chronic kidney disease.; CS, Conscious sedation.; DM, Diabetes mellitus.; Egy-TVR, Egyptian transcatheter aortic valve registry; ESC, European Society of Cardiology.; FRANCE registry, (FRench aortic National Corevalve and Edwards)—TAVI registry; GA, General anesthesia; HF, Heart failure; HH, Heart hospital; HMC, Hamad Medical Corporation; HTN, Hypertension.; IE, Infective endocarditis.; INR, International normalized ratio; LA, Local anesthesia; LVEF, Left ventricular ejection fraction.; MACE, Major adverse cardiovascular events.; MI, Myocardial infarction; NYHA, New York heart association; PCI, Percutaneous coronary intervention.; PM, Pacemaker; PPM, Permanent pacemaker; PVL, Paravalvular leak;; QATAVI registry, Qatar transcatheter aortic valve implantation registry.; SAVR, Surgical aortic valve replacement;; STE, Speckle tracking echocardiography.; STS, The Society of Thoracic Surgeons.; TAVI, Transcatheter aortic valve implantation;; TAVR, Transcatheter aortic valve replacement; TF, Trans-femoral; TVT, Transcatheter valve therapy..

☆ All authors take responsibility for all aspects of the reliability and freedom from bias of the data presented and their discussed interpretation.

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patients with advanced age, frailty, and multiple co-morbidities [3]. Since the FDA approved transcatheter aortic valve implantation (TAVI) in 2002, it has become the standard treatment for symptomatic AS in elderly patients [4]. The global experience with TAVI is expanding, with 276,316 patients in the U.S. alone having undergone the procedure between 2011 and 2019 [5]. The initial reports showed high procedural success rates with decreased peri-procedural complications [6]. Favorable short- and mid-term outcomes were noted in clinical studies, such as the PARTNER trial [7]. Thus, TAVI offers promising hope for aortic stenosis patients to achieve better outcomes.

In Qatar, TAVI was introduced at Hamad Medical Corporation-Heart Hospital (HMC-HH) in 2012. Two types of valves are currently in use: self-expanding Medtronic CoreValve™ and balloon-expandable Sapien Edwards™ valves. Medtronic CoreValve™ has been the main valve choice over the past ten years, whereas the Sapien Edwards™ valve was introduced in November 2021. This is the first report of the Qatar -TAVI (QATAVI) registry, which aims to evaluate the initial outcomes of TAVI in Qatar.

2. Methods

2.1. Study population

This cohort registry included all patients with AS who underwent TAVI at HMC-HH between October 2012 and December 2023. The decision to perform TAVI, the characteristics of the TAVI device, and the route of catheterization were made based on the assessment by a multidisciplinary heart team. TAVI was performed for all patients with clinical characteristics that would suggest poor intra- and postoperative outcomes, such as the presence of cardiac and non-cardiac comorbidities, and increasing age, as per the 2017 guidelines of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS) [8].

QATAVI registry adopted the data collection sheet recommended by the American College of Cardiology (ACC), which is used for the U.S. national TAVI registry [9]. The information reported from the QATAVI-registry was divided into eight sections: patient demographics; pre-procedural medical conditions; basic laboratory data; echocardiographic and CT scan imaging criteria; procedural characteristics; procedural outcomes; clinical outcomes; and mortality rates. Collected post-TAVI clinical outcomes were as follows; paravalvular leak (PVL) or paravalvular regurgitation (PVR); stroke; myocardial infarction (MI); heart failure (HF) including all NYHA classes; and infective endocarditis (IE). Those clinical findings were collected at three follow-up stages: in-hospital; 1 year; and 2 years. Mortality and survival rates at 30 days and 1 year were calculated. The mortality rate at 1 year was further categorized as cardiac and non-cardiac reasons. HMC-HH's death documentation policy governed the quality and accuracy of mortality information. The definitions and time points of TAVI outcomes were aligned with statements of the Valve Academic Research Consortium (VARC)-2 document [10]. Data collection was conducted both prospectively through patient interviews in the clinic and retrospectively by retrieving data from electronic medical records (Cerner system).

2.2. Ethical approval

Institutional Review Board (IRB) approval was obtained from the Hamad Medical Corporation (HMC) Medical Research Center (MRC). HMC is part of the Ministry of Public Health – Qatar, taking the lead in the supervision and operation of all Central hospitals in Qatar (Including Heart Hospital-HH), as well as coordination of the medical research projects in the country. Informed consent for participants was waived by the medical research committee and the Institutional Review Board (IRB) affiliated with HMC. The data collection process fully adhered to the information governance policies of the Health Information Department at HMC. All study procedures and protocols were performed following the declaration for Helsinki.

2.3. Patient and public involvement

Patients were actively involved in shaping the study design by identifying key priorities and ensuring outcomes relevant to their needs. They reviewed patient-facing materials for clarity and contributed to interpreting the findings. The results will be shared with participants and the public through accessible formats to maximize their impact.

2.4. Statistical analysis

Continuous parameters are reported as mean ± SD. Categorical variables are reported as the number of patients (% of patients). Kaplan-Meier analysis was used to measure the survival rate. Two-sided inferential statistical tests were used and a *P*-value less than 0.05 was considered statistically significant. Statistical analysis was performed using IBM SPSS Statistics version: 28.

3. Results

3.1. Baseline characteristics

A total of 241 patients underwent TAVI from October 2012 to December 2023 at HMC-HH. 47.7 % were females ($n = 126$), mean age 73.7 ± 8.13 years, and mean BMI was 31.35 ± 7.7 kg\m2. (Supplementary Table 1). Among the included patients, 80 (33.2 %) had clinical heart failure (HF), and 66 (27.4 %) had atrial fibrillation (AF). The majority of patients were diagnosed with hypertension (HTN) 217(90 %), and diabetes (DM) 184(76.3 %). Valve morphology showed a Bicuspid valve in 25(10.4 %) patients. Other pre-procedural medical conditions are shown in (Table 1). Baseline laboratory data is shown in (Supplementary Table 2), and pre-TAVI Echocardiographic imaging is in (Supplementary Table 3).

3.2. Procedural settings and characteristics

77.2 % were treated with the Medtronic CoreValve™, while 22.8 % received the Sapien Edwards™ valve. 95.4 % of the TAVI procedures were elective. Most TAVI procedures were performed in the hybrid lab

Table 1
TAVI patient's baseline characteristics - Pre-procedural associated medical conditions.

Characteristics	n (%) Total ($n = 241$)
Infective endocarditis	4 (1.7)
Pacemaker	18 (7.5)
Implantable cardioverter defibrillator	2 (0.8)
Coronary artery bypass graft	27 (11.2)
Percutaneous coronary intervention	74 (30.7)
Atrial fibrillation	66 (27.4)
History of valvular disease	42 (17.4)
Prior aortic valve replacement (bio-prosthesis)	18 (7.5)
Bicuspid valve	25 (10.4)
Clinical heart failure	80 (33.2)
Diabetes	184 (76.3)
Hypertension	217 (90.0)
Dyslipidemia	128 (53.1)
Chronic kidney disease	73 (30.3)
Familial hypercholesterolemia	3 (1.2)
Prior stroke	15 (6.2)
Transient ischemic attack	5 (2.1)
Carotid stenosis >50 %	6 (2.5)
Peripheral vascular disease	12 (5.0)
Cancer	23 (9.5)
Smoking	
Current smoker	17 (7.1)
Former smoker	27 (11.2)

(68.5 %), whereas the remaining cases (30.7 %) were performed in the Catheterization laboratory (Cath lab). About 71 % of the total procedures were performed under general anesthesia (GA). 99.2 % were operated using the trans-femoral (TF) approach, and only 0.8 % underwent TAVI through the non-TF approach (Supplementary Table 4).

3.3. Prosthetic Valvular function

Device success was achieved in 98.8 % of the total cases in the QATAVI registry (Supplementary Table 5). During hospitalization, 20 (8.3 %) cases showed mild para-valvular leak (PVL), 2(0.8 %) cases showed moderate PVL and no severe cases of PVL (0.0 %). In 1 year, there were 7(2.9 %) cases of mild PVL, 1(0.4 %) case with moderate PVL, and no severe PVL (0.0 %). In 2 years, 1(0.4 %) case showed mild PVL, another 1(0.4 %) case had moderate PVL and no severe PVL cases were noted (0.0 %) (Supplementary Table 6).

3.4. Clinical outcomes

Data on stroke, myocardial infarction (MI), heart failure (HF), and infective endocarditis (IE) were collected during hospitalization, as well as at 1 year and 2 years post-TAVI as shown in (Table 2).

3.5. Mortality

Out of 241 TAVI cases, the all-cause mortality rate over the whole study period of eleven years was 45 (18.7 %). The 30-day death rate was 5 (2.0 %), and the 1-year death rate was 21 (8.7 %) (Supplementary Table 7). Among those who died in the first year, about one-third of cases 33.3 % reported cardiovascular reasons as the primary cause of death, and the remaining 66.7 % were from non-cardiac reasons. The cumulative survival at 30 days (follow-ups were missing in two patients) was 97.9 %, as shown in Fig. 1A. The 1-year survival (nine patients were missed in the follow-up) showed 90.9 % as per the Kaplan-Meier analysis (Fig. 1B).

4. Discussion

The "QATAVI" registry is abbreviated from the "**Qa**tar-**T**ranscatheter **A**ortic **V**alve **I**mplantation" registry. This study analyzed data from the Heart Hospital (HH), part of Hamad Medical Corporation (HMC), Qatar's primary public healthcare provider and a leading institution for secondary and tertiary health services in the region. The study represents the inaugural public report from the QATAVI Registry, encompassing a consecutive series of patients who underwent TAVI in Qatar. The registry was conducted with no identifiable selection bias.

To ensure reproducibility, the dataset in this registry was aligned with those of The Society of Thoracic Surgeons (STS) and the American College of Cardiology (ACC) Transcatheter Valve Therapy (TVT) registry [9]. Numerous reports have been published from the STS/ACC registry. We extracted data from the initial [6] and contemporary versions [5].

The use of different generations of TAVI valves is comparable to what was included in the German study by R. Zahn et al. [11]. The usage of the Medtronic CoreValve™ was 77.2 % vs 84.4 %, and Sapien Edwards™ was 22.8 % vs 15.6 % for QATAVI and German registries respectively. Two reports from the FRANCE registry (FRench Aortic National CoreValve and Edwards) were reviewed; the 2010 report [12], which enrolled 244 patients, and the 2012 report [13], which included 3195 patients. The former report had a sample size comparable to this QATAVI report. Additionally, we compared our findings with those from the UK [14], and Canadian registries [15], as well as with an international multi-center PARTNER trial [16]. A recent initial report from the Asia Pacific TAVI registry was published in 2021, highlighting the evolving experience of the procedure in the Asian population, which comprised 1125 patients enrolled from February 2009 to December 2017, data were collected from 14 centers within seven sites in Hong Kong, Japan, Philippines, Singapore, and Taiwan [17].

Table 2
Clinical outcomes of TAVI (during hospitalization, 1 year, and 2 years post TAVI).

Outcome	Number of patients (%)		
	In-hospital	1 year	2 year
Stroke	5 (2.1)	5 (2.1)	3 (1.2)
MI	2 (0.8)	8 (3.3)	3(1.2)
HF	9 (3.7)	37(15.4)	11 (4.6)
IE	0 (0.0)	3(1.2)	5(2.1)

HF: heart failure, IE: Infective endocarditis, MI: myocardial infarction.

TAVI showed a successful journey in our region. The first report of the GULF TAVI registry was published in 2021 which included 795 patients from eight centers in Saudi Arabia, Kuwait, Bahrain, and Oman between January 1, 2017, and December 31, 2019, and showed a procedural success rate of 98.9 %, with 28.1 % having para-valvular leak (PVL). Regarding vascular events in the first year post-TAVI, GULF patients had MI in 0.5 %, and stroke in 1.1 %%. Pacemaker required in 9.7 % [18]. The Egyptian Transcatheter Aortic Valve Registry (Egy-TVR), included 96 patients between August 2012 and December 2017, [19]. The Egy-TVR initial report was conducted in five centers. They reported that the need for permanent pacemakers was 7.29 %, mild PVL occurred during the hospital stay in 50 %, moderate in 4.1, and severe in 1.04 %. In-hospital mortality was 4.16 %, and post-procedural stroke was 2.08 %. Despite the limited sample size, it is important to evaluate the Egy-TVR cohort due to its closer demographic characteristics, which include younger TAVI candidates, higher BMI, and a higher prevalence of diabetes [19].

4.1. Demographics and Baseline Data

This study showed a mean age of 73 years, which aligned with the findings of the GULF registry, which showed a mean age of 74.6 [18]. In 2019, the median age of individuals undergoing TAVI as per the US registry, was 80 years [5]. Data from Canadian TAVI patients showed a mean age of 81 years [15], whereas it was 82 in both British and French registries cohorts [14] [12]. The younger age group in this study may be attributed to lifestyle differences; however, this observation can be useful in expanding the age limit of the selection criteria in the future. It is well known that age factor is significantly associated with clinical outcomes of TAVI. Frailty, mobility difficulties, nutritional problems, and cognitive impairments have been linked with poorer TAVI outcomes. A study by A.W. Schoenenberger et al., which focused on the effect of age on TAVI outcomes, has prospectively demonstrated that an index of frailty strongly predicts a post-TAVI functional decline [20].

Regarding gender, we report that 47.7 % of TAVI cases were females ($n = 115$) in QATAVI-registry, which is comparable to other data, (49 %) in STS/ACC study [5], and (44.3 %) in Canadian study [15]. Those percentages, however, suggest an insignificant role of gender in the outcomes of AS.

Body mass index (BMI), Hypertension (HTN), and Diabetes mellitus (DM) were described in this cohort. The mean BMI was 31.35 kg\m^2, whereas it showed 26.6 kg\m^2 in a pilot, multicenter pan-European registry conducted by Gilard et al. [21], and 27.1 kg\m^2 in the German registry [11]. Regarding HTN, 90.0 % of the total patients were hypertensive, compared with 68.8 % from the French data [12]. The diabetics' percentage within the QATAVI cohort was 76.3 % and showed 61.6 % from the GULF registry [18]. Diabetics percentages showed 22.8 % in the UK registry [14], and 34.6 % in the German TAVI registry [11]. In the Asia Pacific TAVI registry, diabetics were 36.9 % [17]. A marked elevation in the percentage of diabetics in this cohort should be highlighted as an important population-specific co-morbidity factor. Furthermore, 128(53.1 %) cases had dyslipidemia, compared with 60.4 % in the Asia Pacific data [17]. These findings also highlight the

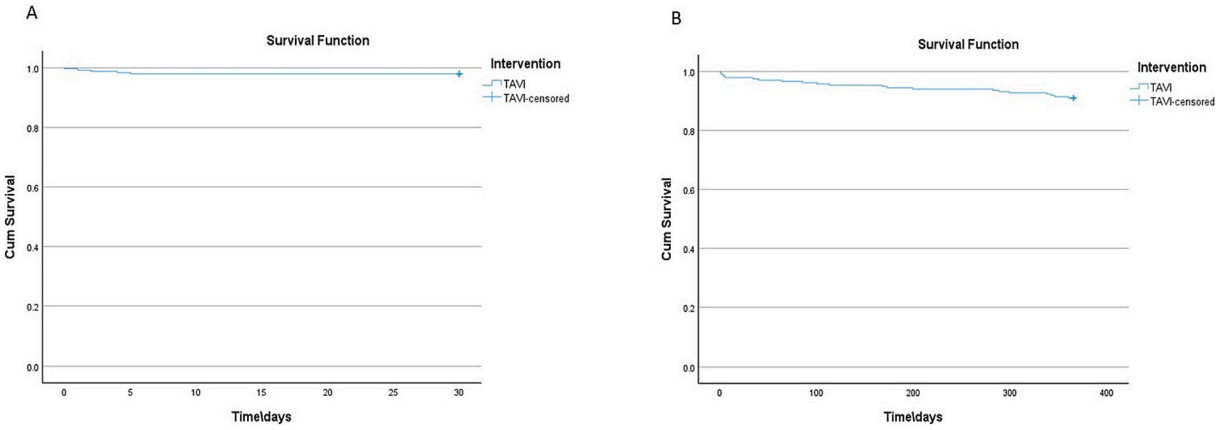

Fig. 1. (A) Kaplan–Meier curve illustrating cumulative survival during the initial 30 days following TAVI. (B) Kaplan–Meier curve displaying cumulative survival throughout the first year after TAVI.

importance of lifestyle modification as a primary strategy for reducing cardiovascular diseases and the need for TAVI. Fig. 2 highlights the baseline and demographic distribution across selected registries.

The prevalence of the bicuspid aortic valve (BAV) was %10.4 (n = 25) in the QATAVI-registry cohort, showing 2 % in the STS/ACC registry [5], and 1.7 % in the German data [11]. This elevated prevalence of bicuspid valves comprises a distinctive characteristic of this cohort. Regarding its relation with TAVI outcomes, studies showed that current-generation TAVI devices had procedural, post-procedural, and 1-year outcomes in the BAV population comparable to those with Tri leaflets AV disease [22].

4.2. Procedural settings

A (71 %) of the total procedures in our registry were performed under general anesthesia (GA), whereas (29 %) of cases were conducted under local anesthesia (LA) or conscious sedation (CS). General anesthesia from the 2013 US registry report was (98 %) [6]. With the growing US experience with TAVI, data from another study performed between January 2016 and March 2019, showed an increase in the proportion of procedures performed using CS, from 33 % to 64 % [23]. In France, procedures performed under local anesthesia were 40.8 % of the TF-approached patients [13]. Emerging data confirmed that using CS is associated with improved outcomes of TAVI compared with GA [23], as a lower rate of in-hospital mortality (adjusted risk difference: 0.2 %; $p = 0.010$) and 30-day mortality (adjusted risk difference: 0.5 %; $p < 0.001$) were observed, and CS is also associated with shorter length of hospital stay (adjusted difference: 0.8 days; $p < 0.001$), as well as with more frequent discharge to home (adjusted risk difference: 2.8 %; $p <$ 0.001) [23].

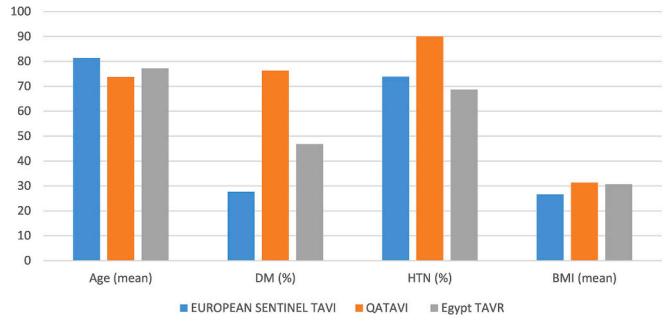

Fig. 2. Comparison of the baseline characteristics with other TAVI registries. European sentinel TAVI registry (*Gilard* et al. *2016*) and Egypt TAVI registry/ Egy-TVR (*Bahaa* et al. *2021*). BMI: Body mass index, DM: Diabetes Mellitus, HTN: Hypertension, TAVI: transcatheter aortic valve implantation, TAVR: transcatheter aortic valve replacement.

Chandrasekhar et al. conducted a computerized literature search on SCOPUS from 2002 until 2014 and compared the trans-femoral (TF) with (non-TF) access routes. Their analysis showed that the TF approach is associated with lower incidences of post-operational complications [24]. In this report (99.2 %) were treated using the TF approach, and only 0.8 % underwent TAVI through non-TF approaches. Experience from the United States showed a steady increase in the use of femoral access, from 57.1 % in the early reports in 2013 to 95.3 % in 2019 [5].

4.3. Device success rate and Prosthetic Valvular function

With a 98.8 % device success rate, QATAVI-registry demonstrated performance consistent with leading international benchmarks. Among 7710 patients who underwent TAVI between November 2011 and May 2013 in the STS/ACC TVT registry, the device succeeded in 92 % of cases [6]. It showed 96.9 % in the FRANCE study [13], and 98.4 % in the German data [11]. At 1 year, para-valvular leak (PVL) was mild in 7 (2.9 %) cases, moderate in 1 (0.4 %) case, and no severe cases of PVL were observed (0.0 %). At 2 years, mild PVL prevalence was 0.4 %, moderate 0.4 %, and severe PVL was 0.0 %. A study by Reardon et al. from the SURTAVI trial – multi-central research, conducted in 87 centers over the United States, Europe, and Canada, which included 864 cases in the TAVI group- found that moderate or severe PVL in 5.3 % of cases at 1 year [25]. This demonstrated that experience in QATAVI-registry reported less occurrence of PVL than other data.

4.4. Clinical endpoints

Most TAVI registries and trials have identified stroke as a key clinical outcome, as its occurrence is associated with significantly worse clinical results and up to a tenfold increase in mortality compared to patients who do not experience a stroke [26]. STS/ACC registry showed a 30-day stroke rate of 2.5 % [6]. Canadian registry reported the incidence of in-hospital stroke as 2.1 % [15]. This report of QATAVI-registry shows comparable findings related to the incidence of stroke, which was 2.1 % within hospitalization, 2.1 % after 1 year, and 1.2 % at 2 years. Figure 3 compares the in-hospital stroke rates across some international registries.

Regarding the incidence of myocardial infarction (MI) in this study, it was noted that 2(0.8 %) patients developed MI within the hospitalization period, 8(3.3 %) after 1 year, and 3(1.2 %) in 2 years. The in-hospital incidence of MI in the US was 0.7 % [6], and 1.3 % in the British data [14]. In a multicenter study, 699 high-risk patients were randomly assigned, at 30 days, no MI cases were noted, and 0.4 % were reported after 1 year [27]. In the UK TAVI data, the percentage of

patients who developed MI as an outcome of TAVI during the study period of 2 years was 1.3 % [14]. This cohort reports somewhat unfavorable outcomes compared with other data. Tendency to MI is assumed to be related to the vascular background, and high prevalence of dyslipidemia and diabetes rates in this cohort.

4.5. Mortality and survival rates

Concerning the mortality rate, out of 241 TAVI cases, the total mortality rate over the 11-year study period was 45 cases, representing (18.7 %) of this cohort and 81.3 % of patients are still alive. The 30-day mortality rate was 2.0 %, and the 1-year mortality rate was 8.7 %. The STS/ACC report for seven years (2013–2019), showed 30-day mortality decreasing from 7.2 % to 2.5 % and the 1 year from 24.29 % to 12.55 % [5].

In a large, non-industry-sponsored multinational European registry, among 4571 patients, 821(18.0 %) were deceased at 1 year [21]. The Asia Pacific registry, conducted by Tay et al., included 14 centers across seven locations in Hong Kong, Japan, the Philippines, Singapore, and Taiwan, where TAVI procedures were performed between 2009 and 2017 [17]. Their cohort showed that the one-year all-cause mortality rate among post-TAVI patients was 8.8 % [17]. This showed the mortality outcomes of the QATAVI experience are similar to the Asian outcomes and favorable compared with western TAVI mortality rates. In this cohort, among those who passed away within one year, approximately one-third (33.3 %) of the deaths were attributed to cardiovascular causes. In contrast, the remaining (66.7 %) were due to non-cardiac reasons. In the PARTNER 2 trial, out of 1011 patients who underwent TAVI, 12.3 % were deceased within the first year. Of these deaths, 57.0 %were due to cardiac causes, while 43.0 % resulted from non-cardiac reasons [28]. Data from FRANCE showed the cardiac causes within the first-year death rate was 61.3 % [13]. The comparison with other registries for the 1-year mortality rate is shown in Fig. 3. The cumulative survival of 241 patients at 30 days (follow-up dates were missing in two patients) was 97.9 %. The Kaplan Meier estimate of cumulative survival at one year (follow-up dates were missing in nine patients) was 90.9 %, compared with 79.1 % in the Pan-European sentinel registry [21].

4.6. Limitations

The study was conducted through the voluntary efforts of our local collaborative group, as no structured funding or financial support was allocated to this project. Consequently, baseline data on strain echocardiography using the advanced speckle tracking echocardiography (STE) could not be included in this cohort, as the current evidence demonstrated that measuring the left ventricular global longitudinal strain (LVGLS) [29] and left atrial reservoir strain [30] may improve the prognostic risk stratification of patients affected by aortic stenosis (AS) and assist in optimizing the timely intervention. Additionally, the absence of dedicated specialized staff for close post-procedural follow-up necessitated reliance on routine clinical practice, which limited the ability to maintain continuous and comprehensive data collection.

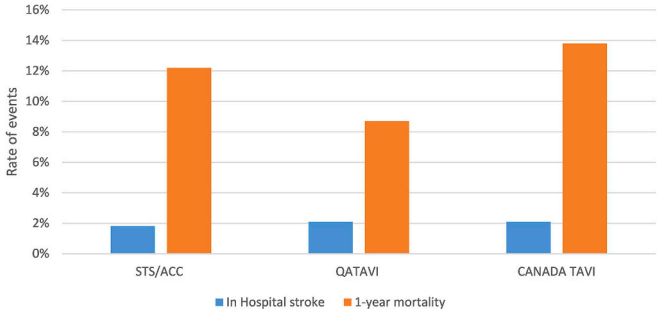

Fig. 3. Comparison of the in-hospital stroke and the 1-year mortality with other TAVI registries. STS/ACC TAVI registry (*Carroll* et al. *2020*) and Canada TAVI registry (*Asgar* et al. *2016*). ACC: American College of Cardiology, STS: The Society of Thoracic Surgeons, TAVI: transcatheter aortic valve implantation.

4.7. Recommendations

We suggest a separate special fund be continuously allocated to this national registry due to the great benefits of this kind of research locally in Qatar. Therefore, we advise prioritizing the research fund in Qatar for this major ongoing registry that benefits the country for the long term, considering this kind of organized research can be conducted for many years and adds strength to the quality of research at the international level. We advise conducting follow-up reports to facilitate ongoing analysis and monitor patient outcomes. Collaboration with regional and international registries is recommended to enhance the understanding of optimal TAVI practice standards. Additionally, the high prevalence of diabetes in Qatar warrants further investigation to explore its relationship with TAVI outcomes, as studies showed a significant relation with cardiovascular events in fooling AS patients [30]. Additional analysis is needed to examine TAVI outcomes specifically among patients with bicuspid aortic valves to identify any unique patterns or challenges.

4.8. Impact on daily practice

This TAVI registry assessment of program outcomes scientifically and practically assesses our procedures' clinical outcomes and safety. It presents important findings supporting decision-making for patient selection, procedural planning, and long-term management of TAVI patients, particularly in populations with similar demographic profiles.

5. Conclusion

The first report of the QATAVI-Registry demonstrates a TAVI device success rate comparable to international benchmarks despite higher incidences of DM, HTN, and dyslipidemia. The findings reveal favorable early and late valvular function, and improved clinical outcomes related to major adverse cardiovascular events (MACE). Additionally, the survival rates observed in our cohort align closely with those reported in global registries. Therefore, it can be stated that TAVI's experience in Qatar adheres to international safety standards and has achieved a globally recognized success rate.

Ethics approval and consent to participate

Institutional Review Board (IRB) approval was obtained from the Hamad Medical Corporation (HMC) Medical Research Center (MRC). HMC is part of the Ministry of Public Health – Qatar, taking the lead in the supervision and operation of all Central hospitals in Qatar (Including Heart Hospital-HH), as well as coordination of the medical research projects in the country. Informed consent for participants was waived by the medical research committee and the Institutional Review Board (IRB) affiliated with HMC. The data collection process fully adhered to the information governance policies of the Health Information Department at HMC. All study procedures and protocols were performed following the declaration for Helsinki.

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Clinical trial number

Not applicable.

Authors' contribution

All authors contributed equally to this work.

CRediT authorship contribution statement

Abdulrahman Alnabti: Supervision. **Salem Abujalala:** Writing – review & editing. **Mohammed Al-Hijji:** Writing – review & editing. **Khaled Othman:** Writing – review & editing. **Ihsan Rafie:** Writing – review & editing. **Jassim Al Suwaidi:** Writing – review & editing. **Huseyin C. Yalcin:** Writing – review & editing, Supervision. **Ruba Sulaiman:** Writing – review & editing. **Ahmed Seri:** Writing – review & editing. **Tahir Hamid:** Writing – review & editing.

Declaration of competing interest

All authors confirm the absence of any conflicts of interest, including affiliations with industry or associations with the funding for this work.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ijcard.2025.133029.

Data availability

The dataset supporting this article's conclusions is available in the Electronic Medical Record (Cerner) system at the Hamad Medical Corporation (HMC) repository, https://hamad.qa/EN/Pages/default.aspx. Access to this data will be provided upon reasonable request to the corresponding author, following the fulfillment of the Health Information Department's information governance requirements at HMC.

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