18th Gulf Heart Association Conference
November 12-14, 2026
OCEC, Muscat, Oman



POSTER PRESENTATION

PROGNOSTIC VALUE OF CMR VENTRICULAR FUNCTION IN AORTIC STENOSIS

With emphasis on right ventricular performance | Systematic review and meta-analysis

Ali Riahi · Ashkan Bahrami · Farzad Adelparvar · Zahra Sadin · Mohammad Sepehr Yazdani · Reza Eshraghi

Isfahan University of Medical Sciences, Isfahan, Iran | Presenting author: Dr. Mohammad Sepehr Yazdani

KEY MESSAGE

Lower CMR-derived RVEF was associated with higher mortality in aortic stenosis.

Associations were directionally consistent across small RV analyses; LV estimates were more heterogeneous.

BACKGROUND & OBJECTIVE

Risk assessment in aortic stenosis (AS) has traditionally emphasized the left ventricle. Chronic pressure overload may also affect the pulmonary circulation and right ventricle. CMR is the reference standard for ventricular volumes and ejection fraction.

OBJECTIVE

Quantify the prognostic associations of CMR-derived RV and LV function with clinical outcomes in AS.

METHODS

- Databases: MEDLINE, Embase and Web of Science through 1 April 2026.
- Population: adults with moderate or severe AS.
- Design: cohort studies reporting CMR ventricular function and clinical outcomes.
- Synthesis: adjusted hazard ratios (HRs), random-effects DerSimonian–Laird models; heterogeneity quantified using I^2, Q and τ^2.
- Sensitivity analyses: common-effect, Hartung–Knapp and leave-one-out models. Cohort overlap assessed to avoid double counting.

EVIDENCE BASE

23
Eligible cohorts
21 reports

3,733
Total patients
Across eligible studies

7
Contributing cohorts
Adjusted function estimates

1,873
Patients
Within these 7 cohorts

FOLLOW-UP

6.8–48.4 months
Among cohorts contributing adjusted estimates

RIGHT VENTRICULAR FINDINGS

1.14
All-cause mortality
HR (95% CI 1.07–1.21) per 5-pp RVEF decrease

1.24
Cardiovascular mortality
HR (95% CI 1.15–1.33) per 5-pp RVEF decrease

1.77
Death or HF hospitalization
Binary RV dysfunction: HR (95% CI 1.34–2.33)

PRIMARY POOLED OUTCOMES

Association	HR (95% CI)
RVEF → all-cause death	0.975 (0.963–0.987)
RVEF → CV death	0.958 (0.945–0.972)
RV dysfunction → death/HF	1.77 (1.34–2.33)
LVEF → all-cause death	0.975 (0.946–1.005)
LVEF → CV death	0.972 (0.950–0.995)

Continuous EF estimates are per 1-percentage-point increase.

INTERPRETATION

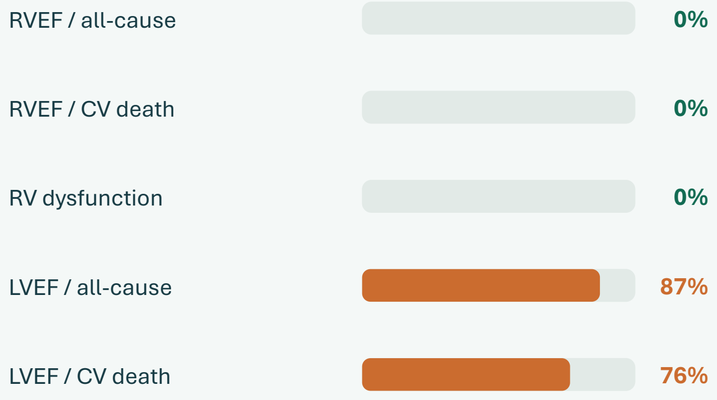
Higher RVEF was associated with a lower hazard of both all-cause and cardiovascular mortality. RV-dysfunction classification also identified patients with elevated risk of death or heart-failure hospitalization.

For RV outcomes, observed I^2 was 0%, but only two or three cohorts contributed to each meta-analysis.

RV VERSUS LV PROGNOSIS

Pooled adjusted associations differed in statistical stability. RVEF analyses showed I^2 = 0%, while continuous LVEF analyses showed substantial heterogeneity.

BETWEEN-STUDY HETEROGENEITY (I^2)



I^2 = 0% does not establish absence of heterogeneity.

ADDITIONAL FINDINGS

LVEF and cardiovascular mortality: HR 0.972 per 1% increase (95% CI 0.950–0.995; I^2 = 76%).

LVEF and all-cause mortality: HR 0.975 (95% CI 0.946–1.005; I^2 = 87%); not statistically significant.

RV global longitudinal strain, LV remodeling measures and 4D-flow markers were reported too sparsely to pool.

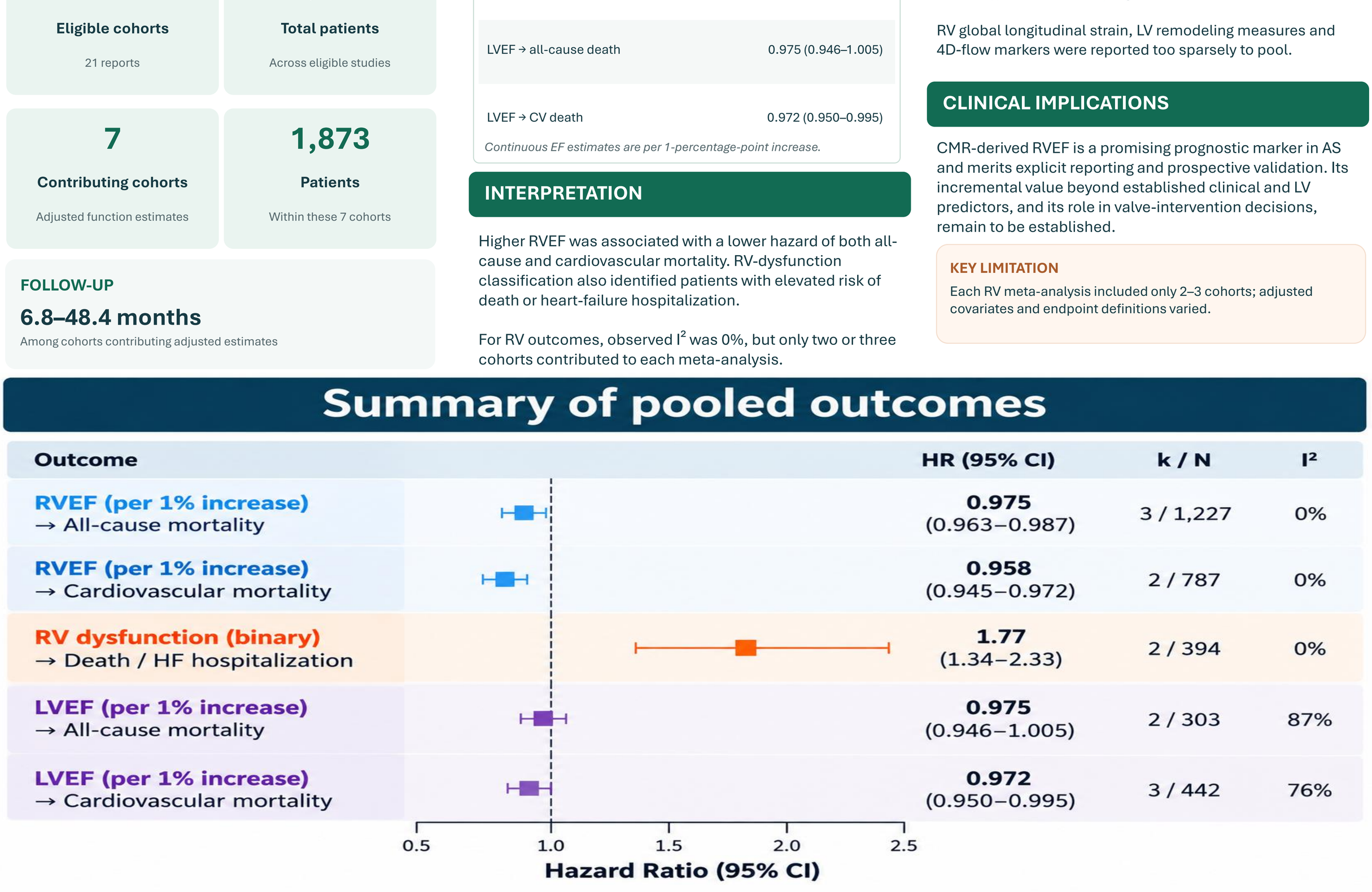
CLINICAL IMPLICATIONS

CMR-derived RVEF is a promising prognostic marker in AS and merits explicit reporting and prospective validation. Its incremental value beyond established clinical and LV predictors, and its role in valve-intervention decisions, remain to be established.

KEY LIMITATION

Each RV meta-analysis included only 2–3 cohorts; adjusted covariates and endpoint definitions varied.

Summary of pooled outcomes



HR < 1 indicates lower risk with higher ventricular ejection fraction; HR > 1 indicates increased risk with RV dysfunction.
Abbreviations: RVEF, right ventricular ejection fraction; LVEF, left ventricular ejection fraction; HF, heart failure; k, number of cohorts; N, total number of patients.