

# Hospitalised Mitral Regurgitation Patients in Italy: Analysis of Surgical and Transcatheter Repair Trends

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## BACKGROUND

Mitral Regurgitation (MR) condition represents a growing healthcare burden, particularly in the aged part of the population, with a growing prevalence due to increasing presence of predisposing conditions like hypertension, coronary artery disease, and heart failure. In Europe and the United States, MR is the second most common valve disease requiring surgical or transcatheter interventions, following aortic stenosis with an increasing prevalence, causing significant healthcare burden and impacting quality of life of the patients. Despite its clinical importance, real-world data on MR burden is limited.

## OBJECTIVES

This study aims to identify the number of hospitalised patients with MR and the surgical and transcatheter repair using real-world-data of Italy.

## METHODS

### Data sources

An observational retrospective study was conducted using the Hospital Discharge Records (SDO) for Italy (about 60 million inhabitants).

The SDO collects information about all hospital discharges (HD) from public and private hospitals of Italy. Each record contains, together with a patient specific anonymous code, patient's demographic (age, sex, residence) and clinical information, such as primary and up to five secondary diagnoses and procedures, classified with the International Classification of Diseases, 9th revision, Clinical Modification (ICD-9 CM) and Diagnosis-Related Group (DRG).

### Study population

Patients with a diagnosis of MR were identified by selecting all patients aged  $\geq 18$  years, discharged from the hospital between January 1, 2015, and December 31, 2018, with a primary diagnosis of Mitral Valve Disorders (ICD-9-CM: 424.0). Only the first hospitalization during this period was selected and defined as the "index event." Patients with prior hospitalizations for endocarditis, congenital or rheumatic diseases within the two years before the index event (baseline period) were excluded. To distinguish between MR aetiologies, patients with diagnoses of dilated or ischemic cardiomyopathy, angina pectoris, or coronary artery bypass graft (CABG) surgery, as well as those who underwent mitral or other heart surgeries during the baseline period or at the index event, were classified as having functional mitral regurgitation (FMR). All other cases were classified as degenerative mitral regurgitation (DMR).

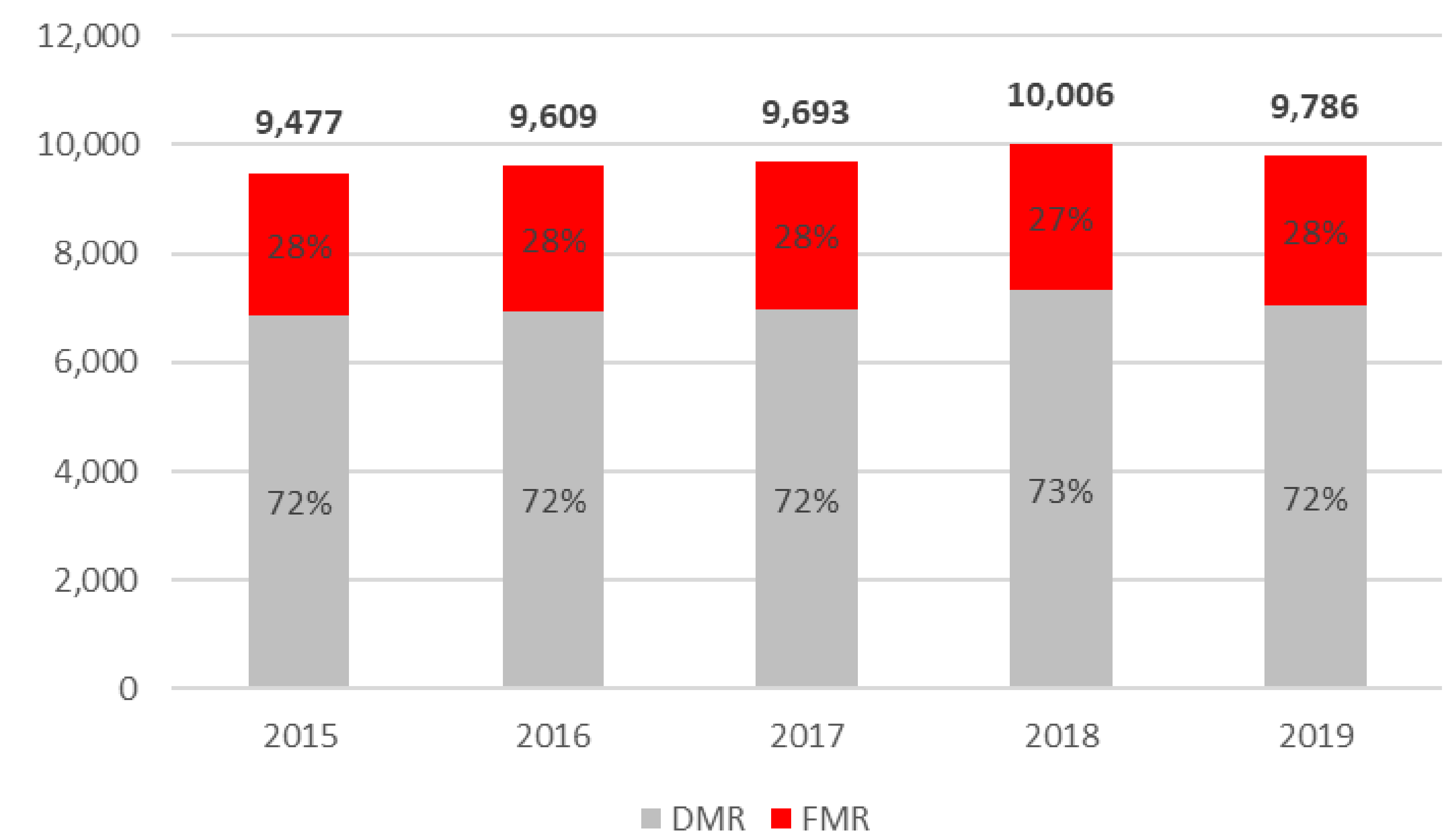
Patients were then followed for one year to calculate the annual proportion undergoing a repair procedure, either through surgical mitral valve repair (SMVr) or transcatheter mitral valve repair (TMVr).

## RESULTS

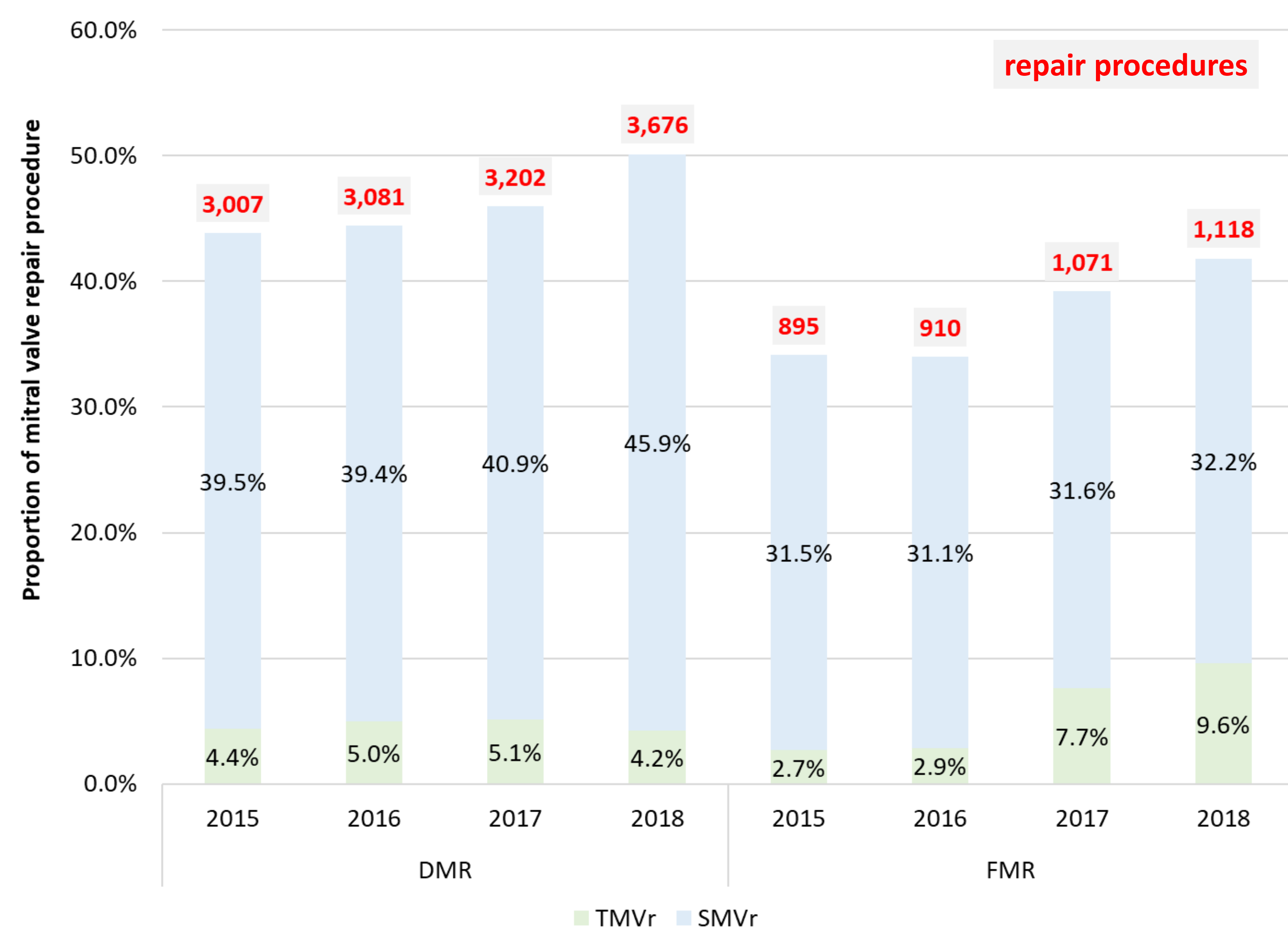
During the study period from 2015 to 2018, an increasing trend was observed in hospitalizations with a primary diagnosis of degenerative or functional MR, rising from 9,477 cases in 2015 to 10,006 in 2018. The distribution by etiology remained stable, with DMR representing 73% of cases and FMR accounting for 27%. The proportion of repair procedures also rose in both etiologies, increasing from 43.9% to 50.1% for DMR and from 34.1% to 41.8% for FMR. While the use of transcatheter mitral valve repair (TMVr) remained constant for DMR, it increased significantly for FMR, from 2.7% in 2015 to 9.6% in 2018.

In particular, in 2018, of the 10,006 patients met the study criteria, 7,333 (73.3%) had DMR, and 2,673 (26.7%) had FMR. MR was more prevalent among men, comprising 50.1% of DMR cases and 63.3% of FMR cases. The average age for DMR patients was 65 years, with 45% under the age of 65, while FMR patients were older, averaging 71 years, with 41% over the age of 75. In terms of treatment, 7,180 eligible patients, representing 71.8% of the cohort, received intervention. Among them, 4,794 patients, or 47.9%, underwent a repair procedure, with 88.2% receiving surgical mitral valve repair (SMVr) and 11.8% undergoing TMVr. Specifically, repair procedures were performed in 3,676 DMR patients (91.6% SMVr and 8.4% TMVr) and in 1,118 FMR patients (77.1% SMVr and 22.9% TMVr). Re-interventions were rare, occurring in 1.1% of SMVr patients and 0.5% of TMVr patients. Within the DMR group, the re-intervention rate was 0.9% (1.0% for SMVr and none for TMVr), while in the FMR group, the rate was 1.5% (1.6% for SMVr and 1.2% for TMVr).

**Figure 1: Trends in Hospitalized Patients with DMR and FMR. Italy 2015–2019**



**Figure 2: Proportion of patients undergoing mitral valve repair within 1 year by MR etiology, repair type and Index hospitalization year. Italy 2015-2018**



## CONCLUSIONS

To our knowledge, this study is the first real-world analysis in Italy to estimate the number of patients with DMR and FMR, highlighting the substantial need for MR treatment. The findings reveal an increasing trend in the adoption of TMVr, particularly among FMR patients. This rise in TMVr use may contribute to resource optimization, given the low rates of post-procedural re-interventions.

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