Abstract in English

Despite advances in acute myocardial infarction treatment, patients remain at high risk of death, recurrent cardiovascular events, and heart failure hospitalization. Introduced in Poland in 2017, the Coordinated Care Program after Myocardial Infarction (KOS-MI) integrates acute treatment, cardiac rehabilitation, assessment for device therapy, and 12 months of outpatient care. This dissertation aimed to evaluate the program's long-term outcomes, with particular emphasis on patients with heart failure with reduced ejection fraction (HFrEF) and the implementation of secondary prevention.

The dissertation comprises three publications based on retrospective and prospective observational analyses. The multicenter registry included 2084 patients hospitalized for myocardial infarction at four centers between November 1, 2017, and November 14, 2018. The final analysis included 1972 patients, of whom 963 participated in KOS-MI. Outcomes were assessed using Kaplan–Meier analysis, with propensity score matching (PSM) additionally used in comparative analyses. Major adverse cardiac and cerebrovascular events (MACCE) comprised all-cause death, recurrent myocardial infarction, repeat revascularization, and stroke; heart failure hospitalization was assessed separately.

Publication 1 evaluated 467 patients with HFrEF, defined as left ventricular ejection fraction (LVEF) ≤40%; 237 participated in the program. At three-year follow-up, participation was associated with lower hazards of MACCE (HR 0.43; 95% CI 0.31–0.60), death (HR 0.33; 95% CI 0.22–0.50), and heart failure hospitalization (HR 0.58; 95% CI 0.40–0.90). After PSM, involving 127 patient pairs, the mortality difference remained significant (HR 0.52; 95% CI 0.29–0.89; P=0.02).

Publication 2 included 331 program participants at a single center; 262 patients (79.2%) completed the 12-month program. In these patients, mean LDL cholesterol decreased from approximately 129.5 to 85.8 mg/dl at 12 months (P<0.001), although only 19.1% achieved LDL cholesterol <55 mg/dl. Mean LVEF increased from 48.3% to 56.1% at three months (P=0.001), with the greatest improvement in patients with baseline LVEF <30%. Among patients undergoing outpatient rehabilitation, exercise capacity increased from 6.7 to 8.5 METs (P<0.001).

Publication 3 extended follow-up of the entire registry to five years, with a median observation time of 5.6 years. After PSM, KOS-MI participation remained associated with lower hazards of death (HR 0.72; 95% CI 0.55–0.92; P=0.01) and MACCE (HR 0.70; 95% CI 0.57–0.86; P<0.001).

These findings indicate a favorable association between one year of coordinated care and long-term prognosis after myocardial infarction, including in patients with HFrEF. The low rate of LDL cholesterol target attainment highlights the need to optimize secondary prevention.

Keywords: myocardial infarction; coordinated care; KOS-MI; secondary prevention; cardiac rehabilitation; heart failure; long-term prognosis.