

# Factors influencing prognosis in acute coronary syndrome

– a report from the SWEDEHEART registry

Akademisk avhandling

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Avhandlingen baseras på följande arbeten:

1. Angerås O., Albertsson P., Karason K., Råmunddal T., Matejka G., James S., Lagerqvist B., Rosengren A., Omerovic E.  
*Evidence for obesity paradox in patients with acute coronary syndrome: a report from the Swedish Coronary Angiography and Angioplasty Registry*  
European Heart Journal 2013; 34: 345–353.
2. Bergström G., Redfors B., Angerås O., Dworeck C., Shao Y., Haraldsson I., Petursson P., Milicic D., Wedel H., Albertsson P., Råmunddal T., Rosengren A., Omerovic E.  
*Low socioeconomic status of a patient's residential area is associated with worse prognosis after acute myocardial infarction in Sweden*  
International Journal of Cardiology 2015; 182: 141-147
3. Redfors B., Angerås O., Råmunddal T., Dworeck C., Haraldsson I., Ioanes D., Petursson P., Libungan B., Odenstedt J., Stewart J., Lodin E., Wahlin M., Albertsson P., Matejka G., Omerovic E.  
*17-year trends in incidence and prognosis of cardiogenic shock in patients with acute myocardial infarction in western Sweden*  
International Journal of Cardiology; 185: 256–262
4. Angerås O., Haraldsson I., Redfors B., Fröbert O., Lagerqvist B., Petursson P., Albertsson P., Ioanes D., Odenstedt J., Olsson H., Witt N., Ruck A., Millgård J., Nilsson J., Persson J., Söderbom M., Erlinge D., James S., Råmunddal T., Omerovic E.  
*Impact of thrombus aspiration on mortality, stent thrombosis and stroke in patients with ST-elevation myocardial infarction: A report from the Swedish Coronary Angiography and Angioplasty Registry*  
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# Abstract

**Background:** Acute coronary syndrome (ACS) is one of the major causes of mortality in the world. The prognosis for patients with ACS is affected by several factors, such as baseline characteristics and treatment before, during and after hospitalisation.

**Aims:** To further elucidate the impact of body mass index (BMI), socioeconomic status (SES), cardiogenic shock (CS) and thrombus aspiration as adjunct to PCI using The Swedish Web-System for Enhancement and Development of Evidence-Based Care in Heart Disease Evaluated According to Recommended Therapies (SWEDEHEART). A secondary aim was to explore statistical methods on how to improve analyses in observational registries.

**Methods:** All papers used SWEDEHEART merged with the National Cause of Death Register, the National Patient Registry (Paper I) and data obtained from the Swedish Central Bureau of Statistics, which holds information about SES by postcode (Paper II). Multiple imputation was used to impute missing variables. Multivariate statistical models were fitted on both complete and imputed data. In Paper IV, instrumental variable analysis was used as the primary model to reduce bias due to unmeasured confounders.

**Results:** In Paper I, we found a U-shaped association between BMI and all-cause mortality. Patients with a BMI ~ 30 had the lowest risk of mortality. In Paper II, we found that SES was an independent risk factor for mortality, especially in the lowest SES tercile compared to patients in the highest. In Paper III, we observed a significant decrease in the incidence of AMI-induced CS and total mortality in patients with AMI, but CS-associated mortality increased during the study period. In Paper IV, instrumental variable analysis showed no association between thrombus aspiration and 30-day or 1-year mortality. However, a significant association was found between thrombus aspiration and a reduced risk of stent thrombosis, both at 30 days..

**Conclusion:** In this thesis, we have confirmed that obesity and high SES is associated with a better prognosis after ACS, that the prognosis for AMI-induced CS has not improved, despite evolution in treatments and the fact that thrombus aspiration is not associated with a reduction in mortality in patients with STEMI. Observational registries can be used to study epidemiological associations and to give randomised trials external validity.

**Keywords:** Acute coronary syndrome, acute myocardial infarction, risk factors, obesity paradox, socioeconomic status, cardiogenic shock, thrombus aspiration, SWEDEHEART, SCAAR, RIKS-HIA