

ORIGINAL INVESTIGATIONS

Trends in Acute Myocardial Infarction in Young Patients and Differences by Sex and Race, 2001 to 2010



Aakriti Gupta, MBBS,*† Yongfei Wang, MS,*‡ John A. Spertus, MD, MPH,§|| Mary Geda, MSN,* Nancy Lorenze, DNSc, MSN,* Chileshe Nkonde-Price, MD,‡¶# Gail D'Onofrio, MD, MS,** Judith H. Lichtman, PhD, MPH,*†† Harlan M. Krumholz, MD, SM*†††§§

ABSTRACT

BACKGROUND Various national campaigns launched in recent years have focused on young women with acute myocardial infarctions (AMIs). Contemporary longitudinal data about sex differences in clinical characteristics, hospitalization rates, length of stay (LOS), and mortality have not been examined.

OBJECTIVES This study sought to determine sex differences in clinical characteristics, hospitalization rates, LOS, and in-hospital mortality by age group and race among young patients with AMIs using a large national dataset of U.S. hospital discharges.

METHODS Using the National Inpatient Sample, clinical characteristics, AMI hospitalization rates, LOS, and in-hospital mortality were compared for patients with AMI across ages 30 to 54 years, dividing them into 5-year subgroups from 2001 to 2010, using survey data analysis techniques.

RESULTS A total of 230,684 hospitalizations were identified with principal discharge diagnoses of AMI in 30- to 54-year-old patients from Nationwide Inpatient Sample data, representing an estimated 1,129,949 hospitalizations in the United States from 2001 to 2010. No statistically significant declines in AMI hospitalization rates were observed in the age groups <55 years or stratified by sex. Prevalence of comorbidities was higher in women and increased among both sexes through the study period. Women had longer LOS and higher in-hospital mortality than men across all age groups. However, observed in-hospital mortality declined significantly for women from 2001 to 2010 (from 3.3% to 2.3%, relative change 30.5%; p for trend < 0.0001) but not for men (from 2% to 1.8%, relative change 8.6%; p for trend = 0.60).

CONCLUSIONS AMI hospitalization rates for young people have not declined over the past decade. Young women with AMIs have more comorbidity, longer LOS, and higher in-hospital mortality than young men, although their mortality rates are decreasing. (J Am Coll Cardiol 2014;64:337-45) © 2014 by the American College of Cardiology Foundation

From the *Center for Outcomes Research and Evaluation, Yale-New Haven Hospital, New Haven, Connecticut; †Department of Internal Medicine, Yale University School of Medicine, New Haven, Connecticut; ‡Section of Cardiovascular Medicine, Department of Internal Medicine, Yale University School of Medicine, New Haven, Connecticut; §St. Luke's Mid America Heart Institute, Kansas City, Missouri; ||University of Missouri-Kansas City, Kansas City, Missouri; ¶VA Center for Health Equity and Research Promotion, Philadelphia VA Medical Center, Philadelphia, Pennsylvania; #Robert Wood Johnson Foundation Clinical Scholars Program, Department of Internal Medicine, University of Pennsylvania, Philadelphia, Pennsylvania; **Department of Emergency Medicine, Yale University School of Medicine, New Haven, Connecticut; ††Department of Chronic Disease Epidemiology, Yale School of Public Health, New Haven, Connecticut; †††Robert Wood Johnson Foundation Clinical Scholars Program, Yale University School of Medicine, New Haven, Connecticut; and the §§Department of Health Policy and Management, Yale School of Public Health, New Haven, Connecticut. This work was supported by grant U01 HL105270-04 (Center for Cardiovascular Outcomes



**ABBREVIATIONS
AND ACRONYMS****AMI** = acute myocardial infarction**HCUP** = Healthcare Cost and Utilization Project**LOS** = length of stay**NIS** = Nationwide Inpatient Sample

Each year, more than 30,000 women younger than 55 years of age are hospitalized with acute myocardial infarction (AMI) in the United States alone (1). Growing public recognition of the importance of heart disease in young women in the late 1990s and early 2000s led to several national campaigns (2) and evidence-based guidelines with a focus on young women.

However, contemporary data about trends in clinical characteristics, hospitalization, and mortality rates of young patients with AMI are lacking. Moreover, patients younger than 55 years of age with AMIs have been historically examined collectively in prior studies, yielding little insight into the relationships of age and race with sex differences in the epidemiology of this disease within that group.

SEE PAGE 346

Accordingly, we studied sex differences in patient characteristics, hospitalization rates, and short-term outcomes among a national sample of patients 30 to 54 years of age with AMIs from 2001 through 2010. Specifically, we examined temporal trends with attention to subgroups of age and race. We used data from the Nationwide Inpatient Sample (NIS), a national all-payer administrative database, and U.S. census data to obtain a national perspective on recent trends. Then, we stratified secondary analyses by age, race, and sex subgroups in the 21 states that collected data on race during this time period.

METHODS

DATA SOURCES AND CODING. We obtained data from the Agency for Healthcare Research and Quality's Healthcare Cost and Utilization Project (HCUP) NIS files between 2001 and 2010. It is the largest all-payer inpatient database publicly available in the United States, comprising discharge data from more than 1,000 hospitals across 44 states. The database was designed to approximate a 20% stratified sample of U.S. community hospitals, representing more than 95% of the U.S. population (including urban and rural hospitals across all

geographic locations) (3). Statistical sampling weights provided by the NIS allow extrapolation to calculate expected hospitalization rates within the United States (4). The NIS includes all claims from each selected hospital regardless of payer or insurance status, because it is derived from state-mandated hospital discharge reports. We classified a hospital admission as AMI if the principal discharge diagnosis code was International Classification of Diseases-Ninth Revision-Clinical Modification 410.xx, excluding cases for which the last digit was 2 (410.x2), which does not indicate an acute event.

STUDY COHORT AND PATIENT CHARACTERISTICS.

From an initial sample of all discharges in the HCUP NIS from 2001 through 2010 (n = 79,171,880), we excluded the following hospitalizations: those with missing data on patient age, sex, length of stay (LOS), or in-hospital death (n = 278,653); discharges in which patients were <30 or >54 years of age (n = 58,687,675); discharges in which patients were admitted and discharged alive the same day (n = 474,676), as they may not reflect diagnoses of AMI; and discharges in which patients were admitted from other hospitals (n = 419,817) to avoid duplication of records, leaving a cohort of 19,311,059 discharges. Secondary analyses stratified by age, race, and sex subgroups were conducted in a subset of patients hospitalized in 21 states that reported complete data on patient race during this time period, leaving a cohort of 12,059,714 discharges. These states represent approximately 60% of the U.S. population and include approximately 60% of Caucasians and 60% of African Americans of the national population, which may not be representative of the entire country. However, an Agency for Healthcare Research and Quality study comparing the HCUP NIS database with the National Hospital Discharge Survey database showed that there were no significant differences in the discharge estimates for the white and black subgroups (5). Additionally, different states do not compare uniformly for inclusion criteria for the "other race" subgroup. We did not include the "other races" in our analyses, because they include many missing values and are very heterogeneous for comparison.

We examined subgroups of age by 5-year categories (30 to 34, 35 to 39, 40 to 44, 45 to 49, and

Research at Yale University) and grant R01 LH081153-06 (Variation in Recovery: Role of Gender on Outcomes of Young AMI Patients), both from the National Heart, Lung, and Blood Institute. Dr. Spertus has received research grants from Genentech and Eli Lilly and Company. Dr. Krumholz has a research agreement to share data with Johnson & Johnson; and is chair of a scientific advisory board of UnitedHealthcare. All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.

[Listen to this manuscript's audio summary by JACC Editor-in-Chief Dr. Valentin Fuster.](#)

[You can also listen to this issue's audio summary by JACC Editor-in-Chief Dr. Valentin Fuster.](#)

Manuscript received August 27, 2013; revised manuscript received March 29, 2014, accepted April 30, 2014.

Download English Version:

<https://daneshyari.com/en/article/2944432>

Download Persian Version:

<https://daneshyari.com/article/2944432>

[Daneshyari.com](https://daneshyari.com)