

Mortality Attributed to Myocardial Infarction in the Male and Female Population of Salvador, BA, between 1981 and 1996

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Objective – To describe according to gender the trend in mortality attributed to myocardial infarction (MI) in the population of Salvador, Bahia between 1981 and 1996.

Methods - This study was on mortality due to MI estimates by period and gender of the city of Salvador, Bahia. Data from 1981 to 1996 were stratified by quadrenia, and the percentage reduction in death rate due to MI relative to the preceding period (PPR) was determined. Comparisons between genders were expressed by the male/female death ratio (DR) based on the gender-related PPR.

Results – An overall increase of approximately 8% was observed in the death rate attributed to MI for the period 1985-1988 (89.2/10⁵ individuals / year) versus the period 1981-1984 (82.1/10⁵/ year). In the subsequent periods, overall reductions of 10% and 20.3% were observed for the periods 1989-1992 and 1993-1996, respectively. For men, the PPRs were 11.1 in the period 1989-1992 and 22.7% in the period 1993-1996. The PPRs in women were lower: 8.6% and 17.4% between 1989 and 1992, and 1993 and 1996, respectively. Death rate reduction was greater for men than women, then the male/female DR decreased from 1.66 in 1981-1984 to 1.35 in 1993-1996.

Conclusion – The results indicate a trend towards a reduction in the death rate attributed to myocardial infarction in the city of Salvador from the second half of the 1980s onwards, striking in men.

Keywords: trend, mortality, myocardial infarction, gender

Studies performed outside of Brazil have shown a persistent decline in mortality attributed to coronary artery disease over the last three decades¹⁻⁴. This phenomenon may, in part, be due to the reduction in the incidence of coronary artery disease believed to be related to behavior modifications (e.g., diet, smoking, physical activity) and to better control of hypertension. Another contributing factor lies in the increased survival of these patients, leading to a greater probability of death due to other causes.

Evidence exists that during the last few decades the introduction of new diagnostic and therapeutic resources has also contributed to a better prognosis for patients with coronary artery disease. It is important, however, to consider that sociodemographic factors are associated with the utilization of such new diagnostic and therapeutic advances. Recent studies demonstrate that men with acute myocardial infarction undergo more frequent and more precocious interventions compared with women⁵⁻⁷. It is therefore plausible that gender is related to different patterns in the temporal tendency towards mortality attributed to acute myocardial infarction.

Despite the availability of pertinent specific information, analyses of the evolution of mortality due to coronary artery disease are still scanty in Brazil. Lolio et al⁸ suggest that in Salvador mortality due to ischemic heart disease remained stable between 1979 and 1989 in men and in women aged 35 to 64 years. Yet, these authors did not evaluate the specific evolution of mortality attributed to acute myocardial infarction. Furthermore, the 10-year period of this evaluation preceded the use of thrombolytic therapy and primary angioplasty, which have become ever more commonly used since then. The present study aims to describe the evolution of mortality due to acute myocardial infarction in both genders in the city of Salvador, BA, between 1989 and 1996.

Methods

Data relative to the annual frequency of deaths attributed to acute myocardial infarction (CID 410) in the city of Salvador between 1981 and 1996 were obtained via the

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DATA SUS System of the Ministry of Health and supplemented by technical reports from the Health Information Center (CIS) of the Department of Health of the State of Bahia (SESAB) relative to the years 1994-1996⁹. Only data referring to death of individuals over 30 years of age were considered. Deaths attributed to acute myocardial infarction were 4,265 for male and 3,530 for female individuals. Population data for individuals over 30 years of age obtained from statistical annals from IBGE¹⁰ for the city of Salvador were used for calculations of gender coefficients.

Four periods (1981-1984, 1985-1988, 1989-1992 and 1993-1996) were selected for analysis. For each period from 1985-1988 on, the percent reduction relative to total and gender-specific acute myocardial infarction mortality in the preceding period was determined. Comparisons between the decline in mortality by gender for each period are expressed by death ratios (DR).

Results

Increased mortality due to acute myocardial infarction was observed in the period between 1985 and 1988 in relation to the period between 1981-1984 (89.2/10⁵ individuals/years vs 82.1/10⁵ individuals/years, respectively). This initial tendency towards increased mortality was not observed in the following periods. The reduction was 10% for 1989-1992 (relative to 1985-1988) and of 20.3% for 1993-1996 (relative to 1989-1992) (table I).

Table II presents mortality data attributed to acute myocardial infarction per 100,000 inhabitants according to gender over 4 year periods. Although the tendency toward a decline in mortality attributed to acute myocardial infarction over the years occurs in both sexes, the percent reduction over the years occurs in both sexes, the percent reduction was greater in males than females (fig. 1). As a result, the death ratio (males vs females) is gradually falling, indicating

that mortality in men is showing a tendency toward declining to the level of that occurring in women.

Discussion

Our findings indicate that a gradual reduction in mortality attributed to acute myocardial infarction has been occurring since the second half of the 1980s. This tendency could possibly be part of the same phenomenon observed since the 1970s in European and North American countries.

The data obtained also indicate that the decline in mortality attributed to acute myocardial infarction is more pronounced in men than in women. Although the present analysis was conducted over a relatively short period, our findings agree with those of Gillium⁴. By analyzing population data from the *Centers for Disease Control and Prevention, National Center for Health Statistics* of the United States, Gillium showed that over the last decade the reduction in mortality due to ischemic heart disease was greater in men than in women.

The possible reasons for this difference have not been directly examined in the present study. One potential explanation may be the differences between men and women relative to the control of coronary risk factors over time. Another possible explanation is the lower use of diagnostic and therapeutic interventions in women with established coronary atherosclerosis a finding observed in other studies^{5,7,12,13}.

The less favorable prognosis for women with acute myocardial infarction has been described in recent studies^{14,15}. Similar findings were observed in hospitals in the city of Salvador^{16,17}. Different patterns of temporal tendencies in the

Period	Deaths	Population	Mortality	PPR (%)
81-84	1.619	1.970.696	82.154	-
85-88	1.997	2.238.719	89.203	no reduction
89-92	2.165	2.697.619	80.256	10.0%
93-96	2.014	3.149.729	63.942	20.3%

PPR - percent reduction relative to preceding time period.

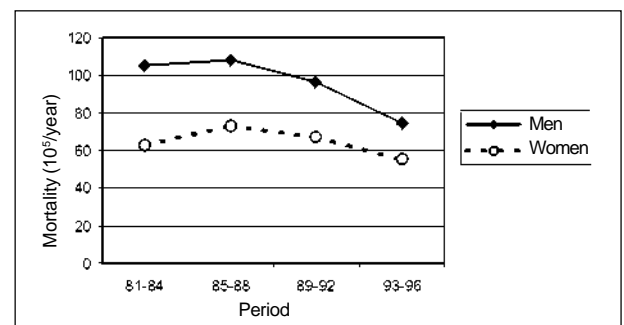


Fig. 1 - Mortality per 100,000 inhabitants, attributed to acute myocardial infarction according to time period (1981-1996) and sex.

Period	Deaths	Masculine Population	Mortality	PPR	Deaths	Feminine Population	Mortality	DR	
								Mortality	PPR
81-84	938	892.527	105.095	-	681	1.078.169	63.163	-	-
85-88	1.099	1.013.915	108.392	no reduction	898	1.224.804	73.318	no reduction	no reduction
89-92	1.173	1.216.681	96.409	11.1%	992	1.480.938	66.985	8.6%	8.6%
93-96	1.055	1.415.666	74.523	22.7%	959	1.734.063	55.304	17.4%	17.4%

PPR- percent reduction relative to the preceding period; DR- death ratio (males vs females); no red- no reduction.

acute myocardial infarction mortality in both sexes can also be explained by a more marked reduction in death due to this condition in men versus women. This possibility is based on evidence that new forms of diagnostic and therapeutic interventions have been utilized to a greater extent in men compared with women^{5,7,12,13}. It is important to note that the prognosis of acute myocardial infarction in women is worse than in men.

In conclusion, this study demonstrates a tendency towards reduction in mortality attributed to acute myocardial infarction in the city of Salvador from the second half of the 1980s onward. This reduction has been more pronounced in men than in women, rendering greater mortality in men ever closer to the lower mortality in women. The reasons for the differing temporal tendencies between the sexes are not clear, and so they remain an important subject for future investigations.

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