

1 **CARDIOVASCULAR DISEASE IN ITALY: GOOD NEWS, BAD NEWS, AND INTERESTING NEWS**

2 **Short title:** CVD in Italy

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25 **Abstract**

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28 **Main text**

29 In this issue of the *European Journal of Preventive Cardiology*, Cortesi et al.¹ provide a
30 comprehensive overview of the evolution of cardiovascular disease (CVD) prevalence in Italy
31 during the last 27 years. Using the information collected from the global Burden of Disease
32 database and a similar methodology, they report incidence, mortality and disease-adjusted life-
33 years (DALY)-related data for a large panel of cardiovascular diseases. For each gender and age
34 group, the authors also provide the effect of a variety of risk factors for each type of CVD. There
35 are good news, bad news, and important news.

36 There are three good news. First, both age-standardized mortality and CVD-related DALY
37 rates have been halved during the last 27 years. Second, age-standardized prevalence of CVD
38 declined by 13%. This decrease benefitted both genders and was namely due to a decrease in stroke
39 (-32%) and rheumatic heart diseases (-28%). Conversely, the prevalence of other CVDs decreased
40 in women but remained stable in men. The decrease in mortality and DALY rates could be due to
41 both the improvement in primary prevention such as changes in food manufacturing ², and the
42 availability of effective therapeutic strategies such as shorter intervention times, improved
43 revascularization techniques ³, or more potent drugs or drug combinations ⁴. Third, the fraction of
44 CVD attributable to smoking decreased, a finding in line with the small but significant decrease of
45 tobacco smoking among Italian adults ⁵.

46 There are three bad news. First, despite the decrease in mortality and prevalence rates, the
47 total number of subjects living with CVD actually increased by over 1.5 million, from 5.75 million
48 in 1990 to 7.49 million in 2017. How can this occur? The authors put forward several explanations,
49 namely an increased survival after a CVD, the aging of the population, and to a lesser degree the
50 increase in the overall population. Second, CVD still ranks first in the causes of death in Italy,
51 representing over one third of all deaths. The health and economic toll of CVD is also high,
52 representing one out of seven hospitalizations and amounting to over €3 billion in medicines. Third,
53 despite a higher mortality rate among men and a 15-year gap regarding CVD-associated DALYs
54 increase (occurring after 40 years in men and 55 years in women), women paid the highest tribute
55 to CVD, with 120.6 thousand deaths in 2017, versus 96 thousand for men. More than ever, CVD
56 prevention should consider both genders equally, and dedicate to women the same attention and
57 care than men ⁶.

58 There are three important news. First, peripheral artery disease (PAD) was the most
59 prevalent CVD, shortly followed by ischemic heart disease. The large burden of PAD could be
60 related to the increasing prevalence of obesity and diabetes, and possibly to the non-decrease of
61 tobacco smoking in women. PAD is a major risk factor for other CVD events ⁷ and for limb
62 complications ending in revascularization or amputation ⁸. Given the increasing prevalence of
63 diabetes and obesity, adequate screening and management of PAD will become more and more
64 important in the future. Second, hypertension and dietary intake were the most common risk factors
65 associated with CVD. Hypertension is prevalent in the general population and increases with age;
66 importantly, management of hypertension is far from optimal, with four to over five out of ten
67 treated patients not achieving control ⁹. Adequate management of blood pressure levels is thus
68 paramount to curb CVD. A healthy diet can significantly decrease CVD risk factors to a magnitude
69 close of drugs ¹⁰ and should be systematically proposed to patients at risk. Still, many people fail
70 to adopt a healthy diet, mainly due to its cost. Third, novel risk factors such as air pollution and
71 impaired kidney function showed a higher or similar impact on some CVD types than classical risk
72 factors such as tobacco smoking or high LDL cholesterol. While impaired kidney function can be
73 assessed at the office, the assessment of exposure to air pollution or other environmental factors at
74 the individual level still poses a challenge.

75 Overall, the paper by Cortesi et al. provides three major findings for the future of CVD
76 prevention and management in Italy and elsewhere. First, the increase in the number of patients
77 living with CVD raises the question of their adequate management to prevent relapse, decreased
78 quality of life and increased health and financial costs. Second, population-wide and individual
79 interventions should go hand-to-hand to curb CVD. At the population level, by maintaining and
80 improving policies towards a healthier lifestyle and environment; at the individual level, doctors
81 should give more attention to women, while patients should adopt a healthier lifestyle and share
82 decisions regarding their treatments. Third, new risk factors are progressively taking over the
83 previous ones, and research on their assessment and management should be prioritized.

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