Editorial

World Heart Day: Education is the key

The rising burden of cardiovascular disease (CVD) mortality in developing countries is a firm acquisition in world health statistics, and a new challenge for these populations.

Males age-standardized CVD death rates far above 350 per 100000 were reported for virtually every country in Africa, Asia, and Eastern Europe in 2008, with peaks of 859 in Kazakistan, 772 in Ukraine, and 709 in Armenia. Latin America showed a slightly better situation, with mortality rates between 200 and 300 per 100000 males, while the western world uniformly got lower figures, always under 200 per 100000¹. The CVD death rate of Indian males was 386/100000, the death rate of women was 283/100000¹.

This phenomenon may be partly related to improved survival and more complete medical coverage in lower middle and low income countries, apart from the composite influence of behaviour changes typical of rural human groups that become urbanized: sedentarism, excess food intake and smoking habits similar to those of urban populations. It is well known that populations with original low CVD prevalence which move to metropolitan areas with higher incidence of CVD face an increased risk profile in time²⁻⁴.

Accordingly, it appears that behavioural factors play a major role in the pathophysiology of CVD. Though starting from a good position in world ranking, Italy has seen a significant fall in CVD death rate from 1980 to 2000. As an example, age-adjusted mortality rate of coronary heart disease (CHD) in men aged 25 to 84 yr was 2.7/1000 in 1980 and decreased to 1.4/1000 in 2000⁵. Approximately 55 per cent of this surprising change has been explained with measured modifications in risk factors in the same time frame, using the IMPACT mortality model, a comprehensive resource that incorporates both risk factors and medical/surgical treatments specific for the disease⁵. In detail, a mean observed 5 mmHg decrease in systolic blood pressure was estimated to have prevented 25 per cent CHD deaths, a mean 0.35 mmol/l decrease in total cholesterol theoretically accounted for 23 per cent fewer deaths, and a 4 per cent reduction in smoking prevalence was thought to translate in a 4 per cent lower mortality rate.

Since January 2005 a smoking ban was made effective in all Italian indoor public places, including cafeterias, restaurants, shops, discos. Smoking had already been prohibited in hospitals, public administration offices, schools, cinemas and public transportation for years. A recent investigation⁶ has highlighted a 4 per cent reduction in hospital admissions for acute coronary syndrome across the country after the smoking ban. The decrease was statistically significant and consistent for both men and women aged 70 yr or less, while no change was seen among people over 70 yr.

The 2011 World Heart Day, to be celebrated on September 29, has been given a focus on family relationships as a "perfect place to start taking action to improve heart health". Indeed, the whole perspective underlying the theme would be: let us make a global effort to disseminate information about what to do to prevent CVD, up to the interpersonal, family level.

Starting a dialogue, a convincing dialogue, and maintaining it in time is the mainstay of a strong and successful action in every field of social life. We all should agree that free personal and communitarian beliefs on one side and legislative restrictions on the

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other are the two poles that move the society. The two poles complement one another, and wherever human dignity is given special value, conscious and free choices to benefit the common good are to be pursued, instead of law prohibitions or obligations.

In the recent history of medicine there is a couple of enlightening examples about the magnitude of behavioural changes that can be obtained through motivational efforts: it is about the sharp decline in HIV prevalence in Uganda and Zimbabwe. In the case of Uganda, HIV positivity surprisingly decreased from 15 to 5 per cent between 1991 and 20017. This result was surely promoted by information campaigns from both the government and non-governmental organizations that hinged more strongly on habit modification than on risk reduction (i.e. condom use). Actually, in the same period the proportion of young males reporting premarital sex decreased from 60 to 23 per cent, and that of girls decreased from 53 to 16 per cent. In the male population, 41 per cent declared more than one sexual partner in 1989 while only 21 per cent did so in 1995, and the percentage of males using condoms with some regularity rose from 6 per cent in 1995 to 11 per cent in 2000. In neighbouring countries sexual behaviour was not addressed first, and plans to fight the HIV epidemics largely spent on protection during sexual intercourse. Accordingly, condom use was found to be much higher in Kenya, Tanzania and Zambia than in Uganda in the same years, but this did not achieve comparable results in terms of infection control.

In Zimbabwe, HIV prevalence increased rapidly in the last decade of the century before reaching a plateau with an estimated 29 per cent adult prevalence in 1997 and declined gradually thereafter. Between 1999 and 2003 the pace of decline accelerated considerably, down to 16 per cent in 2008⁸. Zimbabwe actually stands out in Southern Africa, a region that has been and continues to be an "hyper-endemic" setting. One comprehensive analysis of this phenomenon was carried out in a national conference held in 2008, where government members joined with representatives of civil society and international organizations. Besides the high mortality rate in the population, the single factor most likely responsible for the unexpected outcome was awareness and education efforts coming from prevention programme and the Churches, that were able to produce a significant reduction in casual, multi-partner sex⁸.

The lesson emerging from these facts is that the best response to a big medical problem may not be

medical, but rather social in origin. Motivational actions open to all actors without ideological barriers, based on completeness of information and stimulating respect for human dignity may be the key for success.

Coming back to cardiovascular disease, a noteworthy epidemiological issue is the relation between educational background and risk factors. A graded inverse association was repeatedly noted of higher blood pressure levels and higher percentages of obesity and cigarette smoking among different education levels, that correlated with higher CHD mortality rates in lower education groups9. In a longitudinal American study published in 1986 a significant improvement in risk factors profile and a decline in the incidence of acute myocardial infarction were noted to occur more consistently in people with higher education and socioeconomic status¹⁰. In the Stanford Five-City Project the citizens of two American towns received a five year, low cost programme of social information on CVD risk factors¹¹. This resulted in a remarkable 13 per cent reduction in smoking rate, a 4 per cent reduction in blood pressure and a 16 per cent reduction in composite CHD risk scores in a cohort sample.

These investigational studies evidently reinforce the conclusion that improving understanding of risk factors, motivating people and supporting behavioural changes through personal education is the key of a successful action for a healthier world and a mission for all of us who have a role in medicine.

In the background, however, lies the wider theme of improving educational levels in populations with lower socio-economic status. Only persons able to gauge the reasons of the warnings they receive about their health may be ready to act responsibly on their lifestyle. The more successful developing countries will be in providing a widespread better schooling standard, the more successful they will be in decreasing the burden of CVD mortality.

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References

WHO Global Health Observatory Data Repository, Available from: http://apps.who.int/ghodata/?vid=2510, accessed on August 13, 2011.

- 2. Robertson TL, Kato H, Gordon T, Kagan A, Rhoads GG, Land CE, *et al*. Epidemiologic studies of coronary heart disease and stroke in Japanese men living in Japan, Hawaii and California. Coronary heart disease risk factors. *Am J Cardiol* 1977; *39* : 244-9.
- Robertson TL, Kato H, Rhoads GG, Kagan A, Marmot M, Syme SL, *et al.* Epidemiologic studies of coronary heart disease and stroke in Japanese men living in Japan, Hawaii and California. Incidence of myocardial infarction and death from coronary heart disease. *Am J Cardiol* 1977; 39: 239-43.
- 4. Miranda JJ, Gilman RH, Smeeth L. Differences in cardiovascular risk factors in rural, urban and rural-to-urban migrants in Peru. *Heart* 2011; *97* : 787-96.
- Palmieri L, Bennett K, Giampaoli S, Capewell S. Explaining the decrease in coronary heart disease mortality in Italy between 1980 and 2000. *Am J Public Health* 2009; 99 : 1-9.
- Barone-Adesi F, Gasparrini A, Vizzini L, Merletti F, Richiardi L, Effects of Italian smoking regulation on rates of hospital admission for acute coronary events: a country-wide study. *PLoS ONE* 2011; 6: e17419.

- Stoneburner RL, Low-Beer D. Population-level HIV declines and behavioural risk avoidance in Uganda. *Science* 2004; *304* : 714-8.
- Halperin DT, Mugurungi O, Hallett TB, Muchini B, Campbell B, Maqure T, *et al.* A surprising prevention success: why did the HIV epidemic decline in Zimbabwe? *PLoS Med* 2011; 8 : e1000414.
- Liu K, Cedres LB, Stamler J, Dyer A, Stamler R, Nanas S, *et al.* Relationship of education to major risk factors and death from coronary heart disease, cardiovascular disease and all causes. Findings of three Chicago epidemiologic studies. *Circulation* 1982; *66* : 1308-14.
- Colbourn AW. The decline in coronary heart disease mortality: the DuPont experience. *Del Med J* 1986; 58 : 351-60.
- Farquhar JW, Fortmann SP, Flora JA, Taylor CB, Hastkell WL, Williams PT, *et al.* Effects of community-wide education on cardiovascular disease risk factors. The Stanford Five City Project. *JAMA* 1990; *264* : 359-65.