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Does a gender medicine approach contribute to reduce inequalities and costs in the management of chronic non communicable diseases?

Gender Medicine focuses on the impact of the gender on human physiology, patho-physiology and clinical features of diseases. The concept of *Gender* refers to a complex interrelation and integration of sex – as a biological and functional marker of the human body – and psychological and cultural behaviour (due to ethnical, social and religious background). Human health is strictly correlated to these two fundamental constituents of the gender. While the effect of sex, age and cultural behaviour on the health of both women and men has been widely studied, attention to the impact of the gender differences on the patho-physiology and, therefore, on the management of the most common social diseases such as the group of chronic *Non Communicable Diseases (NCD*) (e.g. cardiovascular, diabetes, obesity, chronic obstructive pulmonary diseases and some tumors) and the group of Brain Disorders (BD) (e.g. dementias, depression, anxiety and mood disorders, to list a few) is both needed and lacking. Years ago a "*gender challenge*" has been launched by WHO to nations and international organizations. The call was for: a better appreciation of risk factors involving women's health; the development of preventive strategies to lessen the impact of diseases that disproportionately plague older women (e.g., coronary heart disease, osteoporosis and dementia); an increased emphasis on understanding why men die sooner than women (*World Health Organization, 1998, The World Health Report 1998, Geneva).* With the claim **"***Stop the global epidemic non communicable disease"* the WHO was launching its strategic "*2008-2013 Action Plan for the Global Strategy for the Prevention and Control of non-communicable Diseases"* drawn up by the Secretariat as requested by the Health Assembly in resolution WHA60.23. The *aim* was to work in partnership to prevent and control the 4 non-communicable diseases - *cardiovascular diseases, diabetes, cancers and chronic respiratory diseases* and the 4 shared risk factors - *tobacco use, physical inactivity, unhealthy diets and the harmful use of alcohol.* Unfortunately WHO is missing the fifth common risk: the indoor and outdoor pollution! The increase of urbanization channels the five risk factors in an even more explosive melting pot of injury to the human health. Major NCDs are responsible for 85% of the deaths and 70% of the burden of disease in Europe *(Atherosclerosis Supplements 2009; 10: 1-30).* BD are responsible for around 15,8 million DALYs (*26,6% of global DALYs*) aged > 15 age: *7*,3 million for men (*23,4% of the global DALYs*), 8,5 million for women (*30,1% of the global DALYs*) in Europe alone. The economic burden (direct and indirect costs) of BDs in Europe of € 798 billion/year exceeds the € 200 billion spent to manage cardiovascular disease and the 150 billion spent on cancer management *(Eur Neuropsychopharmacology 2011, 21 (10): 718-79)*. With the ongoing trend, in 10 years from now (2010) in the 27 countries of the EU, the yearly economic burden of cardiovascular Diseases (CVD) could reach ***€ 250 billion*** (more than ***€ 30 billion*** in Italy). On the other side in 10 years 20 million EU citizens would prematurely die for CD (around 2.4 million in Italy: *1.3 million women and 1.1 million men*): that are known to be preventable. National Health Systems within the EU countries have different epidemiological scenarios and use different policy programs in managing the NCD. Those dissimilarities produce *inequalities* in the management and in the outcomes in term of mortality and morbility among and within, countries. Death rates from CVD have been falling over the past 15 years in some European countries (*Atherosclerosis Supp 2009; 10 (1): 1-30*) as in US *(NEJM 2007; 356: 2388-98),* but the annual incidence of the morbility, is still increasing in all countries, in different rate among them. Compliance to medical prescription is not the same in the European countries. It is understandable that the lack of knowledge on, and attention to, the impact of the gender differences on the patho-physiology and, therefore, on the management of the most common social diseases produces further inequalities between women and men health status in the countries. The ultimate result is a dramatic and unbearable failure of the investment on health in the communities. Since decades, with an explosive increase in the last years, gender medicine became a hot topic in medical studies and debates, however a radical change of course is still questionable. An increased attention to *gender medicine* as a transversal approach among health providers and as an accepted methodological tool in reducing inequalities among citizens and countries, could contribute to tackle the NCDs and BDs in a more cost/effective way. The *dramatic increases in life expectancy* have led, in a different way, men and women, to an extensive aging that is changing the pattern of leading causes of deaths from infectious and acute diseases to the chronic and degenerative diseases of the late age. Adopting a pessimistic attitude, some people believe that there is nothing that can be done, anyway. In reality, the major causes of chronic diseases are known and if these risk factors were eliminated, at least 80% of all heart disease, stroke and type 2 diabetes would be prevented; over 40% of cancer would be prevented. Each year at least: 4.9 million people die as a result of tobacco use; 2.6 million people die as a result of being overweight or obese; 4.4 million people die as a result of raised total cholesterol levels; 7.1

million people die as a result of raised blood pressure. In the *World Alzheimer Report 2010, Alzheimer's Disease International*. *The Global Economic Impact of Dementia* reprinted in 2011 it was estimated that 35.6 million people living with dementia worldwide in 2010. This is expected to increase to 65.7 million by 2030 and 115.4 million by 2050. Nearly two-thirds live in low and middle income countries, where the sharpest increases in numbers may occur. These costs account for around 1% of the world's gross domestic product, varying from 0.24% in low income countries, to 0.35% in low middle income countries, 0.50% in high middle income countries, and 1.24% in high income countries. Women are contributing more than men both in the disability toll of dementia and in the care giving to the patients. Health protection in the communities can receive undoubtedly benefits from a better understanding and better management of NCD/DD both in women and men. Precise explanations of the gender differences in life expectancy still elude scientists because of the apparent complex interplay of biological, social and behavioural conditions. In order to win this exciting new battle for better health, the scientific community needs to develop a *multidisciplinary* approach integrating different competences and players such as physicians, researchers and experts in economics, clinical governance, communications, regulatory issues, health organization, health insurers, education and training, and many sectors of industry. Countries have a legal, moral and economic obligation to achieve the highest standard of health care for citizens, women and men, from the youth to the advanced age and to improve national health care systems accordingly. The *economic future* of a country is even more linked to the health of citizens, both because of the increasing costs of national health system and because of the productivity losses due to increasing disabilities. There is indeed a close link between health deficiencies, political containment and inequitable access to resources. It is the time to change over from the concept of *cost* to the one of *investment* for health. Because the health protection is a cost/effective tool to save money in the society.

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