



Editorial

Excess of dyslipidemia in low income countries: The case of Colombia in the PURE study

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Education and socioeconomic status have been advocated as important factors in causing higher cardiovascular (CV) risk and a larger prevalence of CV risk factors in the population [1]. The World Health Organization (WHO) declared that more than 75% of all CV deaths occur in low-income and middle-income countries [2]. There are several potential reasons for this: 1) limited availability of national healthcare systems' programs for prompt detection and treatment of major CV risk factors; 2) economic and logistic difficulties to access to health care services; 3) low cultural level leading to poor awareness of CV diseases and socio-economic disparities promoting insufficient care in the low strata of the population. Moreover, poor people in low- and middle-income Countries are affected by CV diseases in their most productive age, with consequent inability to work and further exacerbation of poverty and inadequate CV prevention.

Most of CV diseases can be prevented by controlling major CV risk factors. Among these, dyslipidemia is one of the most important, considering that high total cholesterol is a major cause of CV disease burden in both developed and developing countries (Fig. 1). It has been reported that about one third of ischemic heart disease is related to high cholesterol levels. In 2008, the global prevalence of dyslipidemia among adults was 39% (37% for males and 40% for females) with relevant regional differences: 54% in Europe, 48% in America, 29% in South East Asian and

22.6% in Africa [2]. Even if the prevalence of dyslipidemia may this appear related to high income level of the countries, it has been surprisingly reported that atherogenic dyslipidemia, a clinical condition characterized by high levels of triglycerides (TG) and low density lipoprotein cholesterol (non HDL-C) associated with low levels of high density lipoprotein cholesterol (HDL-C), is highly prevalent in Latin American countries and other low income regions.

Various clinical studies have been designed to estimate the impact of the different CV risk factors on health outcomes at both individual and population levels. In this regard, the PURE study (Prospective Urban Rural Epidemiology Study) [2] included a large population of adults aged between 35 and 70 years from different communities who were living in low-, middle-, and high-income regions from 18 countries across the world, thus representing various levels of development and socio-cultural diversity, over a median follow-up of 7,4 years. The study investigated the relationship between societal determinants (nutrition policy, environmental factors, psychosocial, socioeconomic factors) and prevalence of risk factors and disease outcomes. Additional aim was to evaluate the quality of health systems across a diverse range of health resource settings, and its impact on health outcomes. This study has relevant clinical implications, especially for those CV diseases which are responsible for the 80% of the burden in low-income and middle-income countries [3].

In this issue of the Internal Journal of Cardiology, a novel analysis from the PURE study (*reference to be added, when available*), reported data on prevalence and distribution of dyslipidemia in Colombia, a middle-income country where above normal cholesterol level is a very common factor associated to CV deaths. Data derived from 6630 subjects (mean age 50.7 years, 35.9% males) living in the four Colombian regions represented the national cohort of the PURE study. The analysis described an astonishing prevalence of dyslipidemia of 87.7%, substantially higher among rural residents (50.7% of the dyslipidemic population) and in those individuals with lower income (66.4% of the dyslipidemic population) compared to other regions or groups. Furthermore, there was a very high proportion of dyslipidemia in individuals with no or low education level (66.8%) compared to those with middle/higher education (33.2%), and this might be explained by the healthier behaviors and a higher awareness of the importance of lifestyle measures and of drugs preventing CV diseases.

Education is an important issue for enhancing health and promotes healthy lifestyles and low educational status is often associated with low personal income and low social-economic condition.

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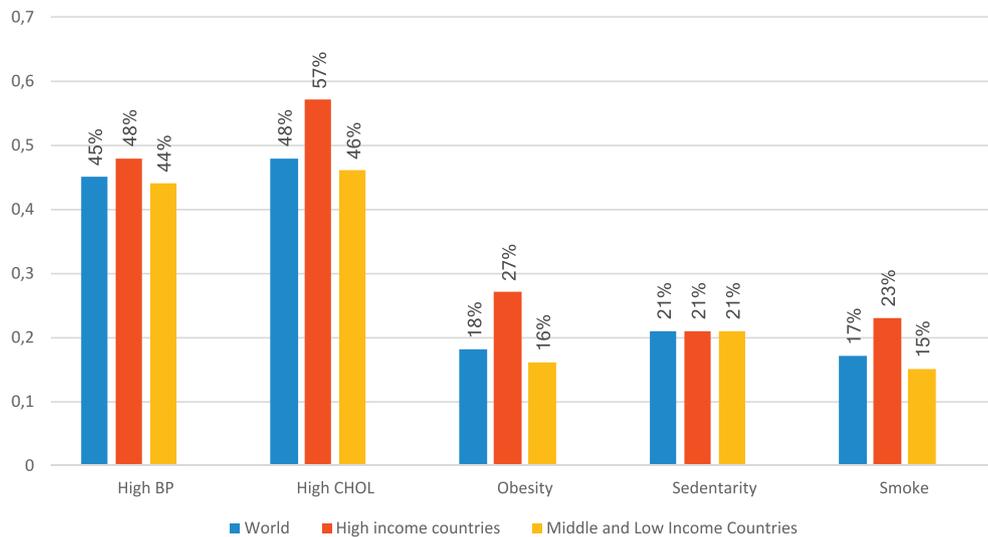


Fig. 1. Contribution of modifiable cardiovascular risk factors to ischemic heart disease. Derived from reference num. [9].

Rural resident showed higher proportion of dyslipidemia and this could be explained by differences in diet [4], reduced capacity to afford medical treatment, particularly statins, and logistic difficulties [5]. It would be also interesting to investigate whether a chronic inflammatory status [6] linked to comorbidities (air pollution, chronic obstructive pulmonary disease, dental disease, rheumatic disease, etc.) may play a role.

The research confirmed the results obtained from a systematic analysis of national health surveys and regional cohort studies [7], showing a high prevalence of atherogenic dyslipidemia in Latin American countries which could be related to both genetic predisposition and epigenetic changes promoted by environmental influences. The interaction between lifestyle, environmental and genetic factors is probably the cause of the high prevalence of dyslipidemia in Colombia as in various Latin American regions and in other low-income countries.

Further population studies are needed to assess the size of the problem and identify potential strategies such as the factors contributing to high prevalence of abnormal cholesterol levels, and national campaign with the aim to reach and to help disadvantaged individuals in order to reduce their gap in terms to CV prevention and management [8].

Conflict of interest

The authors report no conflict of interest.

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