

Mortality and Tobacco Consumption: the Population Attributable Fraction Method as a Tool to Estimate Damage

Mortalidad y consumo de tabaco: el método del riesgo atribuible poblacional como una herramienta de estimación del daño

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Do all risk factors influence the incidence of events in the same way? The answer is “no”, and one of the main reasons mentioned by some cardiovascular medicine specialists is the INTERHEART study (1), which shows that the magnitude of the association among nine conditions or cardiovascular risk factors is heterogeneous with respect to the incidence of a first acute myocardial infarction (AMI). For example, the odds ratios (ORs) observed were 1) 1.91 for history of arterial hypertension; 2) 2.37 for diabetes; 3) 2.87 for smoking (smokers vs. non-smokers); 4) 3.25 for an elevated ApoB/ApoA1 ratio, among others. This information has had healthcare consequences: it provided us with evidence to establish a hierarchy or prioritization of health problems in order to avoid overwhelming patients and support their long-term efforts. However, the INTERHEART study also provided population health information by widely spreading the concept of risk or *population attributable fraction* (PAF) –a “measure to estimate the proportion of cases that are attributed to a given exposure”– among healthcare professionals. (2) Thus, considering the contribution of each of these risk factors to the incidence of a first AMI event, the hierarchy defined by the ORs was modified since the PAF was 1) 49.2% for an elevated ApoB/ApoA1 ratio; 2) 35.7% for smoking; 3) 17.9% for history of arterial hypertension; and 4) 3.9% for diabetes. Same data, but different information: on the one hand, a more “clinical-related” perspective and, on the other hand, an epidemiological-related perspective. The epidemiological perspective is used to understand population health problems, evaluate the results of the actions (or lack of actions) and propose improvements.

The epidemiological approach has had some relevant milestones in our country and in the region, such as the publications of the CARMELA Study (3,4) and the National Survey of Risk Factors conducted

as from 2005 by the National Ministry of Health, with the last edition in 2019. (5) Based on them, all healthcare stakeholders have been able to understand the relevance of the different health problems in our country.

From the healthcare approach, smoking is one of the conditions primarily evaluated by physicians when stratifying risk, according to the guidelines. (6) Likewise, we are challenged by this issue due to the levels of smoking which are likely high among physicians, as shown in the TAMARA I and II studies (7, 8) conducted by the Council on Epidemiology and Cardiovascular Prevention and the Research Area of the Argentine Society of Cardiology.

In this regard, the Bolzán et al.’s study (9) published in this issue of the Argentine Journal of Cardiology is an example of the relevance of the epidemiological information. Based on local data, this study provides evidence on the magnitude of smoking as a contributing factor to mortality in related chronic noncommunicable diseases, such as cancer, cardiovascular and respiratory diseases. By applying an approach based on smoking prevalence, the authors used the publicly available databases of the National Survey of Risk Factors (conducted between 2005 and 2018) in the Province of Buenos Aires (one of the most populated districts of the Argentine Republic) and applied the concept of the population attributable fraction, that is, *the proportion of fatal cases in 19 smoking-related diseases (cancer, cardiovascular and respiratory diseases) that could be avoided if smoking was eliminated*. A decrease in smoking prevalence was observed (an absolute reduction of 6.4% and a percentage reduction of 21.7%). However, smoking remains responsible for 23.1% of all deaths caused by related diseases. The study explores the differences between genders and age groups. For example, in the specific case of cardiovascular disease, mortality attributable

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to tobacco consumption decreased in both men and women aged between 35 and 64 years and increased in men and women aged 65 years and older. The authors appropriately emphasize that women aged 65 years or older were the group with the highest increase in smoking in the Province of Buenos Aires.

In conclusion, this study allows us to objectively state that there still remains work to be done. This involves all the healthcare system stakeholders. Considering that the efforts made at the healthcare centres (hospitals, clinics) are only a part of the healthcare continuum, we should emphasize the pending tasks regarding contributions from the health financing sector and the authorities in order to strengthen the necessary resources and implement policies to address this health problem. (10)

Conflicts of interest

None declared.

(See authors' conflict of interests forms on the web/Additional material).

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