

Editorial



Towards More Influential Research in Acute Poisoning from Toxic Materials

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► See the article “Analysis of Patients with Acute Toxic Exposure between 2009 and 2013: Data from the Korea Health Insurance Review and Assessment Service and the National Emergency Department Information System” in volume 33, e254.

The standard definition of a disease is an important step for any medical research because the magnitude of disease would produce different number of cases depending on the nature in which a disease is defined. Considering this point, this issue should have been better described if the authors applied only first primary diagnosis code or included secondary diagnosis codes also. More precise definition of acute poisoning can be obtained by combining the diagnosis code with other clinical data rather than applying the code only. Comparing the patients' characteristics with other potentially misclassified diseases is also useful for the estimation of a few possible definitions of a disease.² The extent of severity of a disease could also be applied for the categorization of disease using the information on treatment type or the duration of hospital stay. These approaches produce a few definitions of a disease based on possible scenarios and provide more solid evidence to figure out the full scope of acute toxic poisoning cases rather than concentrating on a single definition of the disease.

Using appropriate health indicators is critical for delivering the correct message because they often specify the study findings with their connotative meaning. Generally, more precise indices can deliver more valuable information although every study does not necessarily need sophisticated indices. For example, the proportion or number of patients presented in **Table 1** in this issue is just simply proportional to the total population of each area. The number of cases could have been more informatively presented along with the relative proportion based on their denominator. Further, the authors could have applied more objective indices such as age-standardized rate that can control the effect of age difference between the groups, thereby providing more objective information about the magnitude of diseases along with a reasonable comparison with other studies. In addition, relative risks or odds ratios for acute poisoning can be used for comparison of the groups. Application of more meaningful indices can lead to greater impacts through small additional efforts.

Secondary health data used in this study are considered advantageous for national representativeness and more active utilization of such data is recommendable in medical studies. However, researchers who are using big data for their work must proceed with caution and understand the associated strengths and potential limitations.³ The Health

Insurance Review and Assessment Service and National Emergency Department Information System databases have been collected for administrative purpose and a nationwide descriptive study like this issue is valuable; however, if the purpose of the study is to identify the associations between diseases and risk factors, more complicated methodological approaches are required. It is also necessary to use a number of secondary data together and to compare them to obtain a more comprehensive understanding because each data pool has its own unique strength and limitation. For example, data on death could provide more information on cases of severe poisoning and health insurance data may include less severe cases, so overall interpretation of them can lead to the construction of a pyramid of disease, demonstrating an example of acute pesticide poisoning in Korea.⁴ In addition, an extension of the long-term temporal trend will provide more valuable information than limited to five years period as in this study. Even such a short period, this issue showed significantly decreased the proportion of acute toxic exposure, implying the disease pattern has rapidly changed in Korean society thus revealing the importance of careful monitoring.

In addition to passive monitoring through secondary health data, more efforts to collect primary data at the national level should be progressed such as an establishment of national poisoning center. The U.S. maintains the national poisoning data system and regularly provides useful information (<https://www.aapcc.org/annual-reports>). As a further step, the U.S. has monitoring system based on a specific toxic agent. For example, National Institute for Occupational Safety and Health has been monitoring pesticide poisoning cases based on the Sentinel Event Notification System for Occupational Risks-pesticides program and contributes towards identifying the risk groups of poisoning (<https://www.cdc.gov/niosh/topics/pesticides>). If this type of nationwide data is not possible near future in Korea, doctors working at emergency department may collect clinical data, and the data collection may further extends towards the inclusion of self-poisoning and chronic exposure cases by networking with other departments. This information can be applied for practical efforts of the prevention of toxic materials. In particular, identification of the most common causative agents for poisoning cases could be alarming and be helpful for the prevention as well as treatment. For example, the highly toxic pesticides are controlled successfully by legal regulation worldwide, including Korea,⁵ and such evidence has been applied for prevention activity (Center for Pesticide Suicide Prevention; <https://www.centrepssp.org/>).

Research on acute poisoning from toxic materials has contributed greatly both scientifically and practically. Clinical data should be further polished in a manner to prove their worth in the studies. In-depth interpretation of clinical findings linked with public health increases the impact of study results. Therefore, scientific communication with clinicians and other professionals (especially, epidemiologists) is important and an effective way towards more influential studies in acute poisoning from toxic materials.

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