



# STATE OF THE ART

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## **SUBOD**

**Improved monitoring of the disease burden attributable to substance use**

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## [Introduction]

Alcohol and tobacco use are among the highest contributors to the burden of disease worldwide (GBD 2019 Risk Factors Collaborators, 2020). A previously funded Belspo project, SOCOST, identified a need for more sustainable, tailored and integrated monitoring of the societal impact attributed to substance use. This aligns with the Belgian Alcohol and Tobacco plans 2022/2028 which explicitly call for an improved monitoring of the impacts of tobacco and alcohol use.

The SUBOD project will establish an improved and routine monitoring of the health and economic impact of tobacco and alcohol use in Belgium. It will achieve this aim through the following objectives:

1. Modelling the true extent of tobacco and alcohol use in Belgium, based on a mapping and critical appraisal of available local data sources, and application of appropriate statistical methods;
2. Establishment of best-evidence relative risks associating exposure with the corresponding health outcomes, based on a scoping review of scientific and grey literature; and
3. Quantification of the attributable burden of tobacco and alcohol use in Belgium, both in terms of global economic cost and disease-specific health and economic impact; and integration of the methodology into the Belgian National Burden of Disease Study.

## [State of the art]

### Key research questions

- The aim of the SUBOD project is to perform the necessary methodological developments to integrate the burden attributable to tobacco and alcohol use in the Belgian National Burden of Disease Study and initiate an improved and routine monitoring of these impacts.
- The key research hypothesis for SUBOD is that it is possible to quantify the attributable burden of tobacco and alcohol use in Belgium based on local data.

### Main findings of past research and existing gaps of past research

In 2016, a Belspo-funded study estimating the social costs of legal and illegal drugs in Belgium (SOCOST) was performed, supported by the UGent promoter of the current project proposal (Verhaeghe et al., 2017b; Lievens et al., 2017). That study estimated that for 2012, total alcohol-attributable direct costs to the healthcare system in Belgium were €906.1 million and that indirect costs amounted to €642.6 million, of which 62% were caused by premature mortality. Data were mainly retrieved from existing registrations systems which were often found to be incomplete and/or created for other purposes. Consequently, the cost calculations were to some extent affected by flawed or inconvenient data (Lievens et al., 2016). SOCOST identified the need for a more sustainable, tailored and integrated monitoring of the societal impact attributed to substance use. The current research proposal therefore builds on the insights related to the methodological shortcomings that were observed in the SOCOST study, and the recommendation to establish an improved and routine monitoring of the health and economic impact of tobacco and alcohol use in Belgium.

Today, estimates of the health impact of tobacco and alcohol use in Belgium are already generated by the Global Burden of Disease (GBD) study, coordinated by the Institute for Health Metrics and Evaluation (IHME) at the University of Washington (GBD 2019 Risk Factors Collaborators, 2020). The GBD study relies on an integration of all available data into a modular statistical machinery, to generate estimates of the health impact of 369 diseases and injuries, and 87 risk factors, in 204 countries and territories, from 1990 onwards. While the GBD study is the single best source for internationally comparable health estimates, it does not necessarily provide the most correct and up-to-date estimates at country and sub-country level, since the estimates are not always rooted in (sufficient) local evidence and may be excessively influenced by spatio-temporal smoothing. Furthermore, the estimates are not reproducible and transparency about data inputs is lacking. As a result, various countries have initiated national burden of disease studies, which do allow a closer relationship between the estimates and the local data and knowledge as well as being more responsive to the needs of policymakers and stakeholders. A number of these national burden studies include estimates of the national burden of tobacco and alcohol use, such as the studies in Australia, Scotland, or the Netherlands.

Driven by the same need for transparent estimates rooted in local data, the Belgian institute for health Sciensano launched the Belgian National Burden of Disease Study (BeBOD) in 2016 (Develeeschauwer, 2018). A first set of estimates was launched in 2022, and included DALY estimates for 37 health outcomes, in addition to estimates of the fatal burden of 137 causes of death, and estimates of the non-fatal burden of 56 cancer types (De Pauw et al., 2022). Current developments include the integration of economic impact estimates for the concerned 37 health outcomes—which is notably lacking from the GBD study. Interactions with stakeholders have repeatedly identified the need for the inclusion of risk factors in the BeBOD framework. This however requires a series of methodological developments, linked to the assembly and integration of the different data inputs needed to quantify attributable burden of substance use.

## **New research contributions**

In Belgium, different data sources exist that provide information on alcohol and tobacco use. The best known and most valorised is the Belgian Health Interview Survey (BHIS) managed by Sciensano, the Belgian health institute (Demarest et al., 2013). It is a source of nationally representative, reliable information on health status and determinants. In addition, other annual surveys such as the tobacco survey by the Foundation Against Cancer and the Eurobarometer survey on public opinion in the EU also collect information on tobacco and alcohol use. SUBOD will conduct a critical appraisal of these data sources to ascertain the true extent of alcohol and tobacco use. The project will also collect and evaluate the relative risks for disease associated with alcohol and tobacco and their relevance to the Belgian context. These combined bodies of evidence will help to further the understanding of the extent of tobacco and alcohol use and lay the foundation for calculations of the attributable burden.

It is well-known that survey data suffer from non-response and selection bias, and that, when not accounted for, this bias leads to an underestimation of substance use (Charaffedine et al. 2017; Robinson et al., 2021). These biases can and have been adjusted for in different countries (Gorman et al 2017,

Gottlieb Hansen et al 2011, Tolonen et al 2019). SUBOD will use estimates taken from the 2018 Health Examination Survey, a subset population of the BHIS, that collected cotinine and hydroxycotinine in urine samples as markers for smoking and passive smoking (Van Overmeire et al 2016.). The project will analyse this data to understand the potential impact of underreporting within the BHIS. Underreporting may also be corrected for using estimates of sales of alcohol and tobacco. The SUBOD project will triangulate sales data with survey estimates. For instance, Rehm et al (2010) proposed an approach to calibrate overall population estimates of alcohol consumption with per-capita alcohol sales data which can have a large impact on survey estimates (Gorman et al., 2017).

SUBOD aims to leverage existing methodologies and apply them to the Belgian local context; providing estimates at the level of detail relevant to stakeholders and policymakers. The study will quantify the attributable burden of tobacco and alcohol use in Belgium both in terms of disease-specific health, overall mortality, global economic costs and disease-specific economic impact. It will establish a baseline for monitoring of these impacts over time using best-practice evidence and relative risks.

SUBOD also aims to foster sustainability. To achieve this, the methodological framework used to develop the estimates will be embedded within the Belgian National Burden of Disease Study (BeBOD). Integrating into BeBOD will establish an effective monitoring system for the impact of tobacco and alcohol use in Belgium. This integration will lay the groundwork for the development of future estimates of attributable burden.

### **What is expected in terms of policy maker recommendations**

The SUBOD project aims to disseminate results to a scientific audience, to policymakers and other stakeholders, and to the general public. A project website will be developed and maintained that keeps different audiences informed of the progress of the project and results. A follow-up committee representing a mix of key stakeholders informing policy will be formed and consulted in order to ensure results are relevant and presented in a way that is accessible to them. These include representatives from the Minister of public health and social affairs, Ministry of health, the health authorities of Brussels, Flanders and Wallonia, as well as partners from civil society and research institutes.

Interaction with key stakeholders will be guaranteed through the follow-up committee. These meetings will be supported by issue/policy briefs which will also be disseminated more widely via the website and direct contacts. Through the follow-up committee, authorities and organisations who have a vested interest in the SUBOD outputs will be offered presentations and internal meetings to discuss results.

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