INFACT
Joint Action on Health Information

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FACT SHEET FOR INNOVATIVE USE OF DATA SOURCES

WP9 "Innovative use of data sources: A cross-sectional study of data linkage and artificial intelligence practices across European countries"

Key outputs

1. Background: The availability of data generated from different sources is increasing with the possibility to link these data sources with each other. However, linked administrative data can be complex to use and may require advanced expertise and skills in statistical analysis.

2. Innovative tools to improve the current EU-HIS: Use of data linkage of different administrative sources and AI to analyze large datasets are innovative tools, which are essential to improve the current EU-HIS.

3. Most relevant results: The use of data linkage has been integrated in routine public health activities among majority of European countries but only a few use AI. Using linked data, 46 health outcome indicators, 34 health determinants and 23 health intervention indicators were estimated in routine. The complex data regulation laws, lack of human resources, skills and problems with data governance, were reported by European countries as obstacles to routine data linkage for public health surveillance and research purposes.

4. Feasibility of being integrated in HIS and translated into policies: A sustainable national HIS and a robust data governance framework allowing to link different data sources are essential to support evidence-informed health policy development.

Background and Rationale

The availability of data generated from different sources is increasing with the possibility to link these data sources with each other. However, linked administrative data can be complex to use and may require advanced expertise and skills in statistical analysis. The main objectives of this study were to describe the current use of data linkage at the individual level and artificial intelligence (AI) in routine public health activities, to identify the related estimated health indicators (i.e., outcome and intervention indicators) and health determinants of non-communicable diseases and the obstacles to linking different data sources.

Proposal

We performed a survey across European countries to explore the current practices applied by national institutes of public health, health information and statistics for innovative use of data sources (i.e., the use of data linkage and/or AI)[1].

The use of data linkage and AI at national institutes of public health, health information and statistics in Europe varies[1]. The majority of European countries use data linkage in routine by applying a deterministic method or a combination of two types of linkages (i.e., deterministic & probabilistic) for public health surveillance and research purposes. The use of AI to estimate health indicators is not frequent at national institutes of public health, health information and statistics. Using linked data, 46 health outcome indicators, 34

health determinants and 23 health intervention indicators were estimated in routine. The complex data regulation laws, lack of human resources, skills and problems with data governance, were reported by European countries as obstacles to routine data linkage for public health surveillance and research.

Recommendations for sustainability

To address the above mentioned obstacles and to increase the uptake of innovative and high-performance technologies in public health activities, we propose the following recommendations:

A. Legal aspects: 1. More flexible data governance frameworks to support data linkage of different data sources should be encouraged [2], 2. Specific mandates to ensure data availability/access/capture and safe storage should be an integral part of a national/regional health information system, and 3. Differences in the implementation and interpretation of the EU-GDPR (General Data Protection Regulations) and additional national regulations should be mapped and if possible harmonized across EU-MSs [3].

B. Technical aspects: 4. More collaborations and partnerships should be encouraged to build up capacities for using new health information related technologies, to share new methods, skills, experiences and data for comparative research studies among EU national institutes of public health, health information and statistics;

C. Data Governance, 5. Initiatives to strengthen national health information infrastructure should be encouraged.

D. Organizational and structural aspects, 6. Ministries of health and research from European countries should provide their support (i.e., financial and political) for the development of integrated national health data hubs/data platforms to strengthen the national health information infrastructure.

References

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