

The Italian Society of Medical Statistics and Clinical Epidemiology (SISMEC) Working Group on “Environment, Climate and Health”: topics, aims and perspectives

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In the latest edition of the Conference of the Parties (COP 28, Dubai, 2023), the discussion on air pollution-induced climate change was expanded to include for the first time the health concerns of exposed populations [1]. This fact enshrines the indissolubility of the three themes – Environment, Climate and Health – not only within the scientific community, but also in political, educational and dissemination contexts.

The 12th National Congress of the Italian Society of Medical Statistics and Clinical Epidemiology (SISMEC) held in 2023 and entitled “Environment, Climate and Populations,” as well as the pre-congress workshop focusing on the environment and respiratory diseases, highlighted the diverse perspectives that many Society members are dealing with regarding these issues. This experience gave rise to the need to connect the different views, skills and experiences in order to effectively address methodological, statistical, epidemiological and educational challenges, by setting up a new working group (WG) within the Society. Preliminary open meetings have identified several areas where our Society can make meaningful contributions through its vision and methodological expertise, including:

- Fostering the *availability of integrated and interconnected high-quality data* on health outcomes and environmental exposures;
- Pursuing studies on the *health impact assessment* of extreme weather events (e.g. heat waves, droughts, flooding), and contaminants of various matrices (e.g. air, water, soil, noise), including pollution related to specific sources such as existing and planned productive settlements [2];
- Promoting the design and conduction of studies to evaluate the *effectiveness of interventions* for climate change *mitigation and adaptation*, such as urban reforestation projects [3-4];
- Contributing significantly to research areas necessitating advanced statistical and epidemiological

methods, including *exposomics* as the assessment of lifestyle and environmental interactions [5-6];

- Assessing the multi-generational impact of environmental exposure on health [7-8];
- Investigating the impact of joint exposure to different factors, such as the interaction between environment, climate and social class, on health. *Environmental justice* [9], a movement born in the eighties in United States, has now become a goal of many national and international agencies, including the Environmental Protection Agency and the World Health Organization. Studying the socio-economic determinants influencing health [10] and their interaction with climate and environment is therefore fundamental in a participatory context that aims to eliminate the unequal distribution of environmental harms in populations [11];
- Examining *other methodological aspects* that are intertwined with the aforementioned themes, such as individual exposure assessment, measurement error, geocoding techniques, maps production, and the assessment of health impacts arising from exposure mixtures [12].

GOALS

With respect to these themes and others that may emerge at a later stage, the WG aims to:

- i. engage in collaborative discussions to deepen the methodological and statistical aspects related to the identified issues;
- ii. develop and consolidate networking activities both with other WGs and commissions active within the Society, and through interlocution with other Scientific Societies active on the same issues, also fostering the development of joint research projects;
- iii. promote training and dissemination/communica-

tion activities at different levels and for different audiences.

ACTIVITIES

In its first two years of activity, the WG aims to:

- organize an initial educational and dissemination event, and produce a subsequent report for publication in the Society's journal;
- interact with active SISMEC WGs and commissions (C) [indicated between square brackets] on common areas, such as:
 - use of methods of machine learning techniques for environmental epidemiology, e.g., for exposure assessment [WG: Machine Learning];
 - causal inference in environmental epidemiology studies [WG: Causal Inference in Epidemiology];
 - environment and frailty [WG: Observational Studies];
 - Privacy and data security [C: Privacy];
- organize a series of seminars and workshops, including a workshop for the upcoming 13th Society National Congress in 2025, dedicated to relevant topics in the field of health and climate studies;
- promote dissemination to the general public audience, through media and events.

We are confident that the introduction of this new working group will stimulate the debate within our Society, encouraging other members to join and to be engaged in its initiatives. Environmental issues, climate change and health inequalities represent some of the most pressing challenges of our times; therefore, it is imperative that we seize the opportunity to contribute our expertise as biostatisticians and epidemiologists.

WG (in alphabetical order)

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