

THE LANCET

Planetary Health

Supplementary appendix

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One Health and planetary health research: Leveraging differences to grow together

Supplementary Material

Supplementary Methods

Search strategy

Web of Science, one of the largest multidisciplinary bibliographic databases, was searched on June 5, 2022 using the terms “One Health” and “Onehealth” (the second orthographic form is used by some authors), or “planetary health”. We used the search option “topic” which searches titles, abstracts, author keywords, and Keywords Plus. We used the ‘publication years’ filter to include only records published up to end of 2021. This search was intended to retrieve articles that use the One Health and planetary health concepts and therefore excluded articles thematically related to these concepts but that did not mention them in the title, abstract, or as author keywords.

Publication selection

The search on One Health-related papers yielded 5,826 publications. Titles and abstracts were screened to exclude publications that use ‘One’ as a numeral rather than referring to the One Health concept (e.g. “one health district” or “twenty-one health care centers”). This screening led to a final selection of 4,420 papers pertaining to the One Health concept. The search on planetary health yielded 701 papers, which were all included.

Bibliometric analysis

The bibliometric analyses were done on the papers published in 2020 and 2021. This includes 2,126 One Health papers and 451 planetary health papers.

The bibliographic data were mapped with *Vosviewer* version 1.6.17, which is a free source software developed by the University of Leiden to analyze and visualize bibliometric networks.¹ *Vosviewer* uses an algorithm derived from the Louvain algorithm.

Before creating the maps, different spellings of a same keyword or institution (e.g. singular vs plural form, with/without a hyphen like climate-change vs climate change, “CDC” vs “Centers for Disease Control and Prevention”) were merged in the software as one same item using a Thesaurus file. Thesaurus files were also used to disentangle ambiguous institution names such as “faculty of medicine” alone. To do so, we looked into the text file extracted from Web of Science to identify the authors associated with ambiguous institution names, and, for each of them, we replaced the ambiguous name with the full name of the author’s institution.

A keyword analysis was performed to identify the main areas of research in One Health and planetary health. We used the option “All keywords” to include author keywords and keywords directly generated by the platform. The minimum number of occurrences in different papers for a keyword to be considered was set at 10 for One Health papers and 3 for planetary health. These thresholds were adjusted in a way that the total number of considered keywords was similar for the two topics.

In the resulting visualization maps, each keyword is represented by a node. The size of the nodes is proportionate to the number of publications corresponding to the keyword in question. The closer the nodes are to each other, the stronger the link between the keywords (i.e. the number of joint occurrences of the two keywords). A node placed close to the center of the map means that the corresponding keyword has co-occurrences with a high number of other keywords. Keywords are also grouped in clusters depending on their interrelation and these clusters are represented with different colors.

Institutions were classified into five categories: academic institutions, research institutions and organizations, governmental institutions, United Nations agencies, and non-governmental organizations. Governmental institutions include ministries and agencies such as the Food and Drug Administration (FDA), while research centers that are partly State-funded such as the Consejo Superior de Investigaciones Científicas (CSIC) were classified as research institutions. Institutions were included in our analysis if they had published at least 4 publications in One Health or 3 publications in planetary health in two years (2020 and 2021). For each category, we summed all the One Health and planetary health papers that the institutions have published.

Geography of One Health and planetary health research

The geographic locations of the institutions were mapped using the application *Netscity* from the Institut de Recherche en Informatique de Toulouse (IRIT)². The files from Web of Science were uploaded on the platform. For the institutions whose location could not be defined by the system, we entered them manually using the “view and correct addresses” tool. The GPS coordinates of the institutes were retrieved from Google Maps. The data was normalised so that when a publication comes from several different agglomerations, each one receives a fraction of the publication in proportion to the total number of participating agglomerations. To produce these statistics, the urban level considered is that of the agglomeration in the sense that we have grouped together the central city and its suburbs.

Limitations

By including in our analysis only institutions that have published at least four papers in One Health or three papers in planetary health, we might have missed or underestimated some actors. Institutions such as NGOs or private actors are likely to publish a smaller number of papers per year than academic institutions and were, therefore, less likely to reach the three or four publications threshold. This may have resulted in an overestimation of the proportion of academic institutions active in One Health and planetary health.

Even though the language of the papers was not restricted, the expressions “One Health” and “planetary health” were searched only in English, which could introduce a bias in the language of publication and the countries collaborations. However, most published papers being written in English, we expect this bias to be limited.

Planetary health being a young field, the number of papers was limited and any modification of the number of occurrences threshold would modify the clustering of keywords. It would be interesting to keep following the evolution of the keywords occurrences in order to see which topics will gain in importance and if siloing of the different subjects will be observed in the future as it is the case for One Health research.

References for Supplementary Methods

- 1 van Eck, N. J.; Waltman, L. (2010) VOSViewer: Visualizing Scientific Landscapes [Software]. Available from <https://www.vosviewer.com>
- 2 Maisonobe M, Jégou L, Yakimovich N, Cabanac G. NETSCITY: a geospatial application to analyse and map world scale production and collaboration data between cities. In ISSI 2019: Proceedings of the 17th International Conference on Scientometrics and Informetrics, 2019, Tome 1, p. 631-642, Rome: Edizioni Efesto.

Supplementary Table: Type of institutions having published One Health or planetary health papers in 2020 and 2021 and their number of publications

Institution type*	Number of One Health publications n (%)	Number of planetary health publications n (%)
Academic institutions	2856 (75.9%)	527 (91.8%)
Research institutions and organizations	414 (11%)	28 (4.9%)
Governmental institutions	363 (9.6%)	3 (0.5%)
UN agencies	91 (2.4%)	6 (1%)
Non Governmental Organizations	39 (1%)	10 (1.7%)
Total	3763	574

*only institutions having published at least 4 publications in One Health or 3 publications in planetary health are included