



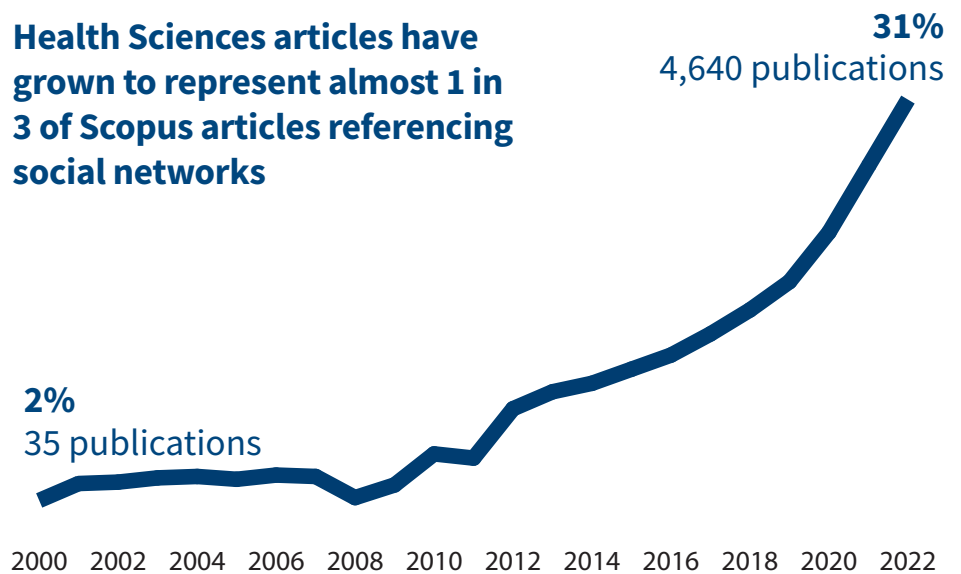
SoNHR – Reporting Guidelines for Social Networks in Health Research

Network methods are ideal for examining the social determinants of health. Health networks are often social, where relationships between people or organizations range from disease contagion to health communication to peer influence. Network methods differ from typical experimental designs and linear analyses, though few guidelines for reporting and disseminating network results exist for health research.

This research brief presents 18 reporting guideline recommendations covering all phases of network research.

Percent growth in health-science specific publications using network methods (% of overall)

Health Sciences articles have grown to represent almost 1 in 3 of Scopus articles referencing social networks



Our 18 recommendations (reverse side) were developed from a modified-Delphi survey approach where 67 network and health science experts from clinical, social science, community, and public health fields provided input. The recommendations speak to all phases of network research, from conceptualization to results, and are now part of the [EQUATOR reporting guidelines](#) database.

- **Conceptualization** (research, theory)
- **Operationalization** (definitions, scope)
- **Data collection & management** (surveys, data organization)
- **Analysis & results** (visualization, reporting)
- **Ethics & equity** (human subjects, social justice)

Who are these guidelines for?

AUTHORS—for designing and presenting research

INSTRUCTORS—for informing social network course topics

JOURNAL EDITORS—for implementing standardized reporting of network studies

READERS—for providing clarity around network- and systems-based work

REVIEWERS—for evaluating rigor and salience



Reporting Guidelines for Social Networks in Health Research (SoNHR)

Conceptualization

- C1. Clearly describe how and why networks are relevant for addressing the study's research question(s).
- C2. Make the value of a network analysis apparent by explaining what kind of information a network analysis tells us that a more traditional approach would not.

Operationalization

- O1. Define the *nodes* to make it clear what a node represents.
- O2. Define the *ties* so that it is clear what each type of tie represents. Make sure to indicate if ties are directed or undirected and if ties are binary or weighted.
- O3. Define the boundaries of the network so that it is clear who is included and not included in the network.
- O4. State clearly the basic type of network that is being analyzed (e.g., complete network, ego networks, affiliation/2-mode/bipartite networks).

Data Collection & Management

- D1. Describe network data collection *procedures* and tools (e.g., surveys and software) in enough detail to support replication. When possible, provide access to all surveys, instruments, and tools used.
- D2. Describe the network *data* used in the study, including pre-existing data sources, how the data are stored, managed, and whether/where they are publicly available.
- D3. Discuss missingness in the network data, its implications, and any attempts to impute or account for missing data (e.g., rationale for requiring one or both responses when only one member of a dyad reports a relationship).
- D4. Report all data transformations (e.g., aggregation of person-level to organization-level nodes, reconciliation of conflicting link values when provided by both members of a dyad, etc.).

Analyses & Results

Description & Visualization

- AD1. When discussing network statistics, be clear about the unit of analysis (e.g., node, dyad, sub-network, whole network).
- AD2. Report network statistics (e.g., centrality, centralization, homophily, etc.) in terms of the real-world property of the setting being assessed (e.g., what does it mean for a particular node to have high degree centrality, for a network to have high betweenness centralization, or for nodes with similar characteristics to cluster together?)
- AD3. Network visualizations should clearly illustrate study findings using design principle best practices that are appropriate for network characteristics and the goals of the visualization (e.g., using node color or shape to convey categorical properties, using node size to convey quantitative properties, limited use of labels and different shapes in large networks, varying line weights or colors in small networks).

Modeling & Simulation

- AM1. Explain the theoretical foundations that drive the model or simulation development and testing.
- AM2. If statistical network models or simulations are used, clearly specify model mechanisms and outcomes (e.g., tie formation). When possible, provide reproducible statistical programming code used in the analyses to support replication.
- AM3. Present some information on how well the network model fits with the observed network data and discuss any important implications of model fit.

Ethics & Equity

- E1. Discuss how confidentiality was explained to participants and how their confidentiality was ensured, including considerations of identifiability in network visualizations and reporting. Clarify how participants understood that information could be collected about them even if they chose not to participate, *or* that non-participation precluded information being collected about them.
- E2. Discuss any potential biases within network structures and results that may be rooted in the network study methods (e.g., failure to capture complete networks, organizational or specific group non-participation, over-representation). Think in terms of equity and social, economic, and health justice when doing so.

For more details, see the full open-source paper at <https://doi.org/10.1371/journal.pone.0285236>