

Title: Characterizing how One Health is used and defined within primary research: A protocol for a Scoping Review

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Author contributions:

SDP wrote the protocol and will be responsible for final manuscript writing. Protocol manuscript review was conducted by all authors. Content expertise will be provided by EJP and JMS. SDP developed the search strategy. JMS and CBW will provide methodological/statistical expertise. SDP will be responsible for project coordination, primary and secondary screening, data collection, and data synthesis. Secondary reviews for primary and secondary screening, and data extraction will be conducted by research assistants.

Registration:

This protocol will be archived in the University of Guelph's institutional repository (<https://atrium.lib.uoguelph.ca>) and reported using the PRISMA for Systematic Review Protocols (PRISMA-P), guidelines (Moher et al., 2015). The review will be reported using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR), (Tricco et al., 2018).

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Introduction

Rationale

Since the term One Health was coined by the Wildlife Conservation Society after their One World, One Health conference in 2004 (Evans & Leighton, 2014; WCS, n.d.), it has been frequently referenced in academic literature as an employed research approach. Due to limited governance and authority, there is minimal regulation regarding how it's used in research and practice (Lee & Brumme, 2013).

There is also a variety of One Health definitions published. However, among these definitions it is widely accepted that One Health typically requires multiple-discipline collaboration and includes three pillars of health as a core foundation; animal, human, and environmental health (WHO, 2017; One Health Commission, n.d.; CDC, 2018; CAHI, n.d.; CPHA, n.d.). The environment encompasses a diverse array of natural and built concepts which can be separated into their own pillars depending on the definition.

Both the frequency of the term's use and what is deemed necessary to employ it appropriately continue to vary across research groups and topics. We aim to better understand this body of work by determining how One Health is being defined in the academic literature, what topics the approach is being applied to, and what fields/disciplines are using it and their collaborations, as well as by evaluating inclusion of the three widely-accepted pillars of health and developing pillars. This review will contribute to our current understanding of One Health among primary research articles that directly indicate using the approach. In addition to this, assessing incorporation of health pillars and collaborative efforts may illuminate patterns in basic understanding of the approach across research fields and research topics. This may also inform target areas for future One Health competency and awareness education initiatives.

Research Question and Objectives

The scoping review will use the methodological framework described by Arksey and O'Malley (2005) to address the question: *How is the One Health approach being used and defined in primary research articles that include an indication of using a One Health approach?*

Objectives

The objectives of the scoping review are to identify research topics and fields of study represented in primary research articles where it was stated that a One Health approach was used, to describe how the term One Health is being defined among them, and to identify patterns of disciplinary collaboration and integration of health pillars in these publications over time.

Eligibility Criteria

The following publication types and article characteristics will be eligible for inclusion:

- Journal articles describing primary research studies;
- Theses and dissertations describing primary research studies.

The following types of publication types and article characteristics are ineligible for inclusion:

- Systematic and narrative reviews, editorials, commentaries, testimonials, letters to the editor, books, textbooks;
- Government reports;
- Conference proceedings;
- Studies for which the full text is unavailable;
- Studies not available in English.

The proposed review will focus on primary research where authors stated that they used a One Health approach in their research. Similar holistic approaches, such as Ecohealth and Planetary Health, will not be eligible for this review.

The scope of this review will be limited to primary research because researchers producing primary research studies can be considered significant decision-makers in what and how original

data are collected and analyzed in literature. As decision-makers, they determine whether information, data or context about each pillar is represented.

Methods

Search Strategy

The search strategy will not be limited by date, language, or publication type.

Searches will be conducted in diverse disciplinary databases: Academic search premiere via EBSCOhost, ABI/INFORM via ProQuest, AGRICOLA via ProQuest, ProQuest SOCIOLOGY, psycINFO via APA PsycNet, MEDLINE via Ovid (all Ovid MEDLINE), JSTOR, CAB via CABI, and Science Citation Index via Web of Science.

Table 1: Search strategy to identify studies using a One Health approach, tested in MEDLINE as of July 2020

1 ("One Health" or "One-Health").ab. or ("One Health" or "One-Health").ti. 3445

The phrases “One Health” or “One-Health” must be within the title or abstract for the following reasons:

- Based on the content expertise from protocol authors, articles that describe research actively using a One Health approach will likely report its use by including the phrase in their title or abstract.
- To evaluate the impact of the search strategy including these phrases in the title and abstract versus in the full text, we searched for articles containing either version of the phrase in all fields (n=5280) and removed articles that contained either phrase in their title or abstract (n=3445, 5280-3445 = 1835). Thus, about 1/3 of all articles using either phrase in the full text would not be captured using either phrase in the title or abstract only strategy. The first 50 articles of the 1835 listed from the described search were assessed on the following question:
 - Does the author/paper state that the One Health approach has been used in the described research at any point in the article? *YES (neutral response), NO (EXCLUDE)*
 - Of the 50 articles, 1 article passed the question with a YES response (2.0% of total articles). This pre-review evaluation only included the single screening question so it is unknown if the article would pass full screening. A list of the 50 articles is available upon request. Overall, there appears to be minimal loss of articles stating use of the One Health approach with the current strategy.
- It is understood that some articles stating use of a One Health approach will be missed with this search strategy which has potential to impact our results. However, searching for the phrases only in the title or abstract was deemed necessary for the resources available and potential issues caused by this decision will be discussed in the resulting manuscript.

Study Records

Data Management

All records will be uploaded into bibliographic software (EndNote, Clarivate Analytics, Philadelphia, USA) and de-duplicated. After de-duplication, records will be uploaded into DistillerSR® systematic review software (Evidence Partners Inc., Ottawa, Canada) and further deduplicated. Distiller SR will be used for study screening and data characterization. The exclusion and inclusion of articles in the various review stages will be mapped via the PRISMA flowchart diagram (Moher, 2009).

Study Selection

The following questions will be used for title and abstract screening, with agreement on eligibility assessed at the form level, to select studies for full-text screening. This process will be conducted in duplicate by two reviewers working independently. A pre-test and consensus meeting of the title and abstract screening process will be conducted for the first 100 articles with all reviewers. Studies will be excluded if they receive a NO from both reviewers on any question, disagreements will be resolved via consensus and a third reviewer will be enlisted if consensus cannot be reached.

1) Is it a journal article or thesis/dissertation describing a primary research study?

YES (neutral response), NO (EXCLUDE), UNCLEAR (neutral response)

2) Does it include the phrase “One Health” or “One-Health” in its title or abstract?

YES (neutral response), NO (EXCLUDE)

3) Is the full-text available in English?

YES (neutral response), NO (EXCLUDE), UNCLEAR (neutral response)

Records passing title and abstract screening will be included for full-text screening, with agreement on eligibility assessed at the question level, using the following questions. This process will be conducted in duplicate by two reviewers. A pre-test and consensus meeting of the full-text screening process will be conducted for the first 5 articles with all reviewers. Studies will be excluded if they receive a NO from both reviewers on any question, disagreements will be resolved via consensus and a third reviewer will be enlisted if consensus cannot be reached. Reasons for full text exclusions will be reported in the final manuscript.

1) Is it a journal article or thesis/dissertation describing a primary research study?

YES (neutral response), NO (EXCLUDE)

2) Does the author state that a One Health approach has been used in the described research at any point in the article?

YES (neutral response), NO (EXCLUDE)

3) Is the full-text available in English?

YES (include), NO (EXCLUDE)

Records passing both levels of screening will undergo the data characterization process.

Data Characterization

Articles will undergo information extraction and characterization conducted in duplicate by two reviewers, independently. DistillerSR® forms will be used and disagreement between the reviewers will be resolved by consensus or by a third reviewer if one cannot be reached. A pre-test and consensus meeting of the data characterization process will be conducted for the first 3 articles with all reviewers.

General study characteristics:

- Research topic/content area: AMR, zoonotic diseases, climate change, environmental pollutants, food safety, comparative medicine (Checkbox/permanently add, text entry – specify condition/disease of interest if applicable)
 - Research objectives (text entry)
- Study design: in-lab experiment, in-field experiment (natural disease exposure, challenge trial), analytical observational (cross sectional, cohort, case-control, other), descriptive observational (surveys, case series, case report, episodic surveillance, etc.), ongoing surveillance, in silico model, qualitative designs (focus groups, in-depth interviews, ethnography, etc.), risk assessment (checkbox, permanently add)
- Purpose of study: Estimate prevalence, estimate incidence, identify risk factors (acquiring, having, mortality, eliminating disease), animal model of human disease, evaluate interventions, predictive modeling, understand lived experience, document behaviour, model risk across a system (checkbox, permanently add)
- Population(s)/species of interest if applicable (checkbox, permanently add)
 - Text entry for supportive detail
- Year of publication date (checkbox, permanently add)
- Geographic location of data collection
 - Country (checkbox)
 - Urban, peri-urban, rural, remote, uninhabited, unspecified (checkbox)
- Researchers' affiliation at time of publication (text entry)
 - General field of study of first author, *indicated by affiliation cited* (checkbox, permanently add)
 - General fields of study of all remaining authors, *indicated by affiliation cited* (checkbox, permanently add)
 - Continent of institution of first author (checkbox)

One Health Characteristics:

- Is a definition or description of One Health provided in paper (y/n)

- If yes, list definition/description and author (internal/authors of paper, external – identify)
- Elements included in definition (y/n for all):
 - Three foundational pillars (human, animal, environment)
 - Environment: physical, social
 - Plant health
 - Other pillars listed outside of foundational pillars and plant health (permanently add)
 - Other pillars constitute health in any population or concept not represented above
 - Transdisciplinary, interdisciplinary, multidisciplinary
 - Research, policy, programming, other outputs for One Health (permanently add)
 - Complexity
 - Systems thinking
- Collaborative efforts and evidence of multiple discipline approaches
 - Self-identification of approach used (multi- inter- trans- disciplinary) (checkbox)
 - Multiple fields in research team (extracted in general characterization above)
- Inclusion of pillars of health on the following levels within a publication. Physical environment will encompass natural and built environments. Social environment will encompass financial, social, and political environments.
 - Introduction
 - Discussion or listing of factors in research problem/area representing each of the health pillars. Can be outlined by researcher or identified by the reviewer.
 - Animal health (y/n); Human health (y/n); Physical environment health (y/n); Social environment health (y/n); (text entry for supportive text)
 - Other pillar health (y/n, permanently add and text entry for supportive text)
 - Methods
 - Data representing each of the health pillars are generated, collected or identified. Can be outlined by researcher or identified by the reviewer.
 - Animal health (y/n); Human health (y/n); Physical environment health (y/n); Social environment health (y/n); (text entry for supportive text)
 - Other pillar health (y/n, permanently add and text entry for supportive text)
 - Results
 - Analysis/reporting of data representing each of the health pillars. Can be outlined by researcher or identified by the reviewer.
 - Animal health (y/n); Human health (y/n); Physical environment health (y/n); Social environment health (y/n); (text entry for supportive text)

- Other pillar health (y/n, permanently add and text entry for supportive text)
 - Discussion and conclusion
 - Situates findings of health pillar information in One Health context by identifying significance of each pillar. Can be outlined by researcher or identified by the reviewer. If findings do not directly apply to all pillars, indication of missing information or potential future research necessary to complete One Health approach will suffice.
 - Animal health (y/n); Human health (y/n); Physical environment health (y/n); Social environment health (y/n); (text entry for supportive text)
 - Other pillar health (y/n, permanently add and text entry for supportive text)

Data Synthesis

Summarizing and Reporting Results

A flow chart will be used to show the selection of articles via the review process (Moher, 2009). The number of articles excluded at each screening level and cause for exclusion at full text screening will be identified.

Distributions of descriptive statistics will be reported via tables and figures for the following.

- **General study characteristics:**
 - Research topic
 - Study design
 - Purpose of study
 - Year of publication date
 - Geographic location of data collection
 - Fields of study represented by author affiliations
- **One Health classification characteristics:**
 - If a definition of One Health is provided
 - Definition author (internal vs. external)
 - Inclusion of elements in definition:
 - Three foundational pillars
 - Environment: physical, social
 - Plant health
 - Trans- OR multi- disciplinary collaboration
 - Research, policy, programming, other outputs of One Health
 - Complexity
 - Systems thinking
 - Collaborative efforts and evidence for multiple discipline approaches
 - Inclusion of pillars of health on the following levels within a publication:
 - Introduction, Methods, Results, Discussion and conclusion

To complete the objectives, observed patterns across pillar inclusion and evidence for multiple discipline teams, field and topic representation, and how One Health is being defined overall and over time will be outlined and discussed. Potential research topics and disciplines for targeting One Health education initiatives, will be outlined and discussed.

Critical Appraisal of individual sources of evidence

Critical appraisal will not be conducted as study results will not be extracted to inform conclusions regarding relationships between interventions or exposures and outcomes.

Discussion

The results of this scoping review have many potential applications. Identifying research topics using the approach may inform new research examples for widely distributed One Health definitions, creating an up-to-date picture of topics of importance to One Health. It may also improve our understanding of the breadth of how the approach is used and defined in different contexts and disciplines.

Overall, the characterized information from One Health literature can help inform education strategies for stakeholders with the resources to tackle gaps in One Health knowledge based on patterns identified, increase our understanding of the current body of literature, and illuminate evolution and changes in its use over time.

References

- Arksey, H, & O'Malley, L. (2005) Scoping studies: towards a methodological framework, *International Journal of Social Research Methodology*, 8:1, 19-32, doi: 10.1080/1364557032000119616
- Canadian Animal Health Institute (CAHI). (n.d.). One Health. Retrieved from <https://www.cahi-icsa.ca/one-health>
- Canadian Public Health Association (CPHA). (n.d.). One world, one health. Retrieved from <https://www.cpha.ca/one-world-one-health>
- Centers for Disease Control and Prevention (CDC). (2018, November 05). One Health Basics. Retrieved July 16, 2020, from <https://www.cdc.gov/onehealth/basics/index.html>
- DistillerSR®. (2018). Evidence Partners Inc., Ottawa, Canada. Retrieved from <https://www.evidencepartners.com/products/distillersr-systematic-review-software/>
- EndnoteX9. 2018. Clarivate Analytics, Philadelphia, USA. Retrieved from <https://endnote.com/>
- Evans, B, & Leighton, F. (2014). A history of One Health. *Revue Scientifique Et Technique De LOIE*, 33(2), 413–420. doi: 10.20506/rst.33.2.2298
- Lee, K, & Brumme, Z. (2013). Operationalizing the One Health approach: the global governance challenges. *Health Policy and Planning*, 28(7), 778–785. <https://doi.org/10.1093/heapol/czs127>
- Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med* 6(7): e1000097. doi:10.1371/journal.pmed1000097
- Moher D, Shamseer L, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart LA. Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) 2015 statement. *Syst Rev*. 2015;4(1):1. doi: 10.1186/2046-4053-4-1
- One Health Commission. (n.d.). What is One Health? Retrieved from https://www.onehealthcommission.org/en/why_one_health/what_is_one_health/
- Tricco, AC, Lillie, E, Zarin, W, O'Brien, KK, Colquhoun, H, Levac, D, Moher, D, Peters, MD, Horsley, T, Weeks, L, ... Hempel, S. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med*. 169(7):467-473. [doi:10.7326/M18-0850](https://doi.org/10.7326/M18-0850).
- Wildlife Conservation Society (WCS). (n.d.). One Planet, One Health, One Future. Retrieved from <https://www.wcs.org/one-planet-one-health-one-future>
- WHO. (2017). One Health. Retrieved from <https://www.who.int/features/qa/one-health/en/>