REVIEWS AND DISCUSSION PAPERS

An environmental scan of studies reporting current practices for the conduct of environmental scans

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ABSTRACT

Objective: The objective of this environmental scan is to synthesize the published, peer-reviewed literature specific to the term 'environmental scan' to determine how it is currently being used in health research and to propose some promising practices.

Background: Environmental scans are becoming increasingly popular in synthesizing information on emergent topics and describing practice and research scope. Despite the growing use of environmental scans in health research, including nursing and rehabilitation, limited attention is given to methodological best practices. It is essential that we develop knowledge in this area to assist researchers, trainees, healthcare professionals, educators, and decision-makers with the use and reporting of environmental scans.

Study design and methods: This environmental scan included a search of four health databases: CINAHL, Embase, MEDLINE, and PsycINFO. We included peer-reviewed studies published between 2000-2024 in English using two key terms, 'environmental scan' and 'health'. Studies were included that described methods used in conducting an environmental scan.

Results: We identified 56 studies describing methods for conducting environmental scans. A synthesis of these studies revealed four promising practices:
1) consider environmental/contextual influences,
2) use of multiple data sources and approaches,
3) engage stakeholders to ensure relevance/need and increase uptake, and
4) use of outcomes to address knowledge or service gap to optimise impact.

Conclusion: The findings of this environmental scan are among the first to examine methodological studies to determine promising practices for conducting environmental scans across health disciplines.

Implications for research, policy, and practice:
- The findings of this novel environmental scan are beneficial for health professionals, researchers, trainees, educators, and decision-makers in informing research, practice, and policy change

What is already known about the topic?
- The use of environmental scans is becoming increasingly popular in health research, including nursing and rehabilitation.
- There is a lack of consistency in the use and reporting of environmental scans across health disciplines.

What this paper adds
- This environmental scan is among the first to contribute foundational knowledge and innovation in promising best practices for the conduct of environmental scans in health research.
- The novel findings will assist in promoting consistency in the use and reporting of environmental scans.

Keywords: Environmental Scan; Health Professionals;Interdisciplinary Methods; Nursing Research; Rehabilitation Research; Research Design

OBJECTIVE

This environmental scan is an initial attempt to better understand the practices used in environmental scans. We invite others to join in furthering our understanding of best practices for environmental scans to advance its methodology. This environmental scan builds upon a scoping review conducted by Charlton and colleagues,[1] examining not only how environmental scans are being used in health research but goes a step further in using this information to invigorate discussion around 'promising practices' for their conduct given the apparent gap in the literature. We define promising practices as prevalent practices that seem to be commonly applied and were deemed by the expertise of our research team as methods worthy of future attention. Given our focus on methods, we specifically focused on published peer-reviewed literature to reflect what journals are accepting as environmental scans worthy of being published. While we recognise that this does not align with a traditional environmental scan approach, we felt this was an appropriate starting point. Our data extraction included information on purposes and promising practices common among the included studies for conducting environmental scans in health research. The outcome of this work is applicable to all health disciplines in promoting the consistent use and conduct of environmental scans.

BACKGROUND

In 1967, Francis Aguilar, a professor at Harvard Business School, coined the term 'environmental scan' to describe the action of observing and gathering data on competing companies and overall market performance in order to improve a company's output and performance.[2] The term environmental scan is frequently defined in the literature as:

> "the acquisition and use of information about events, trends, and relationships in an organization's external environment, the knowledge of which would assist management in planning the organization's future course of action"[3(p.1)]

Although environmental scans originated within a business context, there is increasing evidence for their value in health research to impact systemic and practice change.[4-6] Environmental scans have been conducted in various areas of health, such as nutrition, mental health, and women's health in determining the healthcare needs of individuals and communities.[4,7,8] The use of environmental scans in nursing and rehabilitation has increased considerably over the past two decades.[9-15] Despite the growing popularity of environmental scans in health research,[16] limited methodological support currently exists to conduct environmental scans.[3,17] Environmental scans can be useful in providing preliminary syntheses in areas in which a full systematic or scoping review is not yet justified.18 Systematic and scoping reviews have seen exponential growth, indicating an increasing desire to synthesize evidence.[19-21] Unlike systematic and scoping reviews which aim to synthesize and assess evidence in a given area, environmental scans often include alternate activities and evidence sources. Examples include reviewing organisational trends, integrating documentary material with interviews and surveys (mixed methods), and attempting to ascertain the 'pulse' or 'sense of things' of a group or organisation at the present moment rather than when papers were published.[7] Scoping reviews can be useful in describing the extent and range of a research area, however, fail to adequately 'scan' in the areas of organisation outputs and reports or other contextual features such as trends, availability of services, or understanding a system.[18] While scoping reviews often include grey literature, it can be a challenge to incorporate this type of evidence into these reviews. The environmental

scan could be a needed approach to better include these other types of information into a synthesis. Further, in the same manner in which the scoping review has significantly improved in its methodological conduct,[17,20] including reporting guidance the environmental scan could also benefit from methods attention.[12]

STUDY DESIGN AND METHODS

Our scan of environmental scans was specific to the context of 'health' and the term 'environmental scan' specifically. We were aware that a broader literature likely exists that would inform our questions (i.e., literature using these methods but not the term environmental scan) but we wanted to first do a summary specific to the term environmental scan to establish some foundational concepts to advance work in this area. We did this in order to focus our attention on papers that used the term environmental scan. In the absence of clear labelling and terminology in this field, this seemed to be the best approach at this stage. While we may have missed important papers, we can be sure that we have synthesized papers that are specific to environmental scans. A literature review of health research was conducted using four health databases: CINAHL, Embase, MEDLINE, and PsycINFO. The search used two key terms, 'environmental scan' and 'health'. Included studies met the following eligibility criteria: 1) an explicit description of the methods involved in conducting an environmental scan; 2) an environmental scan conducted in the context of health research; and 3) peer-reviewed, prevalent published studies in English between 2000-2024 to focus on current evidence. Two reviewers (TN, AE) screened all titles and abstracts independently prior to meeting to discuss final article inclusion. Three reviewers (TN, AE, BD) independently completed data extraction of included articles prior to meeting for discussion. Any discrepancies or disagreements between team members regarding data extraction or emergent themes around promising practices were resolved through consultation until consensus was achieved.

When our team embarked on this work, there was limited information on the methods for an environmental scan but since this is what we were aiming to advance, we opted to structure the paper like an environmental scan (as best as we could due to the new and emerging nature of the methods for environmental scans and without clear guidance to date) and were hoping this work would lead to better clarity. Given the infancy of methods for environmental scans, we did not adopt a particular theory or theoretical framework to guide our analysis as we did not want to direct what we found in any specific direction. Our team felt an inductive approach to data analysis was appropriate to understand how environmental scans are actually being done/reported rather than assuming there is one widely accepted way for its use. We extracted and synthesized the following data from the included studies: purpose and promising practices in conducting environmental scans. Thematic analysis was used to review the extracted data in each category and to ultimately synthesize the promising practices in conducting environmental scans among the included articles.

RESULTS

Fifty-six articles were charted for inclusion (see Appendix 1). We followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guidelines in documenting this work.[70] A supplementary file is provided to show the completed STROBE checklist in more detail [Supplementary File 1].

PURPOSES OF ENVIRONMENTAL SCANS

Environmental scans are readily used in health research to survey trends and needs for various individuals and communities in regard to the use, access, and availability of healthcare services and programmes.[7] Three themes emerged regarding the overarching purposes of environmental scans among the included studies.

- **Synthesize evidence to identify health and service gaps, trends, and needs:** A prevalent purpose of environmental scans among the included studies is identifying knowledge and service gaps, practice trends, and healthcare needs of individuals and communities to assess current services and to provide direction for health service planning and delivery.[1,4-7,13,16,,22,24,26,28,29,30,35-37,41,44,46-52,54,55,58,59,60,65,67,69]
- **Synthesize evidence to inform health research, practice, education, and policy: A**s reported in most of the included studies, another prominent purpose of environmental scans is reviewing, synthesizing, and assessing evidence (published and grey literature) to inform decision-making regarding the development of evidence-based solutions, interventions, patient decision aids, and strategies to facilitate health service planning and delivery, as well as health policy.[11,23,27,31-34,38-43,45,56,57,61,62,66,68] These evidence-based solutions, interventions, and strategies assist in advancing professional practice, education, and training.
- **Synthesize evidence to inform quality improvement:** As reported in a subset of the included studies, an important purpose of environment scan is reviewing, synthesizing, and assessing evidence to inform quality improvement in health services and programmes.[23,25,30,35,41,48,61,63,64] Importantly, the studies report on the need to develop actionable outcomes in addressing areas of improvement to impact change at a practice and policy level.

METHODS AND DATA SOURCES FOR CONDUCTING ENVIRONMENTAL SCANS

For clarity, the term 'methods' refers to the approach described in the included studies for conducting the environmental scan. Upon examination of the included studies, the general method involved in an environmental scan involves data collection from a variety of sources including literature reviews (systematic reviews,[23,30,31,34,38,39,41,42,44,50,59] scoping reviews,[1,5,28,43,53] etc.) of peer-reviewed and grey literature,[5,23] key informant interviews,[6,7,13,16,23-25,29,32,34,36,37,43-46,48,49,54,55,59,60,64-66] expert feedback/consultations,[5-7,26,31,41,42,53,63] online/internet materials and resources (Google search,[29-31] web-based resources,[40] social media networks Twitter and Facebook[30]), focus groups,[4,7,13,16] participant surveys,[7,16,22,32,47,51,52,54,56,61,68,69] practice observations,[13] memos and meeting minutes,[4] community resources,[4] personal communication (emails),[4] corporate/government data and resources,[4,6,32] and medical/health data and resources.[38,42] Most of the included studies used more than one data source (primary and secondary data sources) for comprehensiveness and credibility. It is worth mentioning that among the included studies, we found that the study by Wilburn, Vanderpool and Knight provided the most structured and concrete method by describing a seven-step approach for conducting environmental scans.[6] It is also important to highlight that a study by Rowel and colleagues encourages unconventional approaches or "out-of-the-box" thinking to conducting environmental scans to develop new knowledge and insight.[7]

DISCUSSION

The flexible nature of environmental scans promotes its wide use and rapid uptake across different disciplines; however, this flexibility poses challenges in consistent use and reporting among researchers, educators, and clinicians. Articles by Kassam,[40] Naumann, Reynolds, McColl, and Smith,[5] and Wilburn, Vanderpool, and Knight,[6] begin to outline a step-wise method for conducting environmental scans. Based on the findings of the included articles and the common components among them, coupled with our team's experiences and insights, our team came to a consensus to propose four promising practices for conducting environmental scans in health research.

1. CONSIDER ENVIRONMENTAL/CONTEXTUAL INFLUENCES

An essential component of environmental scans common among the included studies was the consideration of contextual influences on study outcomes. In comparison with other types of approaches to reviewing the literature (i.e., scoping reviews, systematic reviews, or narrative reviews), environmental scans not only synthesize information to assess the scope and trends in a given field but also the significance of contextual influences on outcomes.[8] The consideration of contextual factors is important in establishing relevant research questions and ultimately outcomes that are reflective of the unique needs of the target population.[7] For example, Reitmanova and Gustafson found that contextual factors such as cultural and religious differences, language and literacy issues, and mistrust of primary mental healthcare services, influenced access to mental health services for minority immigrants.[55]

2. USE MULTIPLE DATA SOURCES AND APPROACHES

The majority of the included studies used multiple data sources in the environmental scan to account for diverse forms of knowledge to strengthen and validate outcomes. Naumman and colleagues utilised multiple data sources and approaches to collect data for their scan on Fetal Alcohol Spectrum Disorder service availability in Eastern Ontario, which included internet searches, government and hospital websites, email, research registers, existing networks, and key informant interviews.[5] An important consideration outlined by Wilburn, Vanderpool, and Knight emphasises the importance of considering the variety of data sources for collecting information for the environmental scan as this may assist in preventing the omission of relevant and useful information.[6] The most common data sources used among the included studies include the use of literature reviews (systematic and scoping reviews), internet/online materials and resources, key informant interviews, and expert feedback/consultations. It is worth mentioning that we encourage researchers to be mindful of utilising online/internet data sources due to the dynamic nature of the internet, thus results are reflective of a specific point in time and determining a strategy to keep track of search results for future use would be helpful.

3. ENGAGE STAKEHOLDERS TO ENSURE RELEVANCE/NEED AND INCREASE UPTAKE OF OUTCOMES

A unique characteristic of environmental scans is ensuring the outcomes reflect societal needs, thus most of the included studies encouraged the engagement and participation of stakeholders to ensure the findings are reflective of the needs of citizens and communities. More specifically, early engagement of stakeholders was used to assist in assessing the feasibility, relevance, and impact of the environmental scan to enhance knowledge implementation. For example, in a study conducted by Liddy, Johnston, Irving et al, the research team established networks and connections with community health, social care organisations, and public health to facilitate the delivery of a self-management program.[43] These outreach and collaborative efforts enabled the translation of the program content into relevant, user-friendly, practical language and accessible format.[43] As environmental scans tend to assess the needs of stakeholders in each context, engagement in

the scan process may be critical in ensuring outcomes are specific and sensitive to the needs of the target population. The majority of the included studies engaged stakeholders in providing input as a data source for their scan. When stakeholders were not engaged the authors of the studies appeared to have expertise on their research team.

4. USE OF OUTCOMES TO ADDRESS KNOWLEDGE OR SERVICE GAP TO OPTIMISE IMPACT

An important component of environmental scans mentioned in most of the included studies is the consideration of how data will be analysed and disseminated. Given that the outcomes of environmental scans are often used to promote practice, policy and systems changes determining how study outcomes will be utilised to address specific knowledge or service gaps will impact research and practice change.[6,7,53] Therefore, a plan for the analysis, dissemination and implementation of environmental scan outcomes will assist in maximising impact.[4,7] Importantly, environmental scans also promote the creation of new knowledge that can result in actionable outcomes to inform practice change;[7] thus, results not only present an overview of the state of the literature but also a synthesis of new insight based on existing knowledge. A common thread among the included studies is the discussion of how outcomes will inform or impact change in research and practice. Based on our team's experience a distinguishing aspect of the environmental scan is a sense of urgency and consideration for the use of outcomes in addressing a knowledge or service gap. The timeframe from developing or assessing evidence to its use is expedited compared to other approaches.

STRENGTHS AND LIMITATIONS

This study is among the first to decipher promising practices in the conduct of environmental scans. A strength of this work is having the expertise of our collaborative interdisciplinary team (including a knowledge syntheses methodologist, health sociologist, knowledge translation researcher, implementation scientist, health services researcher, and expert in partnered research) with diverse perspectives and experiences in the conduct of environmental scans. The individual and collective experiences of team members contributed to identifying the promising practices and informed our selection of an environmental scan approach instead of a scoping or systematic review for this work. We acknowledge that this may present potential bias in the resulting four proposed promising practices. We encourage others interested in environmental scans to spark a conversation about how to standardise the methods involved in its conduct. One of the advantages of environmental scans is their flexibility thus, a standardised approach seems counterintuitive; making it difficult to outline a common or consistent procedure. Thus, this is an area for future consideration.

It is important to note that we used a scan method to investigate methods for environmental scans which may not have been optimal, however, it is a necessary and valuable first step in acquiring a sense of emerging common practices in the conduct of published environmental scans and validates that need for further research and attention into this type of 'scan' or review for methods. Since we focused on methods, we felt peer-reviewed published literature was the most appropriate data source to seek this information knowing that this would limit our findings as other work might have been missed and that other data sources would need to be considered to align with an environmental scan approach. We also acknowledge that in limiting our search using the terms 'environmental scan' and 'health', additional studies may have been missed.

CONCLUSION

Our findings suggest there is some consistency in the practice of conducting environmental scans due to the commonalities across the included studies. We have used literature that applies the environmental scan approach coupled with our team's experience and insights to provide four promising practices in the conduct of environmental scans. This work demonstrates the flexibility and value of environmental scans in health research. This work is among the first to provide an evidence-based description of key components that contribute to an environmental scan. However, our work provides a starting point and further research is needed to evaluate the effectiveness of the proposed components. Future work could focus on delineating between methods and data sources of environmental scans as this could be useful in guiding decision-making regarding the selection of data sources and the methods or procedures for collecting the data.

IMPLICATIONS FOR RESEARCH, POLICY, AND PRACTICE

We hope this work will encourage conversations among researchers, trainees, educators, scientific communities, and health professionals across health disciplines and beyond about establishing methodological best practices for environmental scans. The findings of this environmental scan are among the first to provide foundational knowledge regarding promising practices for the conduct of environmental scans in health research. We encourage other researchers and health professionals to build upon the findings of this work to establish formal or standard practices in the conduct of environmental scans.

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