











# BMJ Open Use of environmental scans in health services delivery research: a scoping review

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**To cite:** Charlton P, Kean T, Liu RH, *et al.* Use of environmental scans in health services delivery research: a scoping review. *BMJ Open* 2021;**11**:e050284. doi:10.1136/bmjopen-2021-050284

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2021-050284>).

Received 15 February 2021  
Accepted 13 August 2021

## ABSTRACT

**Objective** To examine the extent and nature of evidence on the use of the environmental scan (ES) in the health services delivery literature.

**Design** Scoping review.

**Methods** This scoping review followed the five-stage scoping review methodology outlined by Khalil *et al.* A Peer Review of Electronic Search Strategies was completed. Seven electronic databases and the grey literature were searched. Pairs of researchers independently performed two levels of screening and data extraction. Data were analysed using qualitative content and thematic analysis.

**Results** Ninety-six studies were included in the scoping review. Researchers conducted ESs for many purposes, the most common being to examine the current state of programmes, services or policies. Recommendations were informed by ESs in 20% of studies. Most common data collection methods were literature review (71%), key informant or semistructured interviews (46%) and surveys (35%). Over half (53%) of the studies used a combination of passive (looking at information eg, literature, policies, guidelines) and active (looking for information eg, surveys, interviews) approaches to data collection. Person sources of data (eg, healthcare stakeholders, community representatives) and non-person sources of data (eg, documents, electronic databases, the web) were drawn on to a similar extent. The thematic analysis of the definitions/descriptions yielded several themes including instrument of discovery, knowledge synthesis, forward-looking and decision making. Research gaps identified included absence of a standard definition, inconsistencies in terminology and lack of guiding frameworks in the health services delivery context.

**Conclusion** ESs were conducted to gather evidence and to help inform decision making on a range of policy and health services delivery issues across the continuum of care. Consistency in terminology, a consensus definition and more guidance on ES design may help provide structure for researchers and other stakeholders, and ultimately advance ES as a methodological approach. A working definition of ES in a health services delivery context is presented.

## INTRODUCTION

Environmental scanning, a process designed to gather information to inform and direct

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This scoping review addresses an important knowledge gap—the use of environmental scans in the health services delivery literature—and includes a comprehensive analysis of the peer-reviewed and grey literature.
- ⇒ The study followed established and systematic methods for conducting scoping reviews.
- ⇒ For the grey literature search, limits were placed on the number of platforms searched and articles selected per platform. Some relevant studies may have been missed; however, our comprehensive search strategy helped mitigate this limitation.
- ⇒ Only English-language studies were considered for this scoping review.
- ⇒ The included studies were not assessed for methodological quality.

organisational change, is deeply rooted in the business sector.<sup>1</sup> Leaders in other sectors over the past several decades have come to understand the need to acquire, organise, evaluate and mobilise different kinds of knowledge to inform decision-making processes, anticipate and interpret trends, adapt organisational behaviour, energise organisational growth, mitigate institutional risk and develop strategies in response to rapidly changing environments.<sup>2–8</sup>

## Scanning characteristics

Environmental scanning can range from formal to informal activity and is influenced by individual, contextual and organisational factors.<sup>1 9–13</sup> Formal scanning is systematic, continuous, proactive, prospective and coordinated, and is undertaken to inform decision making on circulating trends, threats or issues.<sup>1 5 14 15</sup> Environmental scanning may also be conducted on a less formal, irregular and reactive basis often triggered by a crisis or specific issue.<sup>11 14–17</sup> Regardless of



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the approach, environmental scanning is viewed as an important means of organisational learning.<sup>12</sup>

Environmental scanning is integral to strategic planning and involves an analysis of an organisation's external and internal environments.<sup>2 13 18–21</sup> The external environment includes elements outside the boundaries of an organisation (eg, political/legal, technological, sociocultural environments, customers, suppliers, strategic partners, etc).<sup>19 22 23</sup> The internal environment may include elements of an organisation, for example, structure, budget, workforce capacity and/or leadership.<sup>23–27</sup>

Information is drawn from person sources (eg, staff, community, experts) and/or non-person sources (eg, databases, documents, the Web).<sup>5 6 28 29</sup> Person and non-person sources may be internal (accessible within the boundaries of an organisation) or external (accessible beyond the boundaries of an organisation).<sup>4 5 28</sup> The selection of data sources may be influenced by accessibility to information, quality of information and environmental uncertainty (constant change within an environment).<sup>10 11 24 30 31</sup>

### Environmental scans and health services delivery

While environmental scanning is conducted by healthcare organisations as part of strategic planning,<sup>32–36</sup> an environmental scan (ES) is frequently reported in health literature as a methodological approach to examine a specific health issue. For example, ESs have been used to: explore patient safety education and healthcare provider training programmes;<sup>37 38</sup> create quality indicators for health services (eg, fall prevention and adult critical care);<sup>39 40</sup> inform the design of cancer prevention programmes<sup>29 41</sup> and; explore the availability of health information resources.<sup>42</sup> Several studies have noted the utility of ESs for assessing community needs and for programme and policy development.<sup>28 29 41 43</sup>

Despite the potential of ESs to inform policy and practice, consensus on a working definition does not appear to exist<sup>29 41 44</sup> and practical guidance to design and/or implement ESs is lacking in the literature.<sup>41 45</sup> Guiding frameworks or models exist in the business and other sectors,<sup>25 14 16 46–48</sup> yet few have been developed specifically in a health services delivery context.<sup>28 29 41 43 44</sup> To build on previous research and address the knowledge gaps noted above, this scoping review provides a synthesis of evidence about the nature and extent of the use of ESs in the health services delivery literature. To our knowledge, this is the first scoping review on this topic. Research and evaluation of ESs may enhance the approach to ES and its utility to support decision making in health policy and practice.<sup>29 41 44</sup>

## METHODS

This scoping review followed the five-stage methodology outlined by Khalil *et al* that builds on previous scoping review methodologies of Arksey and O'Malley, Levac *et al*, and the Joanna Briggs Institute.<sup>49–55</sup> The

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Extension for Scoping Reviews reporting guidelines were followed.<sup>51 56</sup> The steps for the review are briefly presented here; however, a full description of the scoping review protocol can be found in Charlton *et al*.<sup>45</sup>

### Identifying the research questions

The research questions for this scoping review were:

1. How have ESs been conceptualised and operationalised by stakeholders in the health services delivery literature? (eg, characteristics including existing definitions, ES purpose, healthcare issues, settings, design, methods, data sources, scanning modes).
2. What limitations, if any, were described in the included studies that use ESs in the context of health services delivery?

### Identifying relevant studies

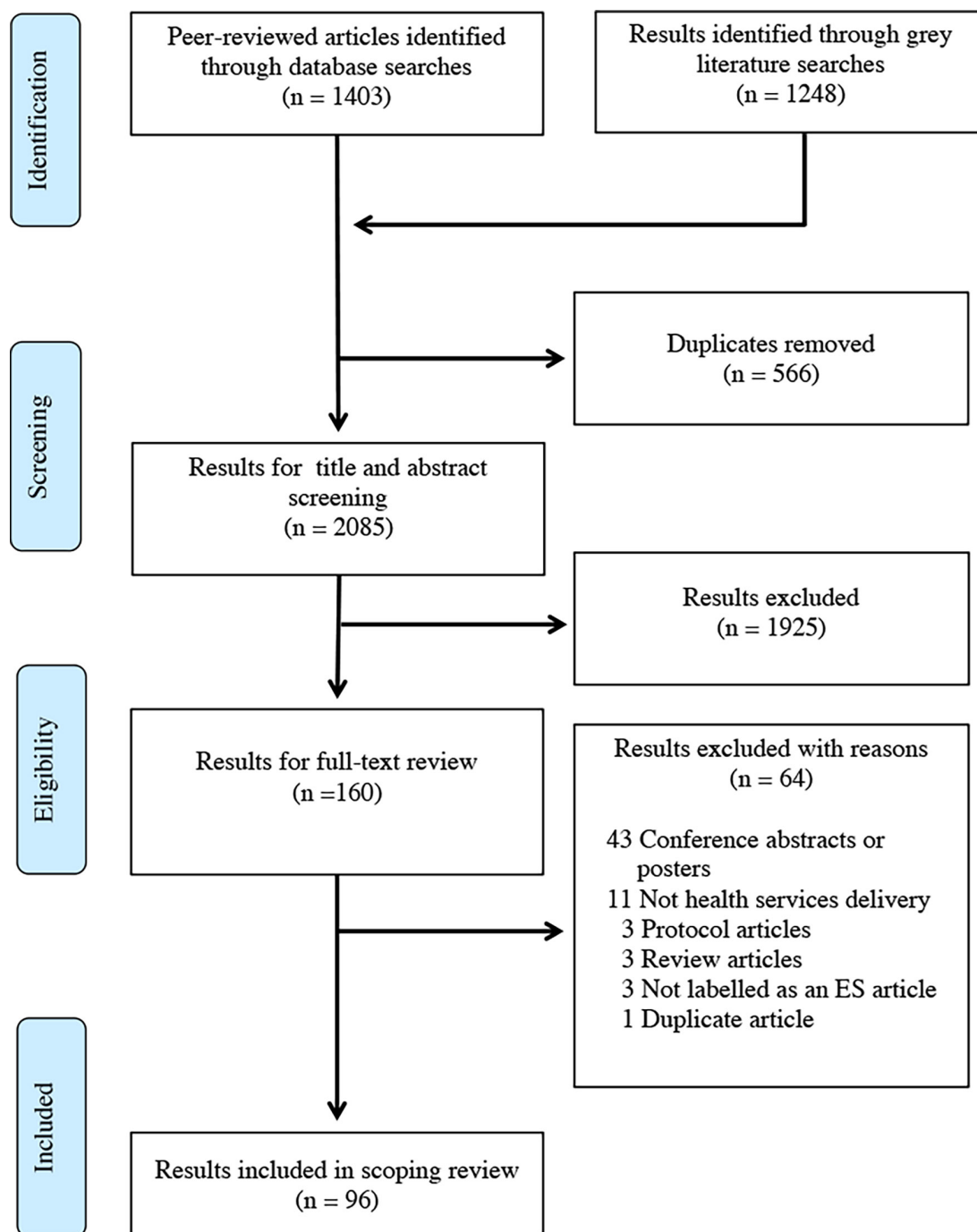
A three-step search strategy was developed by an experienced librarian (LB) with the research team and peer-reviewed (KM) based on the Peer Review of Electronic Search Strategies guidelines.<sup>57 58</sup> Seven electronic databases were searched: CINAHL, MEDLINE, PsycINFO, ERIC, Embase, Canadian Business & Current Affairs, and Academic Search Premier (see online supplemental file 1 for an example of the search strategy for Medline).

Relevant grey literature was identified through searches of the New York Academy of Medicine Library Online Catalog<sup>59</sup> and Grey Matters, a resource developed by the Canadian Agency for Drugs and Technologies in Health (CADTH)<sup>60</sup> for searching health-related grey literature, using the search term “environmental scan”. Google and Google Scholar searches were also conducted using the search terms “environmental scan” and health services, and intitle: (“environmental scan” and health) filetype:pdf-professional development-performance-college-university. To balance comprehensiveness with feasibility, the searches of Google, Google Scholar and the NYAM, were limited to the first 10 pages (or first 100 hits). For CADTH's Grey Matters, the top 10 websites/databases deemed most relevant to the objectives of the study were selected to identify studies. Some relevant studies may have been missed, however, our comprehensive search strategy helped mitigate this limitation. The reference lists of peer-reviewed sources were also hand searched for relevant studies.

### Selecting studies

Articles considered for inclusion were specific to health services delivery, published in English and reported on the use of an ‘ES’ as a methodological approach. No limitations were placed on publication date, population, health service, healthcare setting (eg, primary care, acute care), healthcare discipline or geographical location.

Two reviewers independently screened titles and abstracts (PC and KK) and full-text articles of the peer-reviewed literature (PC and TK) to assess for study



**Figure 1** PRISMA flowchart. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

eligibility. Pilot tests were conducted at the beginning of first level (titles and abstracts) and second level (full-text) screening to evaluate reviewer agreement and to ensure consistency. Similarly, for the grey literature, six team members worked in pairs to conduct both levels of screening (RHL, DAN, AL, TK, RA and PC). Disagreements on study selection in the screening process were resolved through discussion or, if necessary, by a third reviewer (PC, TK and WM). A modified version of the PRISMA flow chart for this review is found in [figure 1](#).<sup>56 61</sup>

### Charting the data

The team developed a standardised data extraction form to chart the data. Extracted data elements included author, country, publication year, publication type, purpose of the study, purpose of ES, health condition, health domain, setting, design, methods, data sources, data source mode, scanning mode, as well as other relevant information including existing definitions, guiding frameworks and limitations.

Working definitions for the extracted data elements were developed to provide clarity and consistency among

researchers during the data extraction process. For instance, scanning mode was recorded following two of the four levels of scanning described in the Choo model<sup>1</sup>—conditioned viewing and searching. In this model, viewing information (ie, 'looking at' information), is considered 'passive' data collection, while searching (ie, 'looking for' information) is considered 'active' data collection.<sup>1</sup> Similar to Naumann *et al*,<sup>44</sup> we categorised scanning mode into two of the four scanning modes described by Choo<sup>1</sup> as these were deemed most relevant to this review. The term scanning mode has also been used to describe data sources (ie, internal/external and personal/impersonal) in some studies.<sup>31</sup> Therefore, for clarity the term data source mode was chosen to refer to the environment from where the data source emerged (ie, internal or external source) and the nature of the data source (ie, person/non-person).

Four teams of paired reviewers (PC, TK, PC, RA, TK, AL, RHL, DAN) independently extracted data from the peer-reviewed and grey literature. Pilot tests of data extraction were conducted to assess agreement and promote consistency between reviewers.<sup>52 62</sup> The team identified initial categories for the data elements and additional relevant categories and sub-levels of categories were added as we became more familiar with the literature. Each pair of reviewers met regularly to review extraction results and to resolve any discrepancies through discussion.

### Collating results

Content and thematic analysis were used to analyse the extracted data.<sup>63 64</sup> Content analysis was conducted using SAS Edition V.3.6 and included a descriptive analysis using frequency counts and percentages to describe study characteristics. A manual thematic analysis was conducted to detect possible themes within the definitions of the reviewed studies. Data familiarisation was achieved by reading and rereading the included articles and the extracted definition-related data. Preliminary ideas were recorded and coded to reflect potential contribution to a theme. The initial themes were reviewed and refined until the final themes were determined.

Team members (PC, TK, RHI, DAN, RA, SD, AL, WM) reviewed and discussed the preliminary findings. The data are presented in tabular form which includes a narrative and descriptive numerical summary of the studies' characteristics (online supplemental files 2–5), ES definitions and descriptions (online supplemental file 6) and thematic analysis details (online supplemental file 7). Knowledge gaps and implications for policy, practice and research are highlighted.

### Patient or public involvement

No patients or public were involved in the design or implementation of the scoping review.

## RESULTS

Ninety-six studies were included in this scoping review: 60 from peer-reviewed literature<sup>29 44 65–122</sup> and 36 from grey literature.<sup>123–158</sup> Findings suggest ESs were conducted for

a wide range of purposes, defined in various ways and employed a variety of methods. Few studies were guided by a methodological framework for conducting an ES. A summary of study characteristics is presented here (see online supplemental files 2–5 for further detail).

### General characteristics

#### Publication date and country of origin

Studies originated from three countries including Canada (68%), USA (28%) and Australia (4%) with publication dates from 2001 to 2019 inclusive. Among the 96 studies reviewed, the rates of published studies that used ESs in a health services delivery context increased from about 6% (2001–2006) to 20% (2008–2011) to 30% (2012–2015) and to 44% (2016–2019).

#### Population, healthcare setting and health conditions

Populations under inquiry ranged from newborn to older adult and the healthcare setting spanned the continuum of healthcare services. Most studies (57%) were situated in multiple settings followed by primary care or primary healthcare (13%), acute care (7%), and regional cancer centres/facilities (6%). Several health settings appeared in 4% or less of the studies, for example, ambulatory care, rehabilitation, palliative care/end-of-life, Veterans Affairs and community emergency response services. Of the 96 studies reviewed, 55% focused on chronic disease, 8% on infections or infectious disease and 8% other conditions (eg, end-of-life, injury); 31% did not focus on a particular health condition.

#### Purpose of the ESs

The reported purposes of the ESs varied across studies (see table 1). The two most reported purposes were to (1) examine the current state of programmes, services or policies (82%) and (2) identify patient/community/organisation needs, strengths, challenges, barriers and service gaps (58%).

In 20% of the studies, the ES and other methods informed policy and/or practice recommendations. For example, the ES helped to inform recommendations to: improve HPV vaccination rates;<sup>68</sup> evaluate technology-assisted patient access to clinical information;<sup>88</sup> promote perinatal mental health and support among immigrant women;<sup>104</sup> develop institution-specific policies and procedures on the use of continuous infusion pumps during radiation treatment;<sup>69</sup> develop a model of care for osteoarthritis management;<sup>150</sup> and develop standards of care for cancer diagnostic assessment programmes.<sup>74</sup>

#### Data collection approach and methods used in the ES

A variety of data collection methods were used and about 64% of the studies used more than one data collection method. Within the ES component of the studies, the most common data collection methods were literature review (ie, peer-reviewed and grey literature) (71%), followed by key informant or semi-structured interviews (46%), surveys (35%), other types of person contact (eg, emails, advisory groups, networks, expert panels), (28%),

**Table 1** Reported purpose(s) of the ES within reviewed studies

Purpose of the ES(s)	Studies % (n)
Examine the current state of programmes, services or policies	82 (79)
Identify and/or assess patient/community/organisation needs, strengths, challenges, barriers and service gaps	58 (56)
Identify and/or assess tools for patient care, or inform development of tools/education materials/patient decision aids	23 (22)
Understand the use or experience of a phenomenon or service	22 (21)
Inform programme planning, design and/or improvement	20 (19)
Inform recommendations for policy and practice	20 (19)
Identify best practices or innovative practices	15 (14)
Inform/guide quality improvement and/or patient safety initiatives	14 (13)
Inform aspects of practice or policy development or change	10 (10)
Assess or inform models of care	10 (10)
Assess or inform clinical practice guidelines	9 (9)
Inform the development of planning or evaluation frameworks	8 (8)
Inform improvements in the transition of care	6 (6)
Inform future research or research programme	6 (6)
Inform standardisation of services, processes, structure/organisation and delivery	3 (3)
Understand factors influencing health behaviours	2 (2)
Assess or inform other types of guidelines and standards such as for use of technology	1 (1)

Percentages do not add to 100 because there may be more than one purpose for an environmental scan. ES, environmental scan.

other methods (eg, mapping exercise, site visits) (17%), and focus groups (3%).

### Scanning mode and sources

About 23% of the studies relied solely on active data collection methods while 22% used only passive data collection methods. Over half (53%) reported using a combination of passive and active data collection methods for the ES component of the study.

Over half (53%) of the studies used a combination of person and non-person data sources, 23% used only

person data sources and 22% used only non-person data sources. Non-person data sources included: the Web (58%) (eg, accessing reports, guidelines, policy documents, tools, resources), academic databases (38%), other reports, documents, grey literature accessed through contacts (26%), administrative databases (4%) and other sources (eg, social media) (11%).

Data source modes were classified into one of four categories: internal person sources, internal non-person sources, external person sources and external non-person sources. Overall, about 70% of the studies included external non-person sources, 65% external person sources, 31% internal person sources and 19% internal non-person sources. Eight per cent of these studies included all four data source modes.

### Conceptual characteristics ES definition and description

Less than one-quarter (22%) of the studies provided a definition and/or a description of ES. Within the 21 studies that provided this information (18 peer-reviewed and 3 grey literature), 12 (57%) studies cited the work of Graham *et al.*<sup>28</sup> 6 studies (29%) referenced or cited the definition by Choo<sup>2</sup> and 7 studies (33%) cited the work of Rowel *et al.*<sup>29</sup> Graham *et al.*<sup>28</sup> and Rowel *et al.*<sup>29</sup> also cited Choo<sup>2</sup> as influential. (see online supplemental file 6).

The thematic analysis of definition/description-related data of the 21 studies yielded several key themes: instrument of discovery, forward-looking, knowledge synthesis and decision making (see codes and themes in online supplemental file 7). Most of the 21 studies (81%) classified ES as a distinct entity or mechanism (eg, 'a tool', 'a review', 'a method') while others described the action or process of environmental scanning.<sup>65 99 110 114</sup> Nearly three-quarters (71%) of these studies used language (eg, 'raise awareness of issues', 'develop insight', 'to identify emerging issues') that suggested the acquisition of new knowledge was a function of an ES. Most of the studies (71%) used ES descriptors that were future oriented (eg, 'may inform future planning', 'to enable strategic action', 'opportunities for improvement'). About half (48%) of the studies conveyed the importance of an ES in synthesising information (eg, 'the identification and synthesis of evidence', 'publicly available information is gathered systematically and is used to evaluate', 'to identify and collate a large body of information'). Many studies (43%) used terms within the definition/description-related data that suggested an ES could guide and support decision making (eg, 'assist in health decision making', 'to facilitate with strategic planning and decision making', 'analyse information to guide the direction'). Finally, some definitions/descriptions made reference to scanning the external environment citing the work of Choo,<sup>2 29 101</sup> while others included reference to both the internal and external environments<sup>65 114</sup> or to internal and external data sources.<sup>44 68 73 93</sup>

## ES terminology

Terms to describe an ES varied across the literature. The most common term used was 'tool' (43%)<sup>29 44 68 73 93 96 112 119 127</sup> including a 'mixed-methods tool'<sup>73</sup> and a 'needs assessment tool'.<sup>119</sup> Other terms used to describe an ES were 'an objective review',<sup>82</sup> 'review',<sup>70</sup> or 'rapid review',<sup>158</sup> 'method' or 'research method',<sup>65 114</sup> 'research approach',<sup>110</sup> 'cross-sectional survey',<sup>84</sup> and 'integral process'.<sup>153</sup> Environmental scanning was further described as systematic,<sup>29 114</sup> and ESs as a flexible<sup>73</sup> and economical<sup>73</sup> approach for collecting information.

## Guiding frameworks or models for ES

Of the 96 studies reviewed, 18% were conducted by the Canadian Agency for Drugs and Technologies in Health (CADTH) researchers using organisation-specific processes for conducting ESs. Of the remaining 79 studies, 5 studies (6%) reported being informed or guided by a specific ES model or framework (4 peer-reviewed articles<sup>29 44 82 99</sup> and 1 grey literature article.<sup>127</sup>) Of these five studies, two<sup>29 99</sup> were guided or informed by Choo's conceptual model,<sup>2</sup> one<sup>44</sup> was guided by Choo<sup>2</sup> and the American Society of Association Executives frameworks,<sup>159</sup> and one<sup>127</sup> was guided by the Wilburn *et al* model which was specific to the public health context.<sup>41</sup> The fifth study implemented a 'built' ES which assesses the environmental factors that influence an organisation (eg, programmes, policies and physical features) using a school-based evaluation model.<sup>82</sup> In addition, two studies<sup>123 153</sup> reported being guided by scoping review methods. Several other studies in this scoping review included conceptual models that were not specific to ES but were used to guide analysis and reporting of results.<sup>75 107 110 127 134 142 153 157 158</sup>

## Methodological and other observations

In most studies, the ES was the primary methodological approach. In other studies, the ES represented one of multiple methodological approaches used within a study.<sup>69 72 86–88 90 103 115 127 131 132 155 158</sup> For example, in some studies ESs were conducted in combination with a systematic review<sup>74 108 131 132 155</sup> or a scoping review.<sup>44 107 127</sup> Several studies reported that the findings of the ES component of the study was used to validate information gathered from other methods used in those same studies such as a scoping review, interviews, focus groups or surveys.<sup>44 83 86</sup>

Finally, several studies emphasised the importance of engaging stakeholders in the ES process.<sup>29 68 153</sup> For example, Baezconde-Garbaní *et al*<sup>68</sup> noted the central role of engaging stakeholders in developing plans to increase HPV vaccination rates.

## Limitations of the reviewed studies

A discussion of study limitations was included in about 65% of the studies. The most common limitations were those related to the search strategy, sampling, design, data collection methods and response rate. Overall,

similar limitations were noted across peer-reviewed and grey literature.

## DISCUSSION

This scoping review provides insight into how ES are conceptualised, designed and operationalised in the health services delivery literature, a topic that had not been extensively examined or well understood. ESs were conducted to gather evidence and to help inform decision making on complex policy and health service delivery issues in a range of settings across the continuum of healthcare services. However, significant conceptual and methodological gaps were also identified.

First, the findings of this review underscore inconsistencies in the terminology used to describe and define ESs in a health services delivery context. Terminology to define the ES as an entity varied (eg, a needs assessment tool, method, review, process), and where a definition or description was provided, the content and emphasis also varied. Despite lack of clarity of terminology and/or definition, research using ES has continued. Data from this review indicate the number of published ESs in health services delivery has increased from 6% (2001–2006) to 44% (2016–2019).

It is not unusual to find inconsistencies in terminology<sup>160–162</sup> and/or definitions<sup>161</sup> in widely used concepts and methodologies. Consistency in terminology and/or definition can improve reader understanding and experience,<sup>160 162</sup> increase confidence and efficiency of researchers in implementing high-quality studies,<sup>161 162</sup> and improve knowledge translation.<sup>161</sup> The provision and use of clear and consistent ES-related terminology and/or definition may limit uncertainty among researchers when deciding whether to choose an ES for a research study, advance the ES as a methodological approach,<sup>29</sup> and potentially enhance the strength of ESs to support decision making on policy and practice.

Among the studies that included an ES definition and/or description, the works of three researchers were most cited,<sup>2 28 29</sup> including the Choo model<sup>2</sup> which built on previous frameworks<sup>163 164</sup> and was developed in the business sector. Notably, these works were all published over a decade ago, signalling an opportunity for new research and further work to explore development of a consensus on a formal definition of ES in the context of health services delivery. This conceptual gap was noted by (Rowel, p533<sup>29</sup>) who stated 'The lack of clear definition or methodology for ES could weaken its efficacy for public health practice if it were confused with other research tools or processes, such as a comprehensive needs assessment'.

Given this conceptual gap, and based on the analysis of the 96 studies in this scoping review, discussions with our research team, and previous research and definitions,<sup>2 28 29 41 44 84 114 153 165</sup> a working definition of ES was developed as a preliminary step towards the potential development of a formal definition of ES within the

### Box 1 Working definition of an environmental scan (ES) in the health services delivery context

Within a health services delivery context, an ES is a type of inquiry that involves the collection and synthesis of existing information and/or the pursuit of new evidence to inform decision-making and help shape future response(s) to existing and emerging policy and service delivery issues and opportunities.

Drawing information from any source within the internal and/or external environments of an organisation, an ES is often conducted to: examine the current landscape of services, practices, and/or policies; identify needs, service barriers, gaps and priorities; inform planning, policy, and programme design; inform quality improvement and patient safety initiatives; and identify successful strategies, models and innovations to inform system transformation.

context of health services delivery (box 1). The characteristics of the ESs identified in this scoping review and the four key themes identified through the thematic analysis (instrument of discovery, forward-looking, knowledge synthesis and decision making) underpin the working definition. This definition is distinct to health service delivery because it provides specifics about the nature of the information, how it is gathered, and the environments from which information is gathered. It also states the purpose of ESs.

Second, our findings indicate a notable lack of formal guidance to support healthcare stakeholders in their attempts to design and conduct ESs within a health services delivery context. These methodological gaps were noted in several of the studies included in this review<sup>29 44 112 127</sup> as well as in other literature.<sup>41 43</sup> Studies noted the lack of specific methodology or guidelines for conducting ESs.<sup>43 44 112 127</sup> Inconsistencies in methodology were also noted when designing this scoping review. In several existing studies about environmental scanning, researchers referred to data source as ‘scanning mode’<sup>10 12 31</sup> while others referred to scanning mode as a component of a conceptual model.<sup>2 163 166</sup>

Among the studies reviewed, those conducted by researchers at CADTH followed organisation-specific protocols to conduct ESs of policy, practice, and research issues, and use of healthcare technologies and provide this evidence to healthcare decision-makers.<sup>48</sup> Of the non-CADTH studies reviewed, few referenced a specific ES guiding framework or model specific to the implementation of an ES.<sup>29 44 82 99 127</sup> Most frameworks were developed within business or education contexts; two ES studies reported being guided or informed by scoping review methods.<sup>123 153</sup> Existing models can be helpful to guide the development of a conceptual model or framework for ES. For example, Wilburn *et al* describes a seven-step process for conducting an ES in a public health context and maintained the process could be applied to other health issues and research.<sup>41</sup>

Given the paucity of methodological guidance for ESs within the health services delivery context, exploring the development of a guiding framework for conducting an

ES specific to this context could potentially enhance the rigour of these studies and make an important contribution to future research and practice.

Finally, several studies in this scoping review and other studies noted the importance of engaging stakeholders in the ES process.<sup>29 41 68 153</sup> This aligns with the current efforts to engage stakeholders in health services delivery decision-making and in health research.<sup>167 168</sup> For example, in a study aimed at improving patient safety in primary care settings by engaging patients and families, stakeholders were involved throughout the ES process including data collection.<sup>153</sup>

### Limitations of the scoping review

#### Strengths and limitations

This scoping review examined a topic not previously examined and followed an established rigorous method for conducting scoping reviews. A data dictionary was developed to promote consistency in data extraction and researchers met regularly to discuss data extraction and the findings. Data were categorised according to the description/terminology as presented by the authors in the individual included studies. The limitations placed on the grey literature may have resulted in some relevant studies being missed. Broad search terms were used to help mitigate this possibility. The included studies were not assessed for methodological quality.

#### Future research and directions

The conceptual and methodological gaps identified in this scoping review raise important questions for future research and the advancement of ES within a health services delivery context.

1. Would a consensus definition, consistent terminology and/or a model or framework provide helpful guidance to support researchers and advance the ES as a methodological approach used to support decision making on policy and practice?
2. What types of guidance would a model or framework provide (eg, type of information gathered, environments assessed (internal/external), methods and/or types of sources)?

Our future work will involve a further review of the literature and consultation with experts (eg, researchers, policy-makers, practitioners and other stakeholders) to build on and refine the working definition presented in this paper to potentially establish a consensus definition of an ‘ES’ within a health services delivery context. We will also explore the development of a conceptual model or framework that may be of assistance to stakeholders who design and conduct ESs.

The findings from this scoping review showed that in 20% of the studies the evidence generated from the ES was used to help inform policy and practice recommendations on a range of issues. A potential topic for future research could examine how ESs ultimately informed decision-making.

Finally, the scoping review was purposely focused on the studies that specified use of an ‘environmental scan’ to address a specific health service delivery issue. Further research may examine other analytical methods or techniques that include or are similar to ESs such as situational analysis or the Strengths, Weaknesses, Opportunities, Threats (SWOT) technique that may be used in business and strategic planning.

## CONCLUSION

This scoping review provided insights into the characteristics of ESs and how they are described, conceptualised, designed and implemented as reported in the peer-reviewed and grey health services delivery literature. Significant conceptual and methodological gaps were identified. Consistent terminology and/or definition along with structured methodological guidance could support stakeholders in their attempts to design and implement ESs while contributing to the strength of ES to support policy and programme development. We presented a preliminary working definition as a first step in exploring a conceptual definition in future work.

Health systems operate in a complex, dynamic environment, responding constantly to current or emerging issues and unpredictable events that can impact service quality and efficiency. Evidence gathered through ESs can support decision making and assist healthcare organisations to respond, adapt and build on potential challenges and opportunities.

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**Acknowledgements** We wish to acknowledge and thank Christine Fahim, PhD, Scientist, Li Ka Shing Knowledge Institute, St. Michael’s Hospital, Toronto, Ontario, Canada, for reviewing the initial draft of the manuscript and providing helpful feedback.

**Contributors** All team members contributed to this research including the search strategy, and preparation and editing of the manuscript. LB, a health sciences librarian, developed the search strategy in consultation with the research team. A second health services librarian (KM) conducted a peer review of the initial search strategy developed in the scoping review protocol, translated the search to other databases and provided reproducible electronic search strategies for all database searches. Kate Kelly, a PhD student, assisted with the first level screening. Team members contributed to the screening and analysis of results (PC, TK, RHL, DAN, RA, SD, AL, WJM). PC developed the initial draft of the manuscript, and after

several iterations with significant input from the research team, team members (PC, TK, RHL, DAN, RA, SD, AL, WJM) approved the final manuscript submitted for publishing.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient consent for publication** Not applicable.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** All data relevant to the study are included in the article or uploaded as online supplemental information. Most data relevant to this study are included in the article or uploaded as supplemental information. The study protocol and the data dictionary for the data elements in the scoping review are available upon request from the corresponding author.

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