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Investigating theoretical concepts relevant to evidence based public health: Critical literature review

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Abstract---The PRISMA flow diagram for this CLR, presented in Figure A.1 (see Appendix), gives an overview of the main statistics from the various phases of the search strategy. Combined with this, it is important to recognise that after screening the full-text articles during the eligibility phase of the search strategy, the reviewer recognised that the two articles, despite failing to satisfy the publication criterion for inclusion and exclusion, were evidently seminal studies regarding the conceptual and theoretical underpinnings of EBPH. Hence, the justifiable decision was made by the reviewer to include both studies in stage 1 of the present CLR. As documented in the literature, these EBPH-focused change management and PHI design frameworks, especially 6SQuID, have yielded positive outcomes, a prominent example being the Scottish CARE intervention designed by Hartley et al. (2018).

Keywords---public health, Investigating, theoretical concepts.

Introduction

The purpose of the present critical literature review was to produce valid and reliable findings that could be used to address the research objectives: namely, 'To provide a critical overview of the main theoretical concepts relevant to evidence based public health'.

PRISMA Flow Diagram

The PRISMA flow diagram for this CLR, presented in Figure A.1 (see Appendix), gives an overview of the main statistics from the various phases of the search strategy. More specifically, the number of articles that were excluded or included during the identification, screening, and eligibility phases is outlined, and a brief explanation is provided regarding the rationale for excluding particular articles. The three main reasons for excluding particular articles at the eligibility phase of

the search strategy were the following: firstly, the article's focus on practical rather than theoretical aspects of EBPH ($n = 9$), thus conflicting with the present stage's research objective; secondly, the article's focus on the EBPH failures ($n = 3$), thereby failing to conform to this stage's attempt to illuminate theoretical concepts relevant to EBPH; and finally, the lack of full-text availability ($n = 1$).

Overview of Included Studies

An overview of the studies included in this stage of the CLR ($n = 6$) is presented in Table 6. The types of data extracted from the included studies for this preliminary overview were the following: firstly, the article's author (or authors) and publication date; secondly, the research objective; thirdly, the research design; fourthly, the study's methods; fifthly, the main results; and finally, the key conclusions.

As the reader will note that studies published prior to 2013 would be excluded from this CLR, two of the included studies, namely, Rychetnik et al. (2004) and Brownson, Fielding, and Maylahn (2009), have been included in this CLR despite failing to satisfy this criterion. However, based on the established exception criteria (see Table 4), which stipulate that studies which fail to satisfy the exclusion criteria can still be included based on the reviewer's discretion, the decision was made to include these studies in the CLR.

To be specific about the rationale for including these two studies, it is first worth noting that, according to various scholars (Finch, 2010; Pan and Fortunato, 2014), citation metrics for a scholarly article provide a fairly robust indication of the degree to which the article itself is significant, impactful, and worth considering in a particular field. Although several commentators have pointed out that citation metrics, including the number of times a given article has been cited by other researchers, do not necessarily reflect the article's quality, a clear relationship between an article's citation count and its theoretical, conceptual, and practical significance was observed in the study conducted by Gajendra and Singh (2009).

Therefore, since a recently conducted Web of Science (2018) citation report for Rychetnik et al. (2004) and Brownson, Fielding, and Maylahn (2009) revealed that the two articles had been cited by other scholars a significant number of times (namely, 156 times and 402 times, respectively), it is reasonable to conclude that these are – at the very least – noteworthy EBPH-related publications. Combined with this, it is important to recognise that after screening the full-text articles during the eligibility phase of the search strategy, the reviewer recognised that the two articles, despite failing to satisfy the publication criterion for inclusion and exclusion, were evidently seminal studies regarding the conceptual and theoretical underpinnings of EBPH. Hence, the justifiable decision was made by the reviewer to include both studies in stage 1 of the present CLR.

Critical Appraisal

As the reader will note from Table 6, all but one of the included studies ($n = 5$) were narrative literature reviews (NLRs), while the exception, namely, Bergeron et

al. (2017), was a systematic literature review (SLR). This was in line with the reviewer's expectations, since the nature of stage 1's objective for this CLR was to engage with the conceptual and theoretical aspects of EBPH. Specifically, in order to satisfy this objective, review-style studies, rather than qualitative, quantitative, or mixed methods research design, would be the most natural source for discussions of conceptual and theoretical information.

Given this stage's inclusion of only NLRs and SLRs, the distinction between these two types of review is worthy of brief consideration at the outset of this critical appraisal. As noted in Section 2.1, SLRs are characterised by (a) their explicit statement of inclusion and exclusion criteria; (b) their utilisation of comprehensive search strategies; (c) the involvement of multiple reviewers; and (d) consideration of the well-established hierarchy of evidence (Aveyard, 2014; Andrews, 2017). Contrastingly, NLRs do not explicitly state their inclusion and exclusion criteria, they may address multiple research questions, and they tend not to be transparent or comprehensive in their use of search strategies (Ferrari, 2015).

As discussed in Section 2.6.1, the CASP systematic review checklist was employed to assess the methodological quality of SLRs. In addition, La Torre, Backhaus, and Mannocci's (2015) recently-developed INSA framework was used for NLRs. The results from these critical appraisal processes are presented in Table 7 and Table 8, respectively, followed by brief discussions.

Table 6
Studies Included in Stage 1

Author	Date	Objective	Design	Methods	Results	Conclusions
Rychetnik et al.	2004	To provide a glossary and overview of the key concepts relevant to EBPH.	Narrative Literature Review (NLR)	Synthesis of qualitative evidence from the following sources: (a) peer-reviewed literature; (b) grey literature; (c) personal experience of the authors; and (d) discussions with practitioners.	The article produces a robust definition of EBPH, a taxonomy addressing the various types of evidence, and outlines several of the core concepts relevant to EBPH, including argument and evidence, burden of proof, causality, and frequency and rate.	Since this article is merely descriptive, insofar as its objective is to provide an overview of key concepts relevant to EBPH, no conclusions are drawn.
Brownson, Fielding, and Maylahn	2009	To outline the key concepts relevant to EBPH.	NLR	Synthesis of qualitative evidence from peer-reviewed literature.	The article outlines the way in which the principles of EBPH have developed over time, discusses key analytic tools relevant to EBPH (e.g., public health surveillance), and examines the theoretical basis upon which EBPH can be implemented effectively.	Decision-making in the context of EBPH is impacted by (a) the best available evidence; (b) resources; and (c) population needs, preferences, and values (i.e., the 3-factor model).
Shelton	2014	To present key concepts relevant to the success of EBPH initiatives.	NLR	Synthesis of qualitative evidence from peer-reviewed literature.	The author states the case as to why randomised controlled trials (RCTs) are ineffective analytic tools for promoting EBPH, and examines why the so-called 'theory of change' is a critical concept for promoting EBPH effectiveness.	Several EBPH approaches, many of which are rooted in management science, can be utilised to maximise the success of EBPH initiatives

Vujcich	2017	To critique Brownson, Fielding, and Maylahn's (2009) 3-factor model.	NLR	Synthesis of qualitative evidence from peer-reviewed literature.	The preoccupation of previous authors with the issue of evidence when discussing EBPH overlooks the criticality of issues such as the need for cost-benefit analysis. Furthermore, given the 3-factor model's emphasis on population needs, preferences, and values, little attention has been paid towards the difficulties associated with establishing concrete findings in this area.	Brownson, Fielding, and Maylahn's (2009) 3-factor model, although considered one of the theoretical foundations of decision-making in the context of EBPH, should be modified to focus on economic considerations.
Bergeron et al.	2017	To illuminate the theories, models, and frameworks relevant for reinforcing capacity building interventions for public health practice.	Systematic Literature Review (SLR)	Synthesis of quantitative and qualitative evidence from peer-reviewed literature, e-databases, grey literature, and interviews.	8 of the included articles (n = 19) were considered methodologically sound, while the remainder were considered moderate. Regarding the identified theories, models, and frameworks, 4, 17, and 7 were acknowledged in the included articles, respectively.	Capacity building is a conceptual cornerstone of EBPH, and this study shows that the theoretical foundations of capacity building itself should be examined to ensure it can be carried out effectively.
Brownson, Fielding, and Green	2018	To examine why a significant gap exists between the publication of new research findings and the incorporation of these into EBPH.	NLR	Synthesis of qualitative evidence from peer-reviewed literature.	EBPH and its implementation can be considered a mixture of art, science, and timing. Furthermore, since the efficacy of EBPH and public health interventions (PHIs) relies on viable implementation, capacity building is a fundamental issue that cannot be overlooked.	Capacity building cannot be achieved effectively without a differentiated, context-dependent strategy. This is critical since capacity building represents one of the pillars of effective EBPH.

Table 7
SLR Critical Appraisal Using CASP Systematic Review Checklist

Checklist Section	Checklist Question	Bergeron et al. (2017)
A	Clearly-focused question?	Y
	Correct types of papers found?	Y
	All relevant studies included?	Y
	Appropriate quality assessment?	Can't Tell
B	Were the results precise?	Y
	What were the results?	See Table 6
C	Can results be applied to local population?	Y
	Were all important outcomes considered?	Y
	Are the benefits worth the harms and costs?	Y

Based on the completion of CASP systematic review checklist, the reviewer rated Bergeron et al.'s (2017) SLR as 'Strong' in terms of its methodological quality. This is because the search strategy, inclusion and exclusion criteria, and results were explicitly and precisely stated, and aside from the ambiguous suitability of the quality assessment process, all other checklist questions received answers of 'Y' (i.e., 'Yes'). Notably, the appropriateness of the quality assessment was unclear since the researchers neglected to outline the specific tools they had used, but for the purposes of the present CLR, this did not significantly undermine the SLR's methodological quality.

Table 8
NLR Critical Appraisal Using INSA Tool

INSA Question	Rychetnik et al. (2004)	Brownson, Fielding, and Maylahn (2009)	Shelton (2014)	Vujcich (2017)	Brownson, Fielding, and Green (2018)
Clear explanation of study background?	Y	Y	Y	Y	Y
Clear objective?	Y	Y	Y	Y	Y
Clear rationale for study selection?	N	N	N	N	N
Clear overview of key study characteristics?	N	N	Y	N	Y
Clear presentation of results?	Y	Y	Y	Y	Y
Clear conclusion?	Y	Y	Y	Y	Y
Statement of conflict of interest?	N	Y	Y	Y	N

After completing the INSA tool for each of the included NLRs ($n = 5$), the only study to receive a quality rating of less than 'Strong' was Rychetnik et al. (2004). This stemmed from the fact that NLRs with fewer than 3 'N' responses for the 7 INSA questions were considered methodologically strong, while those with more than 2 'N' responses were rated as 'moderate'. Overall, all of the review studies included in this stage of the present CLR (that is, both the NLRs and the SLR) can be regarded as suitable, reliable, and methodologically sound sources of evidence for informing the first of this review's research objectives.

Thematic Analysis

After applying thematic analysis to the included studies, in line with the procedure outlined in Braun and Clarke (2006), the following themes relevant to an investigation of the conceptual and theoretical underpinnings of EBPH were identified: firstly, definitions of EBPH; secondly, evidence; thirdly, decision-making; fourthly, public health; fifthly, capacity building; and finally, Shelton's (2014) 'theory of change'.

Definitions of EBPH

One of the key ways in which to identify, illuminate, and critically assess the main theoretical concepts relevant to EBPH is to examine the available definitions of the term. This is because after considering definitions, such as those extracted from the included studies ($n = 6$), aspects of similarity and dissimilarity can be observed, and in turn, those aspects which are similar across all definitions can be regarded as indicative of a common conceptual foundation. As a case in point, consideration of the definitions presented in the included studies (see Table 9) indicates that fundamental components and concepts relevant to EBPH include evidence, the suitable use of evidence (that is, by making appropriate, evidence-based decisions), and public health. Each of these concepts is discussed in greater depth in the following subsections, along with other relevant concepts and theories, including decision-making, capacity building, and the so-called 'theory of change'.

Table 9
Definitions of EBPH in Included Studies

Study	Definition of EBPH
Rychetnik et al. (2004)	'A public health endeavour in which there is an informed, explicit, and judicious use of evidence that has been derived from any variety of science and social science research and evaluation methods' (p. 538)
Brownson, Fielding, and Maylahn (2009)	The use of 'evidence-based strategies [including evidence-based medicine (EBM) approaches] ... to improve public health' (p. 176)
Shelton (2014)	Utilisation of the principles of EBM to promote public health (p. 253)
Vujcich (2017)	Not stated, since background knowledge is presupposed by the author
Bergeron et al. (2017)	Not stated, since the study focuses specifically on the concept of capacity building rather than the concept of EBPH
Brownson, Fielding, and Green (2018)	'The use of scientific evidence in day-to-day public health practice' (p. 28)

Evidence

Analysis of the included studies ($n = 6$) revealed that a critical theoretical concept in EBPH is that of evidence. However, as acknowledged in four of the included studies (Rychetnik et al., 2004; Brownson, Fielding, and Maylahn, 2009; Shelton, 2014; Brownson, Fielding, and Green, 2018), a clear theoretical line of distinction exists between the general concept of evidence and the concept of appropriate scientific evidence for EBPH. Noteworthy, the taxonomies of evidence for EBPH offered by the researchers differ in various respects, and so it is worth examining these differences.

As noted by Rychetnik et al. (2004), one way in which to classify evidence for EBPH is by adopting the following scheme: certain types of evidence are descriptive, taxonomic, analytic,

interpretive, explanatory, or evaluative. Contrastingly, according to Brownson, Fielding, and Maylahn (2009) and Brownson, Fielding, and Green (2018), evidence for EBPH can be divided into three broad types: firstly, Type 1 evidence, which is used to determine that some action should be taken regarding a particular public health issues; secondly, Type 2 evidence, which illuminates what specific action should be taken; and finally, Type 3 evidence, which informs practitioners as to how a specific action should be taken with respect to a public health issue. Finally, a different classification was offered by Shelton (2014), whose system for determining what evidence for EBPH is relies not on abstract categories, but rather on concrete sources of evidence. These sources include systematic trials and program tests, modelling, evaluation, and the data gathered from performance improvement initiatives.

Decision-Making

Although the definitions discussed in Section 3.1.4.1 clearly indicate the conceptual and theoretical criticality of decision-making for EBPH (that is, the suitable use of evidence), several of the included studies were vague in this area (Rychetnik et al., 2004; Shelton 2014), while others neglected to mention decision-making at all (Bergeron et al., 2017). For example, Shelton (2014, p. 254) broadly stated that decision-making for EBPH relies on two issues: firstly, 'knowledge of whether something works' in a given context; and secondly, knowledge of 'how, when, and why ... something works'.

However, a 3-factor model for decision-making in the context of EBPH was proposed by Brownson, Fielding, and Maylahn (2009), which suggests that, in theory, decision-making in EBPH should be informed by the following issues: firstly, evidence for EBPH; secondly, resources (e.g., the expertise of practitioners); and finally, population characteristics, needs, values, and preferences. Additionally, as illustrated in Figure A.2 (see Appendix), the 3-factor model suggests that decision-making in EBPH can be conceptualised as taking place always within a specific environment and organisational context. Noteworthy, although critiques have been levelled at the 3-factor model due to the way it overlooks the importance of economic considerations (Vujcich, 2017), the model itself is still considered a conceptual cornerstone of EBPH.

Public Health

Given the fundamental nature of the concept of public health, it is a surprisingly straightforward concept to define. Dissimilar to other key concepts (e.g., evidence and decision-making), multiple definitions are not available that must be critically and comparatively examined. However, while Rychetnik et al. (2004) was the exception among the included studies in actually offering an explicit definition of this concept, it is worth emphasising that in each of the other studies, excluding Bergeron et al. (2017) (given the study's focus on capacity building rather than EBPH), the implication was that a definition akin to Rychetnik et al.'s (2004) was being employed. Therefore, by the concept of public health, each included study – whether implicitly or explicitly – referred to 'the process of mobilising and engaging local, state, national, and international resources to assure the conditions in which people can be healthy' (ibid, p. 538).

Capacity Building

According to the WHO's (2005) *Bangkok Charter for Health Promotion in a Globalised World*, capacity building refers to 'the development of knowledge, skills, commitment, structures, systems, and leadership to enable effective health promotion'. Noteworthy, this definition was adopted by Bergeron et al. (2017), while in Brownson, Fielding, and Green (2018, p. 28), a broader definition was used, namely, that capacity building is the reinforcement and augmentation of a public health agency's ability 'to provide or perform essential public health

services'. However, despite the differing definitions adopted by the two studies, both acknowledge that capacity building represents one of the conceptual cornerstones of EBPH, since without capacity building, the aims and objectives of EBPH cannot be achieved.

Given that capacity building is a crucial theoretical concept relevant to EBPH (Bergeron et al., 2017; Brownson, Fielding, and Green, 2018), the concepts, theories, frameworks, and models which directly underlie the former are, therefore, indirect elements comprising part of the latter's foundation. Hence, to achieve the research objective of stage 1 of the present CLR, it is worth considering what these concepts, theories, frameworks, and models are. Notably, Bergeron et al.'s (2017) SLR revealed that in terms of the main theories that can be used to promote capacity building, social learning theories, behaviour change theory, transformational learning theory, and diffusion of innovations were the most frequently mentioned in the literature. Regarding the main models, these ranged from the SWOT analysis model to the ecological model, and as for the relevant frameworks, these included Bloom's taxonomy of learning and the action learning framework (ibid).

Ultimately, however, both Brownson, Fielding, and Green (2018) and Bergeron et al. (2017) emphasised the theoretical importance of differentiated, context-dependent capacity building strategies, a fact with considerable practical significance when we consider the diverse nature of public health settings. Indeed, the core distinction between EBPH and EBM is that the former must focus on more dynamic, continuously changing contexts, research settings, types of evidence, and populations (Brownson, Fielding, and Green, 2018), which represents an important challenge to overcome when designing evidence-based PHIs (as will be discussed in stage 2 of this CLR). Nevertheless, at the conceptual level, taking the evidence from the included studies together, it is reasonable to view the aforementioned theories, frameworks, and models that underlie capacity building as fundamental theoretical concepts which are also relevant to EBPH.

Theory of Change

As noted by Shelton (2014), although practitioners have typically sought to achieve EBPH by managing evidence-based public health interventions (PHIs) based on trial and error and intuition, outcomes can be improved by adhering to a systematic 'theory of change'. This is because, when integrated into the conceptual foundation of EBPH, a theory of change offers a structured process by which each of the elements and stages required to produce the intended results can be designed, implemented, overseen, and maintained. Nevertheless, although the presence of a theory of change within a PHI can be considered an important theoretical concept relevant to EBPH, some scholars have suggested that certain theories of change may oversimplify the change process, thus undermining the flexibility afforded by intuition. For example, one of the models highlighted by Bergeron et al. (2017) as an effective way to promote capacity building, namely, Lewin's 3-step change management model, has been criticised extensively in the literature (Cummings, Bridgman, and Brown, 2015), thus emphasising that while – in theory – utilisation of a theory of change may be crucial to EBPH, practical difficulties emerge when attempting to realise these theoretical concepts in the real world. However, as discussed in the next stage of this CLR, other models exist, including Wight et al.'s (2015) 6SQuID, which have been specially developed to promote evidence-based PHI design, planning, and implementation. As documented in the literature, these EBPH-focused change management and PHI design frameworks, especially 6SQuID, have yielded positive outcomes, a prominent example being the Scottish CARE intervention designed by Hartley et al. (2018).

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Appendix**Figure A.1: PRISMA Flow Diagram (Stage 1)**