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Original Research

Development of the Guide to Disseminating Research (GuiDiR): A consolidated framework

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ABSTRACT

Background: Less than one third of research evidence is translated into policy or practice. Knowledge translation requires effective dissemination, adoption and finally implementation. These three stages are equally important, however, existing knowledge translation models and frameworks provide little and disparate information about the steps and activities required for effective dissemination.

Objective: This study aimed to empirically develop a consolidated framework of evidence-based steps and activities for disseminating research evidence.

Methods: We identified models and frameworks from a scoping review and dissemination and implementation webtool. We synthesised them into a prototype dissemination framework. Models and frameworks were eligible to inform steps in our framework if they fulfilled at least one of three elements of dissemination: intending to generate awareness of a message, incorporates targeting an audience: tailoring communication. An initial coding framework was created to organise data into dissemination steps.

Drawing on 'co-approach' principles, authors of the included models and frameworks (dissemination experts) and health service researchers (end users) were invited to test and refine the prototype framework at a workshop.

Results: From 48 models and frameworks reviewed, only 32 fulfilled one or more of the three dissemination elements. The initial coding framework, upon refinement, yielded the Guide to Disseminating Research (GuiDiR) comprising five steps.

1) Identify target audiences and dissemination partners.
2) Engage with dissemination partners.
3) Identify barriers and enablers to dissemination.
4) Create dissemination messages.
5) Disseminate and evaluate.

Multiple activities were identified for each step and no single model or framework represents all steps and activities in GuiDiR.

Conclusions: GuiDiR unifies dissemination components from knowledge translation models and frameworks and harmonises language into a format accessible to non-experts. It outlines for researchers, funders and practitioners the expected structure of dissemination and details the activities for executing an evidence-based dissemination strategy.

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1. Background

Health services research is essential in improving the quality, accessibility and organisation of health services and social care settings.[1] Yet, the evidence generated from health services research can only influence practice or generate change if the learning reaches the right people at the right time.[2] 'Knowledge translation' is the field of research that has emerged to understand the process of utilising the learning from research to influence policy and/or practice.[3] The field (also interchangeably known as 'knowledge transfer', 'knowledge exchange', 'knowledge mobilization' and 'knowledge utilization'[4]) has grown exponentially over the years and has yielded over 100 theories, models and frameworks[5] to guide researchers in their efforts to put new evidence (knowledge) to use. However, across a range of health systems, less than a third of academic research evidence is translated to policy or practice and failure to effectively disseminate is a core contributor.[2]

Knowledge translation encompasses dissemination, adoption and implementation. Effective dissemination is the process of spreading evidence 'to the target audience via determined channels using planned strategies'.[6] Dissemination is a core component of knowledge translation in advance of and alongside adoption and implementation.[7] Adoption is the decision of an organisation or a community to commit to implementing new practices,[8] whereas implementation is the subsequent process of putting to use or integrating new practices within a setting.[6,7] Therefore, effective dissemination is key to successful adoption and, ultimately, implementation.[9]

The goal of dissemination is to reach the people who will use, be impacted by or influence use of the evidence (e.g., patients, healthcare practitioners, programme managers and policymakers). Dissemination should span the entire lifetime of a research project. There are numerous knowledge translation models and frameworks that incorporate elements of dissemination. However, scoping reviews of these models and frameworks[10] and reported dissemination activities[11] indicate that dissemination is generally only recognised as a single step undertaken towards the end of a project's life. This contributes to the translational gap between evidence generation and policy/practice impact and represents potentially poor return on research funders' investment.[12]

The presence of numerous knowledge translation models and frameworks is a welcomed indicator that research is being devoted to addressing the gap between research evidence generation and policy and/or practice impact. However, this presents a challenge for researchers attempting to select the most appropriate resource to underpin their dissemination strategy. Furthermore, while these resources may provide some steps to disseminating research, they do not necessarily guide researchers regarding the specific activities to undertake at each step in the process of dissemination. Dissemination strategies remain ineffective or absent altogether from programmes of research,[13,14] suggesting the field of knowledge translation and the guidance buried within it is inaccessible to researchers who are not experts in dissemination. There is therefore a need to work with the target audience to develop a framework that unifies the numerous dissemination steps and activities reported in the literature into one consolidated and accessible framework.

Addressing barriers to researchers undertaking activities to facilitate effective implementation of new practices has received significant attention. For example, the Consolidated Framework for Implementation Research (CFIR) combines 19 existing theories and frameworks providing researchers with a single resource to guide implementation.[15] It is widely accepted that implementation research is evidence-based, with the CFIR at the forefront of enabling researchers to take this approach. Applying a similar concept to the field of knowledge dissemination represents a significant advancement to addressing the translational gap. This study aimed to develop a consolidated framework of evidence-based steps and activities for disseminating research evidence.

2. Methods

This mixed methods study comprised two stages. The research team, comprising behavioural scientists (DB, SS, CS), health psychologist (IK), master's students (TDC, OL, CR), a social scientist (BA) and patient and public representatives (KM, DT), first identified existing process models and frameworks and synthesised them into a prototype dissemination framework (Stage 1). Authors of the included process models and frameworks (dissemination experts), as well as health service researchers (end users), were then invited to collaborate with the research team to test and refine the framework at a workshop (Stage 2).

We drew on the principles of 'co-approaches'[16,17] to participatory research to develop the framework. Co-approaches promote genuine involvement and participation of the relevant key stakeholders, e.g., the end users, policy makers and commissioners, in the development of new innovations.[16,17] There are three main 'co-approaches'[16,17]; co-creation, co-design and co-production. There are divergent and overlapping definitions and interpretations of the three co-approaches. However, the core principles of all three approaches are the ascription of equal value to the voices of each stakeholder group and equal participation at every stage of the development process. This promotes a 'bottom-up' approach to development and limits social hierarchies.[16–19]

We used the Reporting Design Research (REDR) guidelines[20] to support our reporting of the study (Appendix 1).

2.1. Stage 1: Development of prototype framework

We identified existing models and frameworks from a 2020 scoping review[10] of full-spectrum knowledge translation theories, models, and frameworks and a dissemination and implementation webtool (https://dissemination-implementation.org). We reviewed all articles in the scoping review (n = 39), which were identified through searches within MEDLINE, EMBASE and PsycINFO, as well as grey literature and consultation with knowledge translation experts.[10] From the scoping review, screening of reference lists identified further models and frameworks. On the webtool, we used the search function to identify models and frameworks with a focus on dissemination and implementation (categorised as D > I on the webtool) or dissemination-only (categorised as D-only, D = I, D > I on the webtool).

Models and frameworks were eligible to inform the overarching steps of the framework if they reported activity(s) associated with one or more of the following three elements of dissemination.

1. Intending to generate awareness of a message
2. Incorporates targeting an audience
3. Tailoring communication

These elements were derived from the definition of dissemination as 'an active approach of spreading evidence-based interventions to the target audience via determined channels using planned strategies'(6). Eligibility screening was independently undertaken by three members of the research team (TDC, OL, CR), with a fourth (DB) to reconcile any differences.

2.1.1. Developing initial coding framework

We developed an initial coding framework comprising overarching dissemination steps derived from a sample of five models and frameworks that met dissemination elements, experience of the research team and background reading.[21] These were the Knowledge-to-Action framework,[22] the Knowledge Transfer framework for AHRQ Patient Safety Portfolio and Grantees,[23] The Translational Model of the Black Dog Institute,[24] National Center on Health, Physical Activity and Disability Knowledge, Adaptation, Translation and Scale-up (N-KTAS) framework[25] and the Dissemination Effort Model.[26]

2.1.2. Data extraction

We developed a data extraction tool to facilitate extracting and allocating the activities in the models and frameworks to one of the preliminary steps in the coding framework. For reported dissemination activities not aligning to any one of the six *a priori* steps, the activity was labelled as 'other' and located proximal to the most relevant step. This allowed us to identify any additional steps not included in the initial coding framework.

2.1.3. Data synthesis

The organised data were reviewed by the research team to ensure all included activities were correctly aligned to the most relevant step. As new activities were extracted, we iteratively re-organised the preliminary steps and created new steps where necessary. Finally, we removed duplicate activities and adapted the language to ensure user-friendliness (while preserving the content of the activities) to develop a prototype framework for disseminating research.

2.2. Stage 2: Dissemination expert and end user refinement

We invited authors of the included models and frameworks (dissemination experts), as well as health services researchers (end users), to alert us to any key omissions e.g. recent models and frameworks not included in the prototype, and to review and refine the prototype framework at a 1-h virtual workshop. Health service researchers were invited to collaborate to ensure acceptability of the new framework among end users without expertise in knowledge translation research or dissemination whilst preserving its evidence-based foundations.[27,28]

2.2.1. Eligibility and recruitment

We aimed to recruit 6–12 participants to attend the workshop. Dissemination experts and researchers were eligible if they had published work on dissemination or health services research in the past 10 years. We distributed an expression of interest link via Twitter and also invited potential eligible participants directly via email, which included an information sheet detailing the study aims and required commitment to the project. Health services researchers were purposively selected for maximum variation in the countries in which they are research active and their years of experience in research determined from their publications. Dissemination experts were purposively sampled to ensure expertise in the field of dissemination, determined by their publications. We obtained participant consent via an online consent form.

2.2.2. Pre-workshop review

The prototype dissemination framework (supplementary file 3) was embedded into an online survey which was emailed to participants in advance of the workshop. Participants were asked to critique the framework in terms of ease of understanding, omissions or errors, ambiguity in language, and appearance. We also asked participants to explain why they would/would not use the framework in its current form and provide any additional feedback they felt relevant. We refined the prototype framework accordingly prior to the workshop.

2.2.3. Workshop

We convened a 1-h workshop co-facilitated by facilitation experts, members of the research team (DB, SS, BA, IK) and a patient and public representative (KM). Workshop discussions were recorded and three researchers (DB, SS, BA) took field notes. Recordings were not transcribed, but referred back to for the purpose of clarifying field notes and key decisions.

During the workshop, we split participants into two mixed groups comprising end users and dissemination experts and asked them to review the prototype framework. This activity involved the workshop participants using the framework to prepare a dissemination plan for a fictional programme of research (supplementary file 1). This open-ended task intended to gain insight into how the framework was used through a user experience lens, allowing the researchers to see where it needed to be improved. Namely, we wanted to see how we could increase clarity and ease of use of the framework for the end user.[27,28]

We piloted both the pre-workshop and workshop activities with health service researchers unfamiliar with knowledge translation research and dissemination. This was in order to identify any difficulties understanding and interpreting concepts and content of the planned workshop.

We refined the prototype framework based on the workshop feedback and emailed this to participants for comment. We also sent the framework to relevant research team members for comment, including Public and Patient Involvement (PPI) representatives, who are part of the wider research programme that this work is part of. The research team (DB, SS, BA, KM) actioned the feedback to produce the final framework.

Fig. 1 provides a summary of the framework development process.

3. Results

3.1. Stage 1: Development of prototype framework

Forty-eight models and frameworks were screened for eligibility in total, including 25 from the scoping review,[10] 15 models from the webtool[29] and 8 from screening of reference lists. The last search was performed in 2023. One model was subsequently excluded from the analysis as it was inaccessible (FAB model).[30] Table 1 summarises the extent to which the screened models and frameworks represent the three elements of dissemination.[6]

Of the 48 models and frameworks, 19 (40 %) fulfilled all three of the dissemination elements. Thirty-three (73 %) models and frameworks fulfilled at least one of the three dissemination elements and 12 (25 %) fulfilled none. The three dissemination elements were evenly represented; 'steps to generate awareness' and 'steps to tailor communication to an audience' were met by 28 (58 %) models and frameworks, and 'steps to target an audience' was met by 27 (56 %). 15 (31 %) models and frameworks reported no dissemination activities and were therefore not included in the final framework.

The majority of models and frameworks were developed by researchers in the USA (n = 25, 52 %), Canada (n = 10, 21 %) and Australia (n = 7, 15 %). Seventeen (35 %) models and frameworks were published before 2005, 18 (38 %) were published between 2006 and 2012 and the remaining 13 (27 %) have been published since 2013.

3.1.1. Initial coding framework

Six dissemination steps were extracted from the sample of models and frameworks that met all three dissemination elements.[22–26] These formed the initial coding framework: 1) Research characteristics, 2) Consider user context, 3) Creation of partnerships, 4) Consider the environment and perspective of the user, 5) Mass diffusion of key knowledge, 6) Targeted dissemination efforts. A detailed description of the coding framework is provided in supplementary file 2.

Table 2 provides the extracted activities aligned to the relevant step. Mapping of activities to the initial coding framework resulted in two additional steps being generated for activities that did not align to the initial six steps. The two novel steps are 'Step 5: Creating dissemination messages' and 'Step 8: Evaluation'. The number of activities within each step ranges from one to five.

No existing frameworks outlined activities for all eight steps. The framework that contributed to most steps was EMTReK,[61] contributing to six steps, followed by KT Framework for AHRQ Patient Safety Portfolio and Grantees[23] which contributed to five steps.

The extent to which steps were underpinned by existing frameworks varied. 'Step 6: Mass dissemination of key knowledge' and' Step 7: Targeted dissemination efforts' contain activities that feature in 10 and 19 existing frameworks respectively. In contrast, 'Step 1: Research characteristics' and 'Step 8: Evaluate' contain activities that feature in

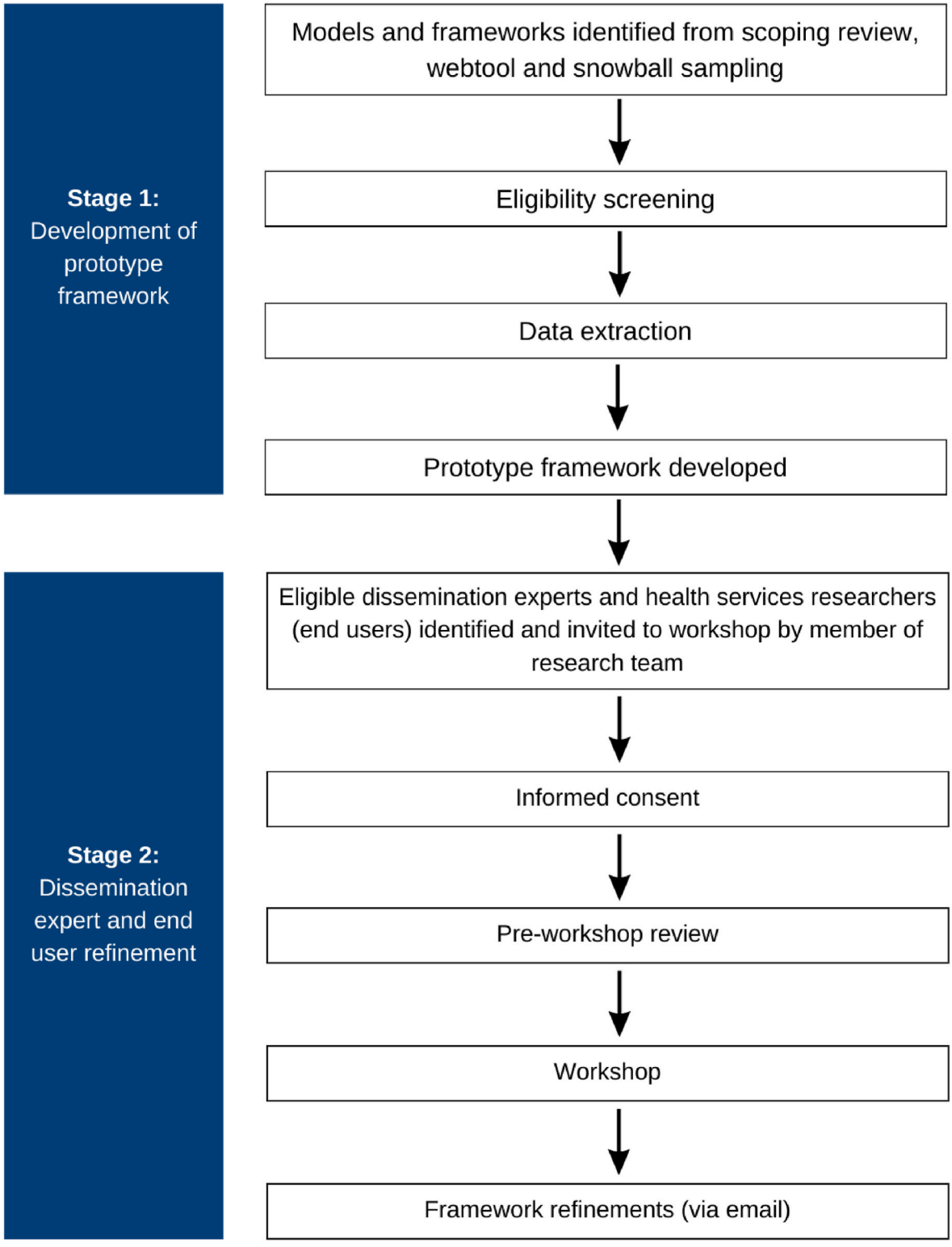

Fig. 1. Overview of framework development.

only four models and frameworks each.

The terminology describing the steps and activities from Table 2 were refined by three researchers (DB, SS, BA) and patient and public representatives (KM, DT) to improve user-friendliness. The prototype framework for disseminating research is provided in supplementary file 3.

3.2. Stage 2: Dissemination expert and end-user refinement

Three researchers (DB, SS, BA) synthesised the feedback from the pre-workshop review and workshop. Supplementary file 4 summarises the feedback from the pre-workshop review and workshop discussions and the subsequent refinements made to the framework in response.

The workshop was convened in June 2022 with four dissemination experts and five health services researchers from Canada, Belgium, UK,

Table 1
Extent to which the 48 identified models and frameworks address the three dissemination elements.

First author	Year published	Country	Model/Framework	Dissemination elements			Dissemination activities present?	Included in GuiDiR framework?
				1. Generating awareness	2. Targeting an audience	3. Tailoring communication to an audience		
Aarons, G.	2011	USA	Exploration, Preparation, Implementation, Sustainment (EPIS) Model[31]	N	Y	Y	Y	Y
Bauman, A.	2006/ 2013	Australia	Stages of Research and Evaluation[32]	Y	N	N	Y	Y
Briggs, A.	2012	Australia	Western Australia (WA) Health Network Approach[33]	Y	N	Y	Y	Y
Campbell, B.	2010	Canada	Community-based Knowledge Translation Framework[34]	Y	Y	Y	N	N
Damschroder, L.	2009	USA	Consolidated Framework for Implementation Research (CFIR)[35]	Y	Y	Y	Y	Y
Damush, T.	2008	USA	Facilitating Adoption of Best Practice (FAB) Models[30]	Excluded – inaccessible	Excluded – inaccessible	Excluded – inaccessible	Excluded – inaccessible	N
Deming Institute	1986	USA	Plan-Do-Study-Action (PDSA) Cycle[36]	N	N	N	N	N
Dobbins, M.	2002	Canada	Framework for the Dissemination & Utilization of Research for Health-Care Policy & Practice[37]	Y	Y	Y	Y	Y
Edward, K.-L.	2017	Australia	Healthcare Improvement Collaborative Model (HICM)[38]	Y	N	N	Y	Y
Elliott, S.	2003	Canada	Conceptualizing Dissemination Research and Activity: Canadian Heart Health Initiative[39]	N	N	Y	Y	Y
Feldstein, A.	2008	USA	Practical, Robust Implementation and Sustainability Model (PRISM)[40]	N	N	N	N	N
Fixsen, D.	2005	USA	National Implementation Research Network's (NIRN) Active Implementation Framework[41]	Y	Y	Y	Y	Y
Glasgow, R.	1999	USA	RE-AIM[42]	N	Y	Y	Y	Y
Glasgow, R.	2012	USA	Evidence Integration Triangle[43]	N	N	N	N	N
Glasgow, R.	2012	USA	Knowledge Integration Process[44]	N	N	N	N	N
Graham, I.	2006	Canada	Knowledge-to-Action (KTA)[22]	Y	Y	Y	N	Y[a]
Green, L.	2006	USA	Push-Pull Capacity Model[45]	Y	N	Y	Y	Y
Green, L.	2005	USA	PRECEDE-PROCEED[46]	N	N	N	N	N
Grimshaw, J.	2020	Canada	Choosing Wisely Deimplementation Framework[47]	N	Y	N	N	N
Harrison, M.	2013	Canada	CAN-IMPLEMENT[48]	Y	Y	Y	Y	Y
Huberman, P.	1994	USA	Dissemination Effort Model[26]	Y	Y	Y	Y	Y[a]
Institute for Healthcare Improvement	2003	USA	Collaborative Model for Achieving Breakthrough Improvement (IHI BTS)[49]	Y	Y	N	Y	Y
Jenkins, E.	2016	Canada	CollaboraKTion Framework[50]	Y	Y	Y	Y	Y
Kitson, A.	2013	Australia	co-KT Framework[51]	Y	Y	Y	Y	Y
Kitson, A.	1998	UK	PARiHS[52]	N	N	N	Y	Y
Kramer, D.	2003	Canada	Conceptual Framework for Research Knowledge Transfer and Utilization[53]	Y	Y	N	Y	Y
Langley, G.	2009	USA	Model for Accelerating Improvement[54]	Y	Y	Y	N	N
Lean Enterprise Institute	2011	USA	LEAN Transformation Process[55]	N	N	N	N	N
Logan, J.	1998	Canada	Ottawa Model of Research Use (OMRU)[56]	Y	Y	Y	Y	Y
Meyers, D.	2012	USA	Quality Implementation Framework (QIF)[57]	Y	Y	Y	Y	Y
Mitton, C.	2007	Canada	Knowledge Transfer and Exchange[58]	Y	Y	Y	Y	Y
Neta, G.	2015	USA	Framework for Enhancing the Value of Research for Dissemination and Implementation[59]	N	N	Y	Y	Y

(continued on next page)

Table 1 (*continued*)

First author	Year published	Country	Model/Framework	Dissemination elements			Dissemination activities present?	Included in GuiDiR framework?
				1. Generating awareness	2. Targeting an audience	3. Tailoring communication to an audience		
Nieva, V.	2005	USA	Knowledge Tansfer Framework for AHRQ Patient Safety Portfolio and Grantees[23]	Y	Y	Y	N	Y[a]
Oldenburg, B.	1996	Australia	A Staged Model of Innovation Development and Diffusion of Health Promotion Programs[60]	Y	Y	Y	Y	Y
Payne, C.	2019	Ireland	Evidence-based Model for the Transfer and Exchange of Research Knowledge (EMTReK)[61]	Y	Y	Y	Y	Y
Pettigrew, A.	1992	UK	Real-World Dissemination[62]	N	N	N	N	N
Ramaswamy, R.	2018	India	Design Focused Implementation Model[63]	N	N	N	Y	N
Rimmer, J.	2016	USA	N-KTAS framework[25]	Y	Y	Y	Y	Y[a]
Skivington, K.	2021	UK	Medical Research Council (MRC) Framework[64]	N	Y	Y	Y	Y
Spencer, L.	2013	USA	A Conceptual Framework for Planning and Improving Evidence-Based Practices[65]	N	N	N	N	N
Stetler, C.	2001	USA	Stetler Model of Research Utilization[66]	Y	N	N	Y	Y
Swinburn, B.	2005	Australia	Framework for Translating Evidence into Action[67]	Y	Y	N	Y	Y
Turning Point	2003	USA	Social Marketing Framework[68]	N	N	N	N	N
Various	2009	UK	ADAPTE[69]	N	N	N	Y	N
Wandersman, A.	2008	USA	Interactive Systems Framework[70]	N	Y	Y	N	N
Ward, V.	2009/ 2012	UK	Knowledge Exchange Framework[71,72]	Y	N	Y	Y	Y
Werner-Seidler, A.	2016	Australia	The Translational Model of the Black Dog Institute[24]	Y	Y	Y	Y	Y[a]
Yousefi Nooraie, R.	2020	USA	EQ-DI[73]	Y	Y	Y	Y	Y

[a] These studies were used to develop the initial coding framework comprising overarching dissemination steps.

Netherlands, Australia and USA.

3.2.1. *Pre-workshop review*

Overall, the feedback highlighted that whilst the prototype framework (supplementary file 3) provided an overview of steps and activities, explicit instructions regarding how researchers undertake each activity was required. Participants also requested clarification regarding the chronology of steps, e.g., at what points during a project's lifetime steps should be undertaken and whether they should be undertaken more than once.

3.2.2. *Workshop*

On presenting the activity to workshop participants, the initial focus of end user discussion was distinguishing between the concepts of dissemination and implementation. Relatedly, there was confusion around when dissemination activities should commence, i.e., at the start of the programme of research or only once the evidence had been generated. In contrast, dissemination experts focused on critiquing the language to ensure it accurately reflected the intended message.

Participants recognised that ensuring the team has the required resources and skills to undertake dissemination activities. However, they felt that this was not unique to dissemination and thus should not constitute a step in the framework.

Participants requested that the framework take the form of a 'guidance document' that signposts users to the resources required to complete each step and their associated activities, such as stakeholder mapping training (Step 1) and a resource on how to make key dissemination messages accessible for different audiences (Step 4). Participants also asked that we produce a case study of how the framework has been used on a programme of research.

The final draft of the Guide to Disseminating Research (GuiDiR) framework is available here: [link to download here – provided as figure for submission/review purposes]. Fig. 2 provides an overview of the five steps.

4. Discussion

We have developed a consolidated framework that guides researchers through the five steps and activities required to effectively plan and execute an evidence-based dissemination strategy. No existing model or framework represents all of the steps and activities of this consolidated framework. The disparate nature of the models and frameworks in their handling of dissemination is evidenced by no one model or framework representing the six steps in the initial coding framework. The value of synthesising the evidence into the consolidated framework is emphasised by two further steps being added to the coding framework. Frequent absence of the step relating to 'creating messages' highlights the need for further detail than the offering from many models and frameworks. The importance of evaluating the performance of dissemination activities and refining accordingly is also notable addition from GuiDiR relative to most existing models and frameworks.

Existing models and frameworks recognise dissemination as an important part of knowledge translation, evidenced by over two thirds recognising at least one of the three dissemination elements. However, the knowledge translation process is not adequately addressed, as illustrated by few models and frameworks incorporating all three dissemination elements. Furthermore, the latter parts of the dissemination process represented in steps 6 and 7 of the framework were more

Table 2
Framework steps, activities and underpinning models/frameworks after data extraction.

Step/Activities	Underpinning Model/Framework
Step 1: Research characteristics	
Activity 1: Diagnose research team's dissemination training needs and preferences for methods of training delivery, e.g., web-based education, technical assistance, self-directed learning, online toolkits.	Stages of Research and Evaluation[32]
Activity 2: Understand the end user's perspective to ensure that your messages are framed to target hearts and minds. Over the course of the research program, collect data to support generating messages regarding its implications for practice and/or policy. Collect quantitative data such as financial benefits and costs, and qualitative data of the merits of the evidence. Include facts, truths and principles as well as social, cultural, and economic factors relating to the intervention.	Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) Framework[42] Quality Implementation Framework (QIF)[57] Evidence-based Model for the Transfer and Exchange of Research Knowledge (EMTReK)[61]
Step 2: Consider user context	
Activity 1: Use stakeholder mapping to identify specific audiences and stakeholders as well as their missions, needs, and context. Include opinion leaders who may influence more because of their status and technical competence	Conceptual Model of Evidence-Based Practice Implementation in Public Service Sectors (EPIS)[31] Knowledge transfer framework for AHRQ patient safety portfolio and patient safety grantees[23] Knowledge Transfer and Exchange[58] Promoting Action on Research Implementation in Health Services (PARiHS)[52]
Activity 2: Identify intermediaries called "knowledge brokers" that understand both the roles of the research team and the target audience. A knowledge broker should be trained in and have time dedicated to information exchange	Knowledge Transfer and Exchange[58]
Step 3: Creation of partnerships	
Activity 1: Form relationships with dissemination partners. Dissemination partners include: key community partners, organisations, opinion leaders, knowledge brokers, membership organisations and multidisciplinary teams. Key elements to forming these partnerships include empowering community participants, frank discussion of issues and concerns of all stakeholders, building trust, and identifying and valuing the needs of all stakeholders.	Promoting Action on Research Implementation in Health Services (PARiHS)[52] Quality Implementation Framework (QIF)[57] Knowledge Transfer and Exchange[58] Knowledge transfer framework for AHRQ patient safety portfolio and patient safety grantees[23] Western Australia (WA) Health Network Approach[33] Conceptual Model of Evidence-Based Practice Implementation in Public Service Sectors (EPIS)[31] Framework for Translating Evidence into Action[67] CollaboraKTion Framework[50] Conceptual Framework for Research Knowledge Transfer and Utilization[53]
Step 4: Consider the environment and perspective of the user	
Activity 1: Researchers should begin with understanding the barriers and facilitators of dissemination within the context of the end user. This may include influential internal and external factors, such as beliefs, resources or timelines. Use techniques such as environment audits, stakeholder and key informant surveys in addition to meetings and discussion.	Knowledge Exchange Framework[71] Stages of Research and Evaluation[32] Stetler Model[66] Medical Research Council (MRC) Framework[64] CAN-IMPLEMENT(48)
Activity 2: Plan dissemination activities considering the gathered factors that can impact uptake; ensure that messages are suitable for the target setting and geography.	Evidence-based Model for the Transfer and Exchange of Research Knowledge (EMTReK)[61] Western Australia (WA) Health Network Approach[33]
Step 5: Creating dissemination messages	
Activity 1: Work with dissemination partners to identify dissemination priorities and shape key messages for the target audience(s).	Knowledge transfer framework for AHRQ patient safety portfolio and patient safety grantees[23]
Activity 2: Researchers' dissemination messages should communicate to target audience the gap in practice, knowledge or need(s) the research is addressing.	Evidence-based Model for the Transfer and Exchange of Research Knowledge (EMTReK)[61] Framework for Translating Evidence into Action[67] Push-Pull Capacity Model[45]
Activity 3: The message to be disseminated should include only the essential information presented in an accessible and attractive format.	Framework for the Dissemination and Utilization of Research for Health-Care Policy and Practice[37]
Activity 4: Dissemination messages should argue the credibility and provenance of the evidence to the end user.	Western Australia (WA) Health Network Approach[33]
Activity 5: Messages should be as specific as possible and contain enough detail for the target audience to make informed decisions.	Framework for Enhancing the Value of Research for Dissemination and Implementation[59]
Step 6: Mass dissemination of key knowledge	
Activity 1: Methods should raise awareness at local and wider levels of the gap in practice or evidence with the aim of garnering interest among the target audience in addressing the issue.	National Center on Health, Physical Activity and Disability Knowledge, Adaptation, Translation and Scale-up (N-KTAS) Framework[25]
Activity 2: Identify and communicate through established networks specific to target audiences. Work with opinion leaders/champions/key stakeholders to support credibility and trustworthiness.	A Staged Model of Innovation Development and Diffusion of Health Promotion Programs[60] National Center on Health, Physical Activity and Disability Knowledge, Adaptation, Translation and Scale-up (N-KTAS) framework[25] Evidence-based Model for the Transfer and Exchange of Research Knowledge (EMTReK)[61]
Activity 3: Where possible, activities should actively involve the target audience. Researchers should formalise and publish their evidence for both wider scientific community and for local communities as well as disseminating through multiple of the following: conferences, newsletters, websites, e-magazine, blog, print media, policy brief, social marketing, posters, (personal) social media, forums.	The Translational Model of the Black Dog Institute[24] Co-creating (co-KT) Framework[51] Institute for Healthcare Improvement Collaborative Model for Achieving Breakthrough Improvement (IHI BTS)[49] Ottawa Model of Research Use (OMRU)[56] Stetler Model[66] Medical Research Council (MRC) Framework[64] Framework for Translating Evidence into Action[67] Evidence-based Model for the Transfer and Exchange of Research Knowledge (EMTReK)[61]
Step 7: Targeted dissemination efforts	
Activity 1: Work with dissemination partners using means at their disposal to disseminate messages and influence into and through settings that have established contact with the target audience. Promote the evidence by supplying the message in a tailored, personal and persuasive way which justifies the need for the information.	Knowledge transfer framework for AHRQ patient safety portfolio and patient safety grantees[23] Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) Framework[42] Promoting Action on Research Implementation in Health Services (PARiHS)[52] Framework for the Dissemination and Utilization of Research for Health-Care Policy and Practice[37]

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Table 2 (*continued*)

Step/Activities	Underpinning Model/Framework
	Evidence-based Model for the Transfer and Exchange of Research Knowledge (EMTReK)[61]
Activity 2: Establish channels of communication with key members of the target audience and ensure that they are supported to receive and address queries.	National Center on Health, Physical Activity and Disability Knowledge, Adaptation, Translation and Scale-up (N-KTAS) Framework[25]
Activity 3: Use methods of communication that are appealing to the target audiences. Utilise multiple communication methods tailored to the target audiences with an emphasis on those that incorporate genuine interaction between researchers and the target audience. Prioritise methods involving one to one and personal contact. Methods include: learning sessions, personal digital platforms, workshops, conferences, clinical guidelines, workshops/working sessions with knowledge broker and connector organisations, conferences, webinars, individual or group instruction, workshops, direct mailing, interactive education, opinion leaders, educational outreach, a mixture of interactive rather than didactic educational meetings audit, feedback, reminders, experts, other experienced staff, training, documentation, and computerized information systems, access to a research librarian, a database providing information on health services, research papers, academic detailing, community coalitions, manuals, guides, worksheets, local presentations.	Evidence-based Model for the Transfer and Exchange of Research Knowledge (EMTReK)[61] Ottawa Model of Research Use (OMRU)[56] Knowledge Transfer and Exchange[58] Push-Pull Capacity Model[45] Western Australia (WA) Health Network Approach[33] Framework for the Dissemination and Utilization of Research for Health-Care Policy and Practice[37] Institute for Healthcare Improvement Collaborative Model for Achieving Breakthrough Improvement (IHI BTS)[49] Healthcare Improvement Collaborative Model (HICM)[38] Knowledge transfer framework for AHRQ patient safety portfolio and patient safety grantees[23] National Center on Health, Physical Activity and Disability Knowledge, Adaptation, Translation and Scale-up (N-KTAS) Framework[25] Stetler Model[66] Consolidated Framework for Implementation Research (CFIR)[35] Conceptualizing Dissemination Research and Activity: Canadian Heart Health Initiative[39] EQ-DI Framework: Interaction Between Health Equity and Dissemination & Implementation[73] Quality Implementation Framework (QIF)[57] The Translational Model of the Black Dog Institute[24]
Step 8: Evaluation	
Activity 1: Knowledge transfer and exchange plans must include clear objectives for planned activities and identify metrics to measure the outcome, response and impact of those activities.	Evidence-based Model for the Transfer and Exchange of Research Knowledge (EMTReK)[61]
Activity 2: Continuing knowledge transfer teams may provide a venue for collecting feedback from early adopters that can serve to improve the prototype model intervention packages, and reflect practical experiences in practice settings.	Knowledge transfer framework for AHRQ patient safety portfolio and patient safety grantees[23]
Activity 3: Researchers should maintain a relationship with their end users and use this to identify successful dissemination strategies.	Western Australia (WA) Health Network Approach[33] Active Implementation Framework[41]

frequently present than the preparatory stages to support effective dissemination that should be undertaken prior to any empirical work. In contrast to the detailed handling of adoption and implementation in most models and frameworks(8, 9), it is unsurprising that our end user workshop participants understood dissemination to be an activity undertaken once the research is complete to coincide with adoption and implementation.

The synthesis also permitted harmonising and simplifying of language. Despite extensive refinement of the language to enhance accessibility, the further changes requested such as describing the differences between active and passive dissemination and detailed guidance on how to conduct stakeholder mapping, highlight the need for a framework that is designed with the target audience. This may offer explanation for the lack in uptake of current knowledge translation models and frameworks. The merits of adopting a 'co-approach' and including end-users in the development of the framework are demonstrated by their differing responses to the framework in comparison to dissemination experts. The experts supported finer refinement to language, while end users feedback supported fundamental changes to the framework, including detailed guidance on how to undertake the activities and a case study operationalising the framework. This allowed for an examination of how dissemination is understood and what needed to be improved in the framework to increase ease of use.

Removal of the step relating to resourcing and training the team to deliver the required dissemination activities was reasonable as workshop participants felt that this is relevant to the entirety of the research programme. However, given that non-expert workshop participants thought that dissemination is considered and embarked upon towards the end of a research programme, the absence of this step may lead to researchers planning and costing their research before engaging with the framework. There is therefore a need for explicit communication supporting the framework to ensure that researchers, funders and practitioners are aware that it needs to be embedded at the stage of research design and costing. GuiDiR embeds these key messages; it recommends that researchers, funders and practitioners plan, cost and record their research and dissemination strategy when developing a research proposal/grant application, as well as it provides guidance on how to identify and cost the required resources to deliver a dissemination strategy.

4.1. Strengths and limitations

All models and frameworks underpinning GuiDiR are from high-income Western countries, namely the USA, Canada and Australia, which may limit its applicability to research contexts in other countries. Furthermore, whilst developed using 'co-approach' principles with the target audience to optimise usability,[16,17] the feasibility of applying the GuiDiR framework within a programme of research has not yet been tested.

The rich array of activities populating each step of the GuiDiR framework reflects the objectives of this study which are not only to outline the evidence-based steps of dissemination but also equip researchers with the knowledge to deliver the steps as intended – across the lifetime of a research project and in the real-world environment (e.g., in the submission and execution of their research grants). Further, whilst GuiDiR is primarily intended for researchers and practitioners, research funders may find utility in the framework when evaluating dissemination plans.

5. Conclusions

The GuiDiR framework draws on evidence, experts in dissemination and experts by experience (the target audience of researchers) to unify the steps and activities for disseminating research evidence from models and frameworks for knowledge translation. GuiDiR complements existing knowledge translation models and frameworks which focus on implementation, by providing detailed guidance on how to plan and execute dissemination activities across the lifetime of a research project. GuiDiR is primarily intended to support researchers and practitioners to ensure learning from health services research reaches the right people at the right time,[2] and in turn influences policy and/or practice. It may also have utility for research funders as a standard for evaluating the dissemination plans included in research proposals.

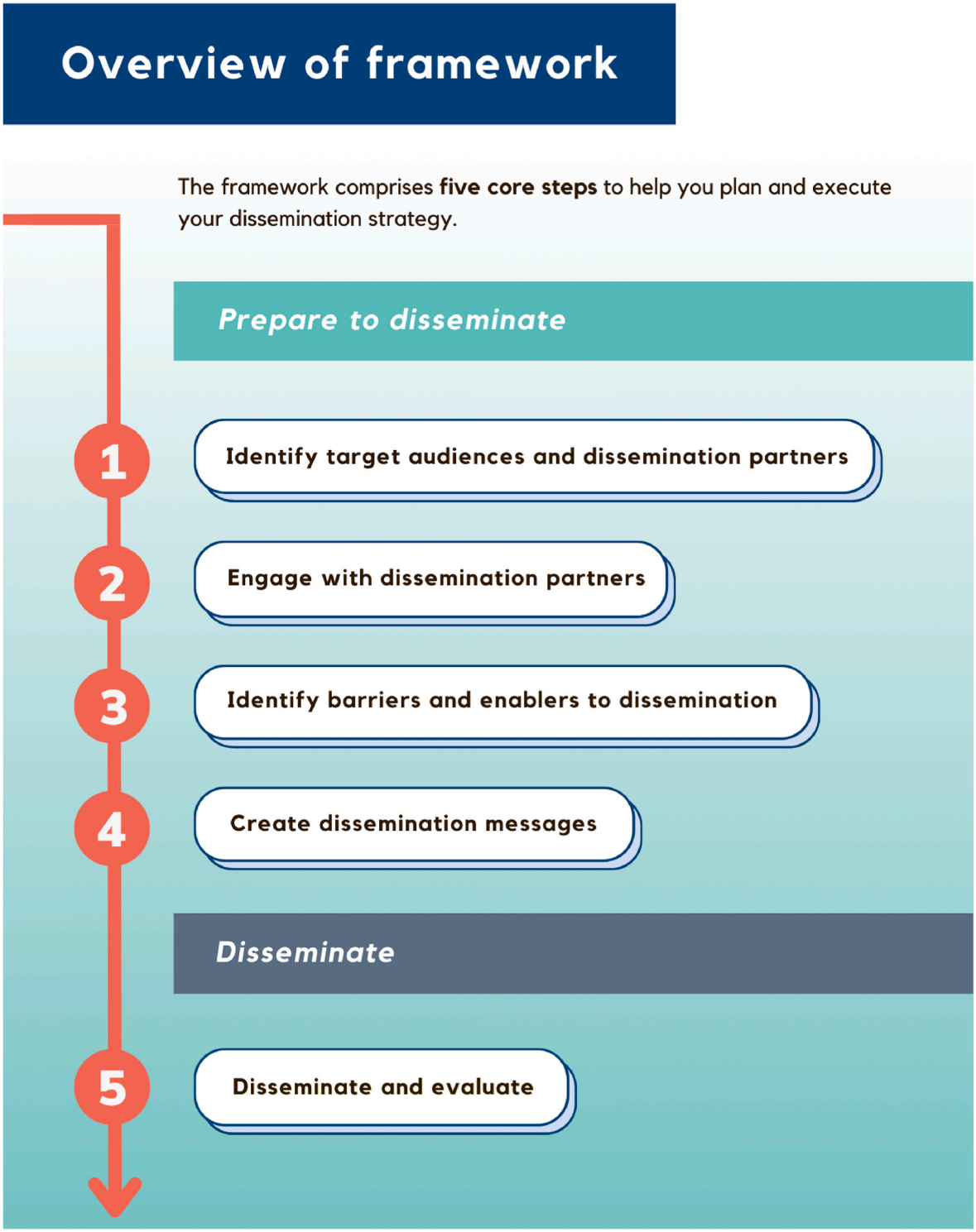

Fig. 2. Overview of the five steps in the GuiDiR framework.

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Ethics approval and consent to participate

Ethical approval was obtained from University of East Anglia Faculty of Medicine and Health Sciences Research Ethics Committee (2021/22-014).

Consent for publication

Not applicable.

Authors' contributions

This is reported on the application system.

CRediT authorship contribution statement

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Declaration of competing interest

The authors declare that they have no competing interests.

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Appendix A. Supplementary data

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