Scoping Review

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☑ Knowledge translation and advances in health and nursing practices

Strategies to promote knowledge translation in primary health care: scoping review

Estratégias para promover a translação do conhecimento na atenção primária à saúde: revisão de escopo

Estrategias para promover la traducción del conocimiento en la atención primaria de salud: revisión de alcance

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ABSTRACT

Objective: To map the strategies used by health professionals to promote knowledge translation in Primary Health Care and to identify barriers and facilitators for the use of scientific evidence.

Method: Scoping review with search in PubMed, EMBASE, CINAHL, Web of Science, Scopus, LILACS, and gray literature, in April 2022, using the terms "translational medical research", "knowledge translation", "primary health care". The PRISMA-ScR was used to report the review.

Results: 56 studies included. Several strategies were identified and grouped into: educational material, training, websites, educational outreach, knowledge translation networks, local facilitators, feedback and public promotion. High demand for services and content without practical information represented barriers, while assessing the context, involving stakeholders and the presence of local facilitators ease theuse of evidence.

Conclusion: The most used strategies were educational material and training. Overcoming barriers is essential to bridging the gap between evidence and practice.

Keywords: Primary health care. Translational research, biomedical. Health services.

RESUMO

Objetivo: Mapear as estratégias utilizadas pelos profissionais de saúde para promover a translação do conhecimento na Atenção Primária à Saúde e identificar barreiras e facilitadores para o uso de evidências científicas.

Método: *Scopingreview* com busca no PubMed, EMBASE, CINAHL, Web of Science, Scopus, LILACS e literatura cinzenta, em abril de 2022, baseado nos termos "translational medical research", "knowledge translation","primary health care".Utilizou PRISMA-ScR para relato da revisão.

Resultados: 56 estudos incluídos. Diversas estratégias foram identificadas e agrupadas em: material educacional, capacitação, websites, extensão educacional, redes de translação do conhecimento, facilitadores locais, *feedback* e promoção pública.Alta demanda por atendimentos e conteúdos sem informações práticas representaram barreiras, enquanto, avaliar o contexto, envolver as partes interessadas e presença de facilitadores locais facilitam a utilização de evidências.

Conclusão: As estratégias mais utilizadas foram material educacional e capacitação. Superar as barreiras é essencial para minimizar a lacuna entre as evidências e prática.

Palavras-chave: Atenção primária à saúde. Pesquisa translacional biomédica. Serviços de saúde.

RESUMEN

Objetivo: Mapear las estrategias utilizadas por los profesionales de la salud para promover la traducción del conocimiento en la Atención Primaria de Salud e identificar barreras y facilitadores para el uso de la evidencia científica.

Método: *Scopingreview* con búsqueda en PubMed, EMBASE, CINAHL, Web of Science, Scopus, LILACS y literatura gris, en abril de 2022, utilizando los términos "translational medical research", "knowledge translation", "primary health care". PRISMA-ScR se utilizó para informar la revisión.

Resultados: Se incluyeron 56 estudios. Se identificaron varias estrategias y se agruparon en: material educativo, capacitación, sitios web, extensión educativa, redes de traducción del conocimiento, facilitadores locales, retroalimentación y promoción pública. La alta demanda de servicios y contenidos sin información práctica representó barreras, mientras que la evaluación del contexto, la participación de todos los actores y la presencia de facilitadores locales facilitan el uso de la evidencia científica.

Conclusión: Las estrategias más utilizadas fueron el material educativo y la capacitación. Superar las barreras es esencial para cerrar la brecha entre la evidencia y la práctica.

Palabras clave: Atención primaria de salud. Investigación biomédica traslacional. Servicios de salud.

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INTRODUCTION

The use of scientific evidence as a support for decision-making, from the identification of relevant health problems to the political choice of options for coping, depends on the ability of knowledge users (health professionals, managers and patients) to access knowledge available and use it appropriately. On the other hand, the identification of proper scientific evidence and its correct interpretation are some of the barriers identified for bringing research closer to the context of health care practice, known as know-do-gap[1,2]. The difficulty of translating scientific evidence into its practical application can have repercussions on the population's quality of life and on the use of health resources[2].

Thus, Knowledge Translation (KT) aims to increase health services capacity in using evidence for more effective policies. The term refers to "a dynamic and interactive process that includes the synthesis, dissemination, exchange and ethical and grounded application of knowledge to improve healthcare, provide more efficient care and products and strengthen the health system"[3]. Thus, knowledge translation includes all phases of the generation of new scientific knowledge and its practical application to produce beneficial results for society[4].

From this perspective, it is understood that Primary Health Care (PHC) presents unique challenges regarding knowledge translation. Team training, as well as organizational structures and work practices vary considerably in PHC, and this variability can hinder the implementation of new scientific evidence, as they will probably require changes at different levels[5]. Moreover, appointments are often short and health demands vary, requiring constant access to evidence to contribute to effective care[6]. Also, the generalist approach to primary care should be considered in studies involving the knowledge translation to this context[7].

Research outcomes do not automatically translate into clinical practice. At the same time, healthcare and bureaucratic demands make it difficult for professionals to identify, assess and implement new scientific evidence[8]. Strategies for scientific knowledge translation characterize the effort to bring scientific evidence closer to practical decision-making[9]. Although the literature presents studies that focus on knowledge translation strategies in different contexts[10,11], specific studies on PHC are still incipient and investigations are needed that address the strategies most used by professionals, as well as difficulties and potentialities of the transfer of scientific evidence to practice[12].

Based on the above, this scoping review aims to i) map the strategies used by health professionals to promote knowledge translation in PHC; ii) identify barriers and facilitators to the use of scientific evidence. The structured research question, according to the acronym PCC (Population, Concept and Context), was "What strategies have been used to promote knowledge translation (concept) by health professionals (population) in Primary Health Care in the world (context)?"

METHODOLOGY

The present study is reported in compliance with the PRISMA-ScR guidelines, which contain the essential items for reporting scoping reviews[13] (supplementary data). This model of literature review presents a more extensive approach and is unique when a body of literature has not been widely reviewed. It may also present a complex or heterogeneous nature, not subject to a more precise systematic review[14]. Based on this, and considering that the focus was not on the effectiveness of a given strategy, but on an overview of the theme[15], a scope review was performed.

Protocol and registration

The protocol was prepared, before study selection, and registered in the Open Science Framework (OSF) repository on March 19, 2020 (https://osf.io/y492h).

Inclusion and exclusion criteria

To be included in the review, the study had to present the strategies used to promote KT in PHC and being published in indexed journals in the health area. In addition, theses and dissertations on the theme were included as they provide sufficient elements to understand the quality of the studies and answer the research question.

In the context of this review, PHC was understood as a set of individual and collective actions, including health promotion, disease prevention, diagnosis, treatment, rehabilitation, harm reduction, palliative care and health surveillance, performed by a multiprofessional team[16]. KT strategies were understood as interventions or processes that facilitate or encourage the use of scientific evidence to support and/or modify health care practices[9].

Studies of any methodological design (quantitative, qualitative or mixed) were considered and there was no restriction on date or language, as the study aimed to identify the largest

number of existing studies. Studies were excluded if they did not describe details about the strategies/interventions used for KT and did not present information about the context in which they were developed. Studies were also excluded when KT strategies were designed for patients or did not show any outcome. In addition, studies in which KT was not used in the context of PHC were excluded.

Search strategy

To identify potentially relevant documents, the databases MEDLINE via PubMed, EMBASE via Ovid, CINAHL Plus via EBSCOhost, Web of Science, Scopus, and LILACS were electronically searched in April 2020. In April 2022 a search strategy update was performed. An experienced researcher created the search strategies, which were based on the terms "translational medical research", "knowledge translation" and "primary health care", together with their synonyms and Boolean operators. The research was adapted according to each database. Supporting information shows the detailed search strategy for individual databases.

Complementary research was conducted in electronic journals Translational Research, American Journal of Translational Research and Journal of Translational Medicine, as they focus on studies on the theme of the study. Additionally, The Open Access Theses and Dissertations was consulted, which joins postgraduate theses and dissertations, in open access, published around the world. In this database, publications from Australia, Canada, United States and United Kingdom were assessed, considering that these countries stand out in publications in the study area. Brazil was also included in the research because it is the authors' country. Finally, additional publications were manually collected from the references of retrieved articles.

Study selection

All references of the study were imported into EndNote Web to remove duplicates. Then, the other results were imported into Rayyan QCRI for selection of studies based on titles and abstracts[17]. Titles and abstracts were read and analyzed by two independent reviewers to identify those potentially eligible for the study. Selected studies were read in full by a reviewer to confirm the relevance of the research question. Any doubt about the inclusion of the study were resolved with a discussion with a second reviewer until reach a consensus. There was no need to contact a third reviewer.

Data extraction

Data were organized in an Excel spreadsheet developed especially for the study. The two authors pretested the form on the first 20 titles and abstracts to refine and ensure that all relevant data was captured. The following information from the studies was summarized: title, author, year, country, objective, design, knowledge translation strategy, aspects that facilitated or hindered the use of new evidence by health professionals and conclusions.

Data analysis

The results were synthesized narratively and quantified as frequencies. KT strategies were categorized as 'multiple' interventions when more than one intervention was involved, and single, when they addressed only one. As for the classification of the strategies, these were categorized based on their similarities. For example: abstracts, syntheses and leaflets were classified as educational material, while workshops, courses and case discussion were grouped into the training category. The barriers and facilitators of KT in PHC did not generate a categorization process.

Considering that the scoping review does not focus on a critical evaluation of the methodological quality of primary studies, the study was not analyzed regarding the risk of bias or other methodological issues.

RESULTS

The search strategy resulted in 2,460 publications. After duplicates removed, 1929 studies remained. Based on titles and abstracts, 1834 studies were excluded and 95 were read in full and assessed for eligibility. From these, 39 studies were excluded (supplementary data); therefore, 56 studies were included in the review synthesis. Figure 1 presents the flowchart of the selection process of publications included in this review.

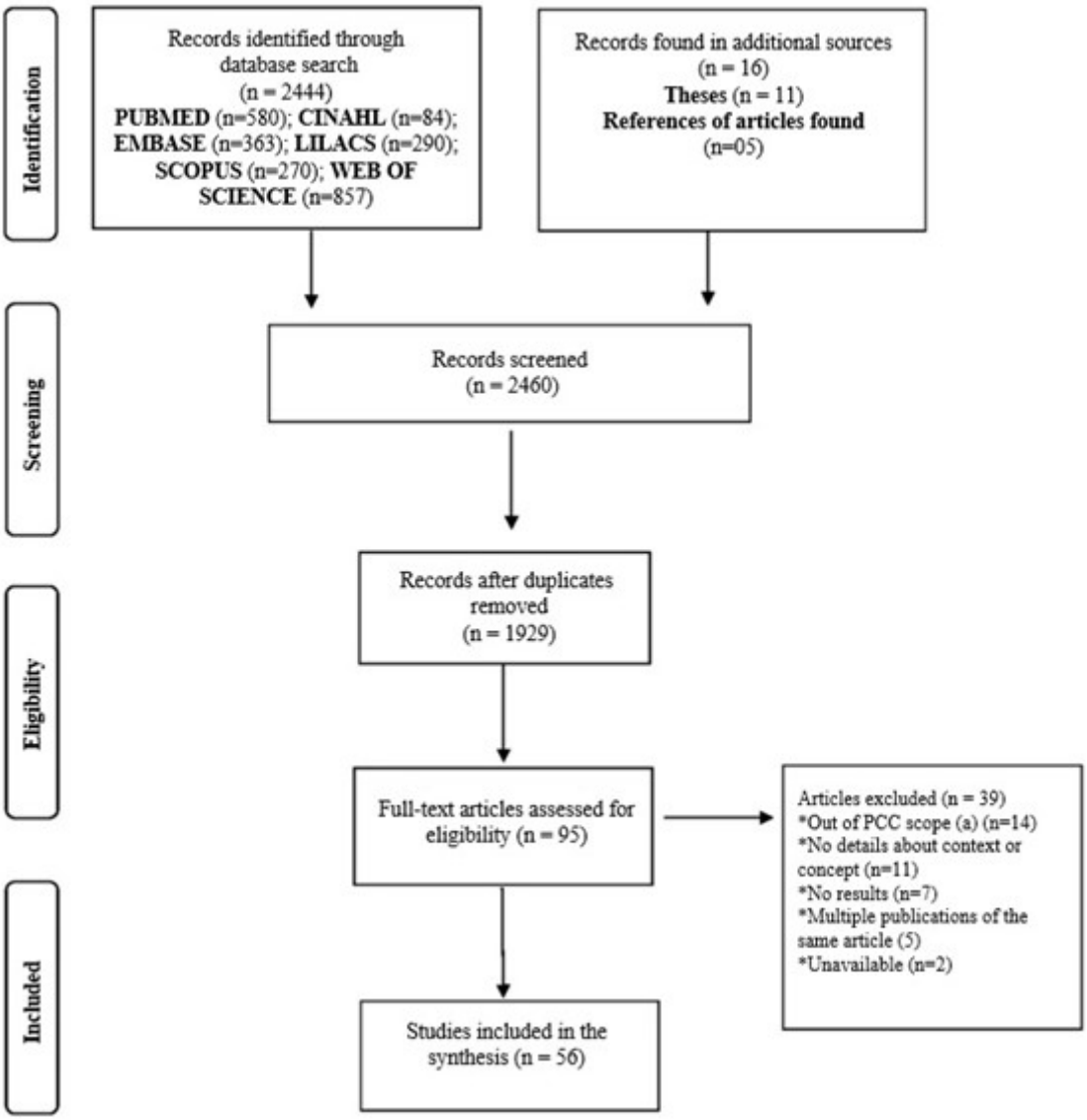

Figure 1 – Flowchart for identification and selection of primary studies included in the scoping review according to PRISMA-ScR[13]. Chapecó, Santa Catarina, Brazil, 2022

Source: Adapted from PRISMA.
(a) Population, Context and Concept.

Study characteristics

Studies were published between 1994 and 2021, although there is an increase in the number of publications in 2013. Canada was the country with the highest number of studies (n=25), followed by Australia (n=11) and the United States (n=6). Most studies (74%) used a single KT strategy.

KT strategies used in PHC were classified into eight distinct categories, namely: 1. Educational material; 2. Training; 3. Website; 4. Educational outreach; 5. Knowledge Translation Networks; 6. Local facilitators; 7. Feedback; and 8. Public promotion. Chart 1 describes the main characteristics of the studies included in the review.

First author (year) Country of origin	Objective(s)	Study design	Single/Multiple intervention	KT strategy(ies)
Wensing (1994) Netherlands[18]	To evaluate the effectiveness of different strategies, applied single or combined, to implement changes in primary care practice.	Systematic review	Multiple	Educational Material, Training and Feedback
Swinglehurst (2001) United Kingdom[19]	To develop and evaluate an information service.	Descriptive study	Single	Educational outreach
Forsetlund (2003) Norway[20]	To evaluate whether a theory-based, multifaceted, intervention increased the integration of research into the decision-making of public health physicians.	Randomized controlled trial	Multiple	Training, Educational outreach, Educational material andWebsite
Lindbloom (2004) USA[21]	To describe the organization and work of networks of practice-based research.	Descriptive study	Single	KT Networks
Stevenson (2006) United Kingdom[22]	To investigate whether physical therapists' clinical management of patients with low back pain would change after an evidence-based education programme.	Randomized controlled trial	Single	Local facilitators
Dobbins (2009) Canada[23]	To describe the intervention of the knowledge mediator and reflect on the future development of the role in public health, as well as in other health settings.	Randomized controlled trial	Single	Local facilitators
McGowan (2010) Canada[24]	To describe the process and lessons learned from developing and operating a rapid response library consultation service for primary care physician.	Qualitative study – interviews	Single	Educational outreach
Armstrong (2010) Australia[25]	To describe how interdisciplinary Knowledge Networks can support knowledge translation into practice.	Descriptive study	Single	KT Networks

Chart 1 – Characteristics of studies included. Chapecó, Santa Catarina, Brazil, 2022

First author (year) Country of origin	Objective(s)	Study design	Single/Multiple intervention	KT strategy(ies)
Goldman (2010) Canada[26]	To examine the interprofessional protocol development process and pilot implementation.	Exploratory case study	Single	Educational material
Labrecque (2010) Canada[27]	To evaluate continuing medical education articles for mention of evidence-based information about benefits and harms of available treatment and/or preventive options.	Cross-sectional study	Single	Educational material
Dolor (2011) USA[28]	To develop an open access website that provides adaptable resources to facilitate best practices.	Cross-sectional study	Single	Website
Estrada (2011) USA[29]	To determine the effectiveness of a web-based education and implementation intervention to improve diabetes control.	Cluster randomized trial	Multiple	Training and feedback
Souza (2011) Canada[30]	To review randomized clinical trials evaluating the effects of computerized clinical decision support systems for primary preventive care.	Systematic review	Single	Website
Tieman (2012) Australia[31]	To describe two strategies used to assist those who work in primary care in the care for their patients who have palliative care needs.	Descriptive study	Multiple	Website
Hofmeyer (2012) Canada[32]	To discuss a decision-maker-researcher partnership that investigated practice in primary care networks in Alberta.	Descriptive study	Single	KT Networks
LaRocca (2012) Canada[33]	To identify the effectiveness of knowledge translation strategies used to promote evidence-informed decision making among public health decision makers.	Systematic review	Multiple	Website and Educational material

Chart 1 – Cont.

First author (year) Country of origin	Objective(s)	Study design	Single/Multiple intervention	KT strategy(ies)
Bailie (2013) Australia[34]	To describe the Partnership Learning Model in Primary Care and the successes and challenges in its application.	Descriptive study	Single	KT Networks
Liddy (2013) Canada[35]	To provide an overview on practice facilitators.	Descriptive study	Single	Local facilitators
Barreto (2013) Brazil[1]	To describe the experience of the Nucleus of Evidence in Health.	Descriptive study	Single	Educational material
Dadich (2013) Australia[36]	To determine what works to facilitate evidence-based sexual health in the primary care unit.	Cross-sectional study	Multiple	Educational material and Training
Ryan (2013) Canada[37]	To use a knowledge-to-practice intervention for primary care teams to help professionals develop their capacity to care for frail elderly people.	Non-randomized intervention trial	Multiple	Website, Educational material and Local facilitators
Armstrong (2013) Australia[38]	To describe the design and implementation plan of a knowledge translation intervention for public health decision-making.	Cluster randomized controlled trial	Multiple	Educational material and Training
Bernhardsson (2014) Sweden[39]	To evaluate the effect of a intervention for implementation in primary care physical therapy in western Sweden.	Non-randomized intervention trial	Multiple	Website and Educational material
Pluye (2014) Canada[40]	To explore whether stimulated family physicians' feedback could further optimize research-based information delivered via email.	Cross-sectional study	Single	Feedback
Giguere (2014) Canada[41]	To measure the value and intent of using decision boxes in practice and describe barriers and facilitators to their use.	Mixed methods implementation study	Single	Educational material

Chart 1 – Cont.

First author (year) Country of origin	Objective(s)	Study design	Single/Multiple intervention	KT strategy(ies)
McColl (2015) Canada[42]	To design and test an innovative methodology to translate the latest and best evidence on spinal cord injury for family physician to use in practice.	Mixed methods	Single	Educational material
Badran (2015) Canada[43]	To explore the advantages and disadvantages of educational email alerts.	Qualitative descriptive study	Single	Educational material
Redaèlli (2015) Germany[44]	Identify the best strategies for implementing an asthma guideline.	Non-randomized controlled study	Single	Training
Clark (2015) Canada[45]	To assess the impact of telephone consultations between pain specialists and primary care physicians in the care of patients with chronic pain.	Pragmatic randomized trial	Single	Educational outreach
Naik (2015) USA[46]	To describe the process of building a partnership between a research team and a community of primary care providers.	Community-based participatory research	Single	KT Networks
Siron (2015) Canada[47]	To describe the current state of research on knowledge transfer strategies to improve public health in low-income countries.	Scoping review	Multiple	Training, Educational material and Local facilitators
Perrier (2015) Canada[48]	To describe the development and pilot testing of an shortened systematic review format for use by physicians.	Mixed methods study	Single	Educational material
McIntyre (2016) Australia[49]	To report how the Primary Health Care Research and Information Service operates to accelerate the use of research and evidence in primary healthcare policy and practice.	Descriptive study	Single	Website

Chart 1 – Cont.

First author (year) Country of origin	Objective(s)	Study design	Single/Multiple intervention	KT strategy(ies)
Carroll (2016) Canada[50]	To determine the value of Gene Messengers as a continuing education strategy in genomic medicine for family physicians	Non-randomized study of interventions	Single	Educational material
Gupta (2016) Canada[51]	To evaluate a knowledge translation intervention to address both the poor quality of spirometry and the underuse of spirometry in primary care.	Prospective study	Multiple	Training and Educational outreach
Grudniewicz (2016) Canada[52]	To understand what design and content attributes primary care physicians perceive as key to increase acceptance of printed educational materials and their ease of use.	Qualitative study – focus group	Single	Educational material
Oelke (2016) Canada[53]	To describe the use of dialogic methods as a participatory knowledge translation approach to promote integration of nursing professionals in primary healthcare settings.	Intervention study	Single	KT Networks
Davis (2017) USA[54]	To explore what clinic and community users want from intervention toolkits and identify factors that support application in practice.	Qualitative study – focus group	Single	Educational material
Morténius (2017) Sweden[55]	To analyze the role of strategic communication in raising awareness and interest in research and development among dental professionals and compare findings with primary care professionals.	Intervention study	Multiple	Educational material, Website and Public promotion
Wang (2017) China[56]	To determine the effectiveness of a nurse-led education and knowledge translation programme.	Cluster randomized controlled trial	Single	Training
Cornick (2018) South Africa[57]	To describe the lessons learned during the development of the Practical Approach to Care Kit (PACK).	Descriptive study	Single	Educational material

Chart 1 – Cont.

First author (year) Country of origin	Objective(s)	Study design	Single/Multiple intervention	KT strategy(ies)
Wattrus (2018) Brazil[58]	To describe the adaptation and implementation of the Practical Approach to Care Kit (PACK) in Brazil.	Descriptive study	Single	Educational material
Vedel (2018) Canada[59]	To discover conditions associated with change in primary care practice following passive dissemination of recommendations for the diagnosis and management of Alzheimer's disease and related dementias.	Mixed methods study	Single	Educational material
Schütze (2018) Australia[60]	To assist primary care physicians and nurses to better understand, diagnosis and management of dementia in primary care.	Cross-sectional study	Multiple	Training
Klaic (2018) Australia[61]	To enhance uptake of evidence-based practices with allied health professionals.	Mixed methods study	Single	Training
Anderson (2019) Australia[62]	To report on the development and feasibility study of Stepped Care, a scaled online mental health service.	Cross-sectional study	Single	Educational outreach
Fritz (2019) Sweden[63]	To explore the mechanisms of impact on implementing a behavioral medicine approach in physiotherapy by examining the dose, scope and experiences of participants.	Mixed methods study	Multiple	Educational material, Training and Public promotion
Brimble (2020) Canada[64]	To evaluate the impact of the launch of the Kidney Wise toolkit on the characteristics of primary care nephrology referrals.	Prospective study	Single	Educational material
Barbosa (2020) Portugal[65]	To describe the development of the Prevention and Management Program.	Descriptive study	Single	Website
Casey (2020) Australia[66]	To evaluate the effectiveness of a nation-wide Continuing Medical Education.	Prospective study	Single	Training

Chart 1 – Cont.

First author (year) Country of origin	Objective(s)	Study design	Single/Multiple intervention	KT strategy(ies)
Gattellari (2020) Australia[67]	To evaluate an intervention to improve anticoagulation uptake in patients with atrial fibrillation.	Randomized controlled trial	Multiple	Training and Feedback
Kjaergaard (2020) Kyrgyzstan and Vietnam[68]	To evaluate whether carrying out the same training program in two contextually different countries would lead to differences in translating increased knowledge into clinical change.	Prospective study	Single	Training
Stander (2020) South Africa[69]	To develop and test a tailored training program.	Mixed methods study	Single	Training
Howie (2021) Canada[70]	To test whether printed educational materials improve care on a larger scale within usual primary care clinical practice.	Cluster randomized controlled trial	Single	Educational material
Minian (2021) Canada[71]	To evaluate the effectiveness of generic and email-only prompts versus a custom remote knowledge broker.	Cluster randomized controlled trial	Single	Educational material
Phillips (2021) USA[72]	To evaluate how primary care professionals use general health care reports and primary care research and how well the reports provide what they need to inform clinical practice.	Cross-sectional study	Single	Educational material

Chart 1 – Cont.

Source: Research data, 2022.

Knowledge translation strategies used in Primary Health Care

There was a wide variety of strategies to promote KT. Therefore, they were grouped into eight categories (Table 1).

Frequently, the strategy involved a single KT intervention. Studies with multiple KT interventions applied a combination of strategies that included several activities, such as evidence synthesis, or a combination of activities such as local facilitators and educational outreach. Most studies (67%) that used multiple interventions had at least one component related to the training of health professionals, such as workshops and in-person or online courses.

Barriers and facilitators of knowledge translation in primary health care

The analysis of studies identified aspects that facilitated the use of new evidence by health professionals, as well as barriers to KT in PHC (Table 2).

Table 1 – Knowledge translation strategies used in the studies included.Chapecó, Santa Catarina, Brazil, 2022

Educational material (n=28)	1. Multiprofessional protocols, synthesis of evidence, scientific abstracts sent by email, posters and printed leaflets, recommendation guide (guidelines).
Training (n=16)	2. Workshops, online and face-to-face courses, seminars, practical training, peer training, interactive lectures, and case discussions.
Website (n=10)	3. Website (with resources from project design to dissemination), website with customized material, website of the Service of Research and Information on Primary Health Care, automated search in PubMed, computerized systems to support clinical decisions.
Educational outreach (n=6)	4. Assistance to the librarian, telephone consultation with specialist, continuous guidance from specialists (online, e-mail, telephone, or in-person).
Knowledge translation networks (n=6)	5. Creation of networks to connect researchers, service providers, funding bodies and consumers, such as practice-based research networks or research networks.
Local facilitators (n=5)	6. Health practice facilitators.
Feedback (n=3)	7. Performance feedback and constructive feedback on research outcomes.
Public promotion (n=2)	8. Research seminars and promotion visits.

Source: Research data, 2022.

Table 2 – Barriers and facilitators of knowledge translation in Primary Health Care.Chapecó, Santa Catarina, Brazil, 2022

Facilitators	Barriers
Evidence-based teaching in undergraduate courses[20]	Lack of portable devices or internet access in the workplace[24]
Research agenda informed by the professional working in PHC[21]	High demand for healthcare services[29,36,63, 65]
Research in partnership[25,32,46, 57]	Resistance to change[26]
Local facilitator who adapts the main messages of the research evidence to the local perspective[23,35,37]	Lack of managerial support[63]
Bond with the community studied[32]	Lack of resources to implement the recommended translation strategies[47, 65]
Creation of research networks to share information[21, 38]	Shortened or intensive training courses[47]
Adapt the research according to the context[46, 47]	Systematic reviews without practical information[33, 48]
Shortened recommendation guides[48,52, 54]	

Source: Research data, 2022.

DISCUSSION

This study presents an important review of the current literature about knowledge translation in Primary Health Care and highlights a significant number of strategies to bridging the gap between scientific evidence and practice. It was found out that health professionals generally prefer clearer and shorter documents, with less scientific detail[50]. In a Canadian study[52], most participants preferred documents with concise information with little scientific detail, but referenced with sources from complementary information. Thus, educational materials with greater applicability provided targeted and personalized messages[36,47,50,52]. In addition, training, in small groups, also proved to be a valid trick for health services with few resources[56].

Web-based activities to search for results were also used as KT strategies. They are organizations that aim to contribute to the improvement of decision-making in healthcare, based on the best available information and are means of synthesis and dissemination of knowledge. In this sense, some actions were developed in the Brazilian scenario, for example: the portal of the Primary Health Care Research Network (https://https://redeaps.org.br/), the community of primary care practices (https://novo.atencaobasica.org.br/) and the Cochrane Brazil Center (https://brazil.cochrane.org/). Another Brazilian strategy, that can be classified as an educational outreach strategy, is Telehealth, which has centers in several regions of the country, with tele-education, telediagnosis and teleconsulting actions aimed at all professionals working in PHC and professionals at the Units of Support for APS. The contents and learning objects provided aim to encourage the development of the best clinical practices[73].

However, a systematic review that identified the efficiency of KT strategies among decision makers in public health revealed that none of the strategies was efficient in all contexts. The scenario plays an important role in the process and, therefore, it is suggested that interventions should not be defined without considering the participants and services characteristics, as well as the knowledge that is being transferred[33].

Furthermore, accessing scientific evidence does not mean change of behavior. Using evidence synthesis, for example, is part of the knowledge translation process that assists the decision-making process, but it is not sufficient by itself to ensure evidence-informed decision-making. Political and economic interests can hinder this process[2]. Moreover, it is easier to implement research outcomes when training is based on how to use evidence[74]. In this perspective, the

passive dissemination of information can work, but to ensure successful implementation in practice, studies indicate that there must be organizational resources, a moderate level of confidence and motivation by the knowledge user, as well as the presence of a leader (facilitator)[23,35,37]. Neta and collaborators[75]state that it is clearer that dissemination and implementation processes require active strategies to ensure that evidence is effectively understood, adopted, implemented and maintained in practice environments.

Given the diversity in Primary Health Care and the complexity of emerging health problems, the included studies also state that the partnership between health professionals and researchers is a promising approach to ensure the application of research outcomes[25,32,46,57].One approach is to combine the theoretical and methodological knowledge of researchers with knowledge and context experiences of users, which makes results more appropriate, accessible and relevant for professionals[76,77]. The lack of portable devices or internet access in the workplace[24]and the high demand for health care[29,36,63,65]were reported as barriers to KT. Moreover, the lack of continuous support after the implementation of interventions and the lack of resources were mentioned as obstacles to effective strategies for translation[47,63,65]. These factors hinder the incorporation of new scientific evidence in the context of PHC. Alternatives to overcome such barriers are local facilitators, research in partnership, research objects relevant to PHC and accessible reports of results, which may help to maintain behavioral change over time[47,78].

Although studies on this issue are limited, it is also important to consider the sustainability of interventions, that is, how long a translational strategy is preserved after implementation. It is suggested that to ensure longevity, sustainability should be planned from the beginning, when KT strategies are being designed[79]. Furthermore, it is proposed to broaden research funding beyond the stage of production and dissemination of evidence, offering resources for long-term maintenance[78].

Another point identified in the study is on the low use of social media such as Twitter, Facebook and YouTube. The internet has become an important tool for disseminating knowledge in the area of health, as it allows the quick and easy dissemination of information to different stakeholders, increasing access to information[80]. Recently, the COVID-19 pandemic has highlighted how essential social media has become for disseminating research outcomes. However, some researchers may not feel properly trained to engage in social media-based techniques to disseminate their studies, which contributes to underuse by the scientific community, despite having been shown to have direct implications for increasing the visibility of science[81].

In short, there is no "magic formula" for applying research outcomes and improving the quality of health care. Furthermore, a KT strategy is unlikely to be effective in all circumstances. Although educational material was the most used KT strategy in this review, different methods are likely to be needed for different audiences and purposes.

Limitations

This review has some limitations. Although attempts have been made to develop a wide search strategy, some relevant studies may have been missed. For example, different terminology for Knowledge translation may have limited the identification of additional studies.

CONCLUSION

The results show that translation strategies can be used in single or multiple formats and that educational materials and training are the most used. The high demand for healthcare and content syntheses without practical information represented barriers to the use of scientific evidence. However, evaluating the context of the research, having local facilitators, involving all stakeholders during the study, making data available in an accessible format, and creating research networks with the participation of researchers, professionals and the community are means that facilitate the use of scientific evidence.

In addition, further studies may focus on assessing the effectiveness of KT strategies, as well as listening to knowledge users about ways to operationalize strategies in PHC practice and develop effective interventions in real-world contexts.

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