

BMJ Open Barriers and enablers to implementing clinical practice guidelines in primary care: an overview of systematic reviews

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ABSTRACT

Objectives To identify the barriers and enablers to implementing clinical practice guidelines (CPGs) recommendations in primary care and to provide recommendations that could facilitate the uptake of CPGs recommendations.

Design An overview of systematic reviews.

Data sources Nine electronic databases (PubMed, Cochrane Library, CINAHL, MEDLINE, PsycINFO, Web of Science, Journals @Ovid Full Text, EMBase, JBI) and three online data sources for guidelines (Turning Research Into Practice, the National Guideline Clearinghouse and the National Institute for Health and Care Excellence) were searched until May 2021.

Eligibility criteria Systematic reviews, meta-analyses or other types of systematic synthesis of quantitative, qualitative or mixed-methods studies on the topic of barriers and/or enablers for CPGs implementation in primary care were included.

Data extraction and synthesis Two authors independently screened the studies and extracted the data using a predesigned data extraction form. The methodological quality of the included studies was appraised by using the JBI Critical Appraisal Checklist for Systematic Reviews and Research Syntheses. Content analysis was used to synthesise the data.

Results Twelve systematic reviews were included. The methodological quality of the included reviews was generally robust. Six categories of barriers and enablers were identified, which include (1) political, social and culture factors, (2) institutional environment and resources factors, (3) guideline itself related factors, (4) healthcare provider-related factors, (5) patient-related factors and (6) behavioural regulation-related factors. The most commonly reported barriers within the above-mentioned categories were suboptimal healthcare networks and interprofessional communication pathways, time constraints, poor applicability of CPGs in real-world practice, lack of knowledge and skills, poor motivations and adherence, and inadequate reinforcement (eg, remuneration). Presence of technical support ('institutional environment and resources factors'), and timely education and training for both primary care providers (PCPs) ('healthcare provider-related factors') and patients ('patient-related factors') were the frequently reported enablers.

Conclusion Policy-driven strategies should be developed to motivate different levels of implementation activities, which include optimising resources allocations, promoting

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ An internationally recognised guideline (the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guideline for overview) was followed to enable a transparent presentation of the methods and a replication of this study.
- ⇒ A very comprehensive database search was conducted (nine electronic databases and three other relevant online sources) to help achieve adequate and efficient coverage.
- ⇒ The barriers and enablers were categorised with the guide of a specific framework—Theoretical Domains Framework of identifying influencing factors of the implementation of clinical practice guidelines into practice.
- ⇒ Subgroup analysis was not conducted based on the types of health conditions, which could limit the generalisation of the study findings to one specific health condition.
- ⇒ Language bias could not be excluded as only English papers were included in this study.

integrated care models, establishing well-coordinated multidisciplinary networks, increasing technical support, encouraging PCPs and patients' engagement in guideline development, standardising the reporting of guidelines, increasing education and training, and stimulating PCPs and patients' motivations. All the activities should be conducted by fully considering the social, cultural and community contexts to ensure the success and sustainability of CPGs implementation.

INTRODUCTION

Clinical practice guidelines (CPGs) refer to the medical recommendations that are systematically developed based on the latest available scientific evidence, with the aim of facilitating evidence-based decision-making.^{1 2} Appropriate use of CPGs recommendations can bring potential benefits to patients, healthcare providers and healthcare systems by enhancing the quality of care, decreasing costs and inappropriate practice variations, and reducing preventable adverse events and mistakes.^{3 4} Although many CPGs are available and accessible to

health providers, the underutilisation of the research evidence in CPGs is still suboptimal in primary care.⁵⁻⁷ The proportion of non-adherence to CPGs was up to 60% in primary care settings.⁸ As a result, many patients still receive suboptimal health services, and variable, costly and even inappropriate care that is inconsistent with the recommendations in CPGs.^{5,9} For instance, a cohort study with 438 cardiovascular disease patients from 21 primary care centres in Spain reported that 61.4% of the patients did not receive drug therapies recommended in the guidelines due to the underutilisation of the CPGs.⁸ Non-adherence to CPGs can lead to negative health outcomes for patients and unnecessary medical expenditures and resource use for health systems.^{10,11} A retrospective observational study reported that non-adherence to CPGs on psychopharmacological prescriptions can lead to two times higher incidence of adverse effects and medication costs than those adherence to CPGs.¹²

The implementation of CPGs in clinical practice is a complex and challenging process, as it can be influenced by different levels of factors.¹³⁻¹⁶ For example, a systematic review (SR) conducted by Flottorp *et al*¹⁴ summarised 57 influencing factors in seven domains (guideline-related, patient-related, individual health professional-related, professional interactions, organisational, incentives and resources, and social, legal, and political-related factors) for healthcare professional practice using the method of expert consensus. Specifically, lack of financial support, resources and staff shortage, inadequate knowledge and skills, and negative attitudes towards the CPGs are the common factors identified across practice settings and countries in previous studies.¹³⁻¹⁶ Identifying the relevant key influencing factors, including the enablers and barriers, for implementing CPGs in clinical practice is highly desirable, which can inform the development of tailored and effective CPGs implementation strategies and promote the implementation of evidence-based recommendations into practice.^{17,18}

Several evidence syntheses studies have been conducted to conclude the influencing factors of implementing CPGs in different healthcare settings including primary care and secondary care.^{13,19} In 2008, an overview of SRs was published with the aim of exploring the factors that affect the CPGs implementation, in which five aspects of factors (guideline, implementation strategies, healthcare professionals, patients and environment-related factors) were categorised.¹³ In 2020, an updated overview was published with the literature search conducted in 2018.¹⁹ However, both the 2008¹³ and 2020¹⁹ overviews included studies in different levels of care without specifying and summarising the barriers and enablers to implementing CPGs in primary care.¹⁹ Primary care, as the first contact, continued, comprehensive and coordinated health service, plays a critical role in the provision of healthcare, where the patients can present any kind of health problems to the healthcare professionals and where most of the patients' health needs (health promotion, disease prevention, treatment and rehabilitation) can be addressed as

early as possible.²⁰ The WHO has estimated that, in low-income and middle-income countries, improving primary care could reduce 60 million of deaths and increase 3.7 years of average life expectancy by 2030.²⁰ Primary care and secondary care are two distinct paradigms of healthcare,²¹ and findings from secondary care may not be fully suitable for primary care. Given that an increasing number of SRs on CPGs implementation in primary care has been published since 2018 and none of the published overviews specifically focused on the primary care setting, this current overview of SRs was therefore conducted to achieve a full understanding of the influencing factors for the implementation of CPGs recommendations in primary care, with the following objectives: (1) to identify and synthesise the available evidence regarding barriers and enablers to implementing CPGs recommendations in primary care and (2) to proffer recommendations for implementation strategies that could facilitate the uptake of CPGs recommendations.

METHODS

Study design

An overview of SRs design was adopted to synthesise the barriers and enablers to implementing CPGs recommendations to inform future practice, research and policy. This overview is reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.²²

Data sources and search strategies

Nine electronic databases, including PubMed, Cochrane Library, Cumulative Index to Nursing and Allied Health Literature (CINAHL), MEDLINE, PsycINFO, Web of Science, Journals @Ovid Full Text, EMBase, and Joanna Briggs Institute (JBI), were searched systematically to locate potentially eligible reviews from the inception of each database to May 2021. No restrictions regarding the language of publications were applied. Mesh terms, keywords and free words such as "Practice Guidelines", "Guidelin*", "Primary Health Care", "Guideline Adherence", "barrier*", "enabl*", "facilitat*" and "Systematic Review [Publication Type]" were used to develop the search strategies. In addition, we also searched the Turning Research Into Practice (TRIP), the National Guideline Clearinghouse and the National Institute for Health and Care Excellence (NICE) as the secondary resources. References of the included studies and relevant overviews on barriers and/or enablers of CPGs implementation were also searched to further identify any potentially eligible studies. Details of the used Mesh terms, keywords and free words, and search strategies of each database were reviewed by two authors with extensive experience in doing SRs and a librarian. One representative search strategy is presented in [table 1](#). Search strategies for all the databases are presented in online supplemental file 1.

Table 1 Mesh terms, key words and free words, and one representative search strategy

Domain/item	Mesh terms	Keywords and free words
Clinical practice guidelines	"Implementation Science" or "Practice Guidelines" or "Guidelines" or "Health Planning Guidelines" or "Consensus" or "Guideline Adherence"	"Guidelin*" or "Pathway*" or "recommendation*" or "expert opinion"
Primary care	"Primary Health Care" or "Physicians, Primary Care" or "Primary Care Nursing" or "Community Health Services"	"Primary Care" or "Primary Healthcare" or "General Pract*" or "Practice Nurs*" or "Community Healthcare"
Barriers and Enablers	"Guideline Adherence"	"complan*" or "adherence" or "barrier*" or "hinder*" or "obstac*" or "challeng*" or "difficult*" or "enabl*" or "empower" or "facilitat"
Review [Publication type]	"Systematic Review [Publication Type]" or "Systematic Reviews as Topic" or "Meta-Analysis [Publication Type]" or "Meta-Analysis as Topic"	"Review, Systematic" or "Systematic*" or "Meta-analy*"
One representative search strategy (PubMed) using the above terms and words		
#1	((((("implementation science"[MeSH Terms]) OR ("practice guidelines as topic"[MeSH Terms]) OR ("health planning guidelines"[MeSH Terms]) OR (consensus[MeSH Terms])) OR ("guideline adherence"[MeSH Terms]))	
#2	(((Guidelin*[Title/Abstract]) OR (Pathway*[Title/Abstract]) OR (recommendation*[Title/Abstract]) OR (expert opinion[Title/Abstract]) OR (Implementation Science[Title/Abstract]))	
#3	#1 OR #2	
#4	(((("primary health care"[MeSH Terms]) OR ("physicians, primary care"[MeSH Terms]) OR ("primary care nursing"[MeSH Terms]) OR ("community health services"[MeSH Terms]))	
#5	((((("Primary Health Care[Title/Abstract]) OR (Primary Care[Title/Abstract])) OR (Primary Healthcare[Title/Abstract])) OR (General Pract*[Title/Abstract]) OR (Practice Nurs*[Title/Abstract]) OR (Community Healthcare[Title/Abstract]))	
#6	#4 OR #5	
#7	((((((((complan*[Title/Abstract]) OR (adherence[Title/Abstract]) OR (barrier*[Title/Abstract]) OR (hinder*[Title/Abstract]) OR (obstac*[Title/Abstract]) OR (challeng*[Title/Abstract]) OR (difficult*[Title/Abstract]) OR (enabl*[Title/Abstract]) OR (empower[Title/Abstract]) OR (facilitat*[Title/Abstract]))	
#8	(("systematic review"[Publication Type]) OR ("systematic reviews as topic/methods"[MeSH Terms]) OR (Meta-Analysis[Publication Type]))	
#9	((Review, Systematic[Title/Abstract]) OR (Systematic*[Title/Abstract])) OR (Meta-analy*[Title/Abstract])	
#10	#8 OR #9	
#11	#3 AND #6 AND #7 AND #10 Filters: in the last 10 years	

Eligibility criteria

The inclusion criteria were: (1) study design: SRs or Meta-analyses, or other types of systematic synthesis of quantitative, qualitative or mixed-methods studies; (2) topic/interest/outcomes: barriers and/or enablers for CPGs implementation and (3) sample and context: primary care setting from the perspectives of either patients, informal caregivers, primary care providers (PCPs) (such as general practitioners (GPs), nurses and allied health-care professionals (eg, pharmacists, physiotherapists, physical therapists) or policy makers of health services. Original studies with the aim of exploring barriers and/or enablers for the implementation of CPGs and the studies on the implementation tools of CPGs were excluded. In this study, CPGs refer to guidelines and/or recommendations that were systematically developed for clinical practice decision-making based on the available scientific evidence. Barriers and/or enablers were any influencing factors that could promote or hinder the implementation of CPGs in clinical practice. Barriers and enablers were distinguished based on how it was categorised/described in the included studies. General practice, community health and other healthcare settings outside the hospital were viewed as primary care settings in this study.

Study selection and data extraction

All the identified studies were imported into reference management software (EndNote) to check duplications. After removing the duplications, two authors (TW and

X-LL) independently screened the title and abstract of the studies to locate potentially eligible studies. Then the full texts of all potentially eligible studies were obtained for full assessment by the same two authors in accordance with the eligibility criteria. Any inconsistency during the process were addressed via discussions between the two reviewers. If necessary, a third reviewer (J-YBT or IZ) from the review team was involved. Reasons for exclusion were recorded.

A predesigned data extraction form was used to extract the following information: study authors and publication year, type of review (qualitative, quantitative or mixed based on the data analysis method used in the included review), number of studies included in the review, study country/region of the original studies, targeted health problem, methodological quality of the review and relevant risk of bias appraisal tools. For the barriers and/or enablers, we went through the results of each included study carefully, and then extracted (direct citation or summarising the results) and categorised the barriers and/or enablers based on predefined content categories. The content categories/subcategories were determined based on the checklist for identifying determinants of healthcare practice,¹⁴ the Theoretical Domains Framework of identifying influencing factors of the implementation of CPGs into practice,²³ and two previous SRs on CPGs implementation.^{13 19} Any barriers and/or enablers that were not covered by the predefined content categories

were extracted in a separate table, and all those were further analysed by using summative content analysis to form new categories. More details about the predefined content categories and the development of new categories are presented in the section of data synthesis.

Methodological quality assessment

Methodological quality and evidence quality of the included SRs/meta-analysis were appraised independently by two reviewers (TW and X-LL) using the JBI Critical Appraisal Checklist for Systematic Reviews and Research Syntheses.²⁴ The JBI Checklist includes eleven criteria: (1) 'Is the review question clearly and explicitly stated?'; (2) 'Were the inclusion criteria appropriate for the review question?'; (3) 'Was the search strategy appropriate?'; (4) 'Were the sources and resources used to search for studies adequate?'; (5) 'Were the criteria for appraising studies appropriate?'; (6) 'Was critical appraisal conducted by two or more reviewers independently?'; (7) 'Were there methods to minimise errors in data extraction?'; (8) 'Were the methods used to combine studies appropriate?'; (9) 'Was the likelihood of publication bias assessed?'; (10) 'Were recommendations for policy and/or practice supported by the reported data?' and (11) 'Were the specific directives for new research appropriate?' (p.3).²⁴ Each of the criteria includes four answers: 'yes', 'no', 'unclear' and 'not applicable'. Any inconsistencies during the process were addressed by discussions between the two reviewers and/or the third reviewer (J-YBT or IZ).

Data synthesis

Content analysis was used to synthesise the data extracted from the included reviews. A priori content categories of the barriers and enablers to implementing CPGs in primary care were developed first to guide the data synthesis. The content categories and subcategories were determined based on the checklist for identifying determinants of healthcare practice,¹⁴ the Theoretical Domains Framework of identifying influencing factors of the implementation of CPGs into practice,²³ and the findings of previous systematic synthesis on CPGs implementation.^{13 19} The proposed categories included: political, social and culture-related factors, institutional environment and resources factors, guideline-related factors, healthcare provider-related factors and patient-related factors. Data extracted from the included reviews were compared, combined and clustered with respect to the predefined categories. For new categories that were not covered by the above-proposed domains, summative content analysis was adopted.²⁵ Rectification/verification of the subcategories and categories was performed throughout the coding process level and the whole dataset level to ensure all the extracted data was grouped into the most appropriate categories or subcategories. To further support and reinforce the meaning of the identified categories or subcategories for the enablers and barriers, representative data such as the text quotes in

the included reviews were extracted and presented in the results section.

As this study is an overview of SRs, the 'corrected covered area' (CCA) was calculated to determine the overlaps of the original trials in the included SRs.²⁶ A CCA value of 5% or below was regarded as a 'slight overlap', 6%–10% as a 'moderate overlap', 11%–15% as a 'high overlap' and above 15% was regarded as a 'very high overlap'.²⁶ A lower CCA indicates a lower likelihood of overlaps. In this study, no overlap of original trials was identified in the included SRs.

Patient and public involvement

No patients or members of the public will be involved in the design, conduct, reporting or dissemination plans of our research.

RESULTS

Study selection

A total of 4820 articles were identified. After excluding the duplicates (n=1673), 3147 articles were left for title and abstract screening. The full texts of 50 potentially eligible records were retrieved for further assessment based on the inclusion and exclusion criteria. Ten studies^{27–36} were identified for inclusion. Relevant websites and organisations (TTRIP, NICE) as well as the reference list of the included articles were also searched, which yielded 250 records for eligibility assessment, and two articles^{37 38} were included. Thus, 12 studies were finally included in this current overview. The study selection process is presented in [figure 1](#).

Characteristics of the included reviews

The 12 reviews^{27–38} were published between 2014 and 2020, and involved 276 articles (275 studies) that were conducted in different countries or regions including the USA, the UK, Canada, Australia, Sweden, Germany, the Netherlands, Saudi Arabia, Taiwan, New Zealand, Singapore, France, Germany, Mexico, Switzerland, Belgium, Norway, Oceania, Israel, Ireland, Uzbekistan, Spain, Pakistan, Italy, Denmark and some other Asia and Africa countries or regions (not specified). Ten reviews (n=10/12)^{27 28 30–34 36–38} analysed the data using qualitative method (eg, thematic analysis) and the other two using mixed methods.^{29 35} For the participants of the included reviews, nine reviews^{27 29–33 35 37 38} involved PCPs only, including GPs, nurses and other allied healthcare professionals (eg, pharmacists, physiotherapists, physical therapists), while the other three reviews^{28 34 36} involved both PCPs and patients. The included reviews focused on various health conditions, with two reviews^{27 34} on osteoarthritis, and one each on asthma,²⁸ mixed health problems,^{29 37} chronic kidney disease,³⁰ diabetes,³¹ low back pain,³² heart failure,³³ HIV,³⁵ cardiovascular diseases³⁶ and depression,³⁸ respectively. A summary of the characteristics of the included reviews are presented in [table 2](#).

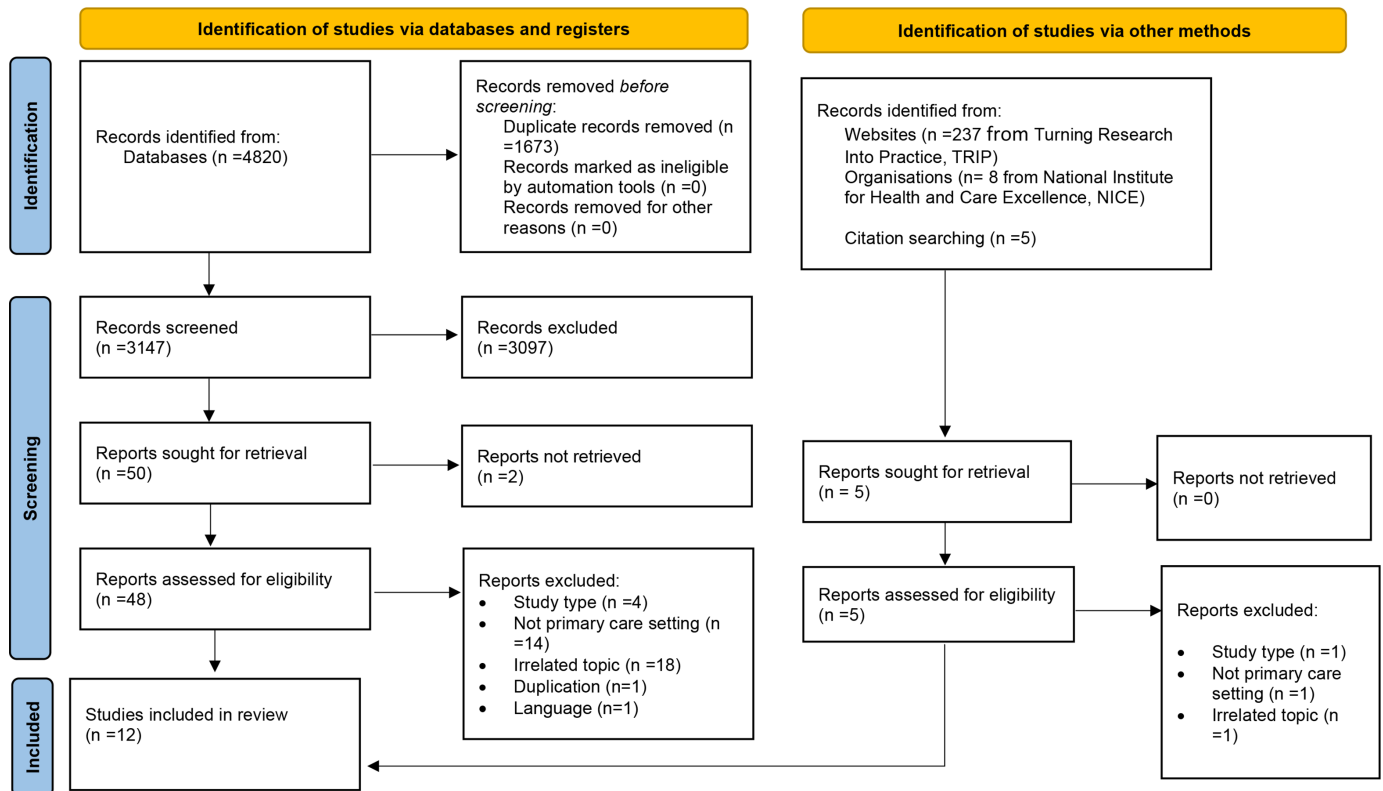


Figure 1 PRISMA flow diagram for study selection. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

Methodological quality and risk of bias of the included studies

Results of the methodological quality and risk of bias for all the included reviews are shown in [table 3](#). The methodological quality of the included reviews was generally robust, with all the reviews receiving a quality score of 7 or above out of 11 criteria. All the reviews clearly and explicitly elaborated the review questions, data resources and the implications for policy and/or practice. Inclusion criteria, critical appraisal criteria /tools and the approach of evidence synthesis were appropriately used in most of the included reviews. Several reviews did not clearly present the search strategies,^{27 28 31 36} whether the quality appraisal was conducted by two reviewers independently,^{28 30 32 35 37} and the implications or directives for future research based on their findings.^{27 30 33 36}

Expectations/Beliefs about consequences/Personal characteristics/Attitudes/ views towards CPGs/Behavioural regulation and reinforcement/Barriers and enablers for CPGs implementation in primary care

A total of six categories regarding the barriers and enablers for CPGs implementation in primary care were identified. These categories included political, social and cultural factors, institutional environment and resources factors, guideline-related factors, healthcare provider-related factors, patient-related factors and behavioural regulation-related factors. Some of the categories had a few subcategories for both the barriers and enablers, which were similar but not entirely the same ([table 4](#)).

The first five categories were consistent with two previous overviews (one was conducted in 2008 by Francke *et al.*¹³ and the other one was conducted in 2018 by Correa *et al.*¹⁹) on different levels of care including primary, secondary and tertiary care. Although the above-mentioned five categories were also reported in other levels of healthcare, this current study identified some barriers and/or enablers within each category that were specific for primary care setting, for example, limited healthcare networks (political, social and cultural factors), limited services for specific patient groups or needs (institutional environment and resources factors), limited technical support and PCPs' negative attitudes towards the consequences of CPGs (healthcare provider-related factors). In addition, a specific category was identified in this current study, which was the category of behavioural regulation-related factors such as remuneration, rewards and financial incentivisation for the healthcare practice or primary care professionals. Of the identified six categories, the most commonly reported categories for barriers were healthcare provider-related factors (n=10), institutional environment and resources factors (n=9), guideline-related factors (n=9) and patient-related factors (n=8); for enablers, the most frequently reported category was institutional environment and resources factors (n=10) while all other categories of barriers were only reported by half or even less than half of the included studies. More details about the barriers and enablers within each category and subcategory are presented in online supplemental file 2.

Table 2 Characteristics of the included reviews

Included review	Objective/aim	Review type	Countries/regions where the primary studies were conducted	No. of included studies	Participants and sample size	Health topic of the review	Quality assessment of the papers analysed in the review	Data synthesis method of the review
Egerton <i>et al.</i> , 2017, ²⁷	Exploration of the barriers and enablers to implementation of clinical practice guidelines (CPGs) for osteoarthritis management in primary care	SR Qualitative	Australia, France, UK, Germany, Mexico	8	Participants: Primary care providers (PCPs) only including general practitioners (GPs), nurses, pharmacists and physical therapists Sample size: 129	Osteoarthritis	Yes-Critical Appraisal Skills Programme (CASP) checklist	Meta-synthesis
Ezeani, 2016. ²⁸	Exploration of the barriers and recommendations to implementation of CPGs for asthma management in primary care	SR Qualitative	USA, UK, Canada, Australia, The Netherlands, Sweden, Taiwan, Germany, Saudi Arabia, New Zealand, Singapore	29	Participants: Asthma patients, parent caregivers and PCPs including GPs and nurses Sample size: 1846	Asthma	Yes-Critical Appraisal Skills Programme (CASP) checklist	Thematic analysis
Mathieson <i>et al.</i> , 2018 ²⁹	Exploration of the strategies, barriers and enablers to implementation of evidence-based practice in community nursing	SR Mixed methods	Switzerland, UK, Australia, USA, Canada, Sweden, Belgium, Norway, The Netherlands	22	Participants: PCPs without specifying the details Sample size: not specified	Various health topics	Yes-Assessment template for disparate data developed by Hawker <i>et al.</i> (2002) ³⁰	Critical Interpretive Synthesis
Neale <i>et al.</i> , 2020 ³⁰	Exploration of PCPs' perceived barriers and enablers to the diagnosis and management of chronic kidney disease in primary care	SR Qualitative	UK, Australia, USA, Canada, The Netherlands	22	Participants: PCPs only including GPs, nurses, practice managers, pharmacists and medical assistant Sample size: around 803	Chronic kidney disease	Yes-Joanna Briggs Institute critical appraisal checklist	Thematic analysis
Rushforth <i>et al.</i> , 2016 ³¹	Exploration of PCPs' perceived barriers to implementation of CPGs recommended practice for type II diabetes in primary care	SR Qualitative	USA, UK, Europe but non-UK, Asia, Africa, Australia, Oceania	33†	Participants: PCPs only such as GPs, family medicine specialists, medical officers, government policy makers, nurses Sample size: not specified in some included studies	Type II diabetes	Yes-National Institute for Health and Care Excellence checklist	A framework was used to guide the data analysis
Slade <i>et al.</i> , 2015 ³²	Exploration of PCPs' perceptions regarding the enablers and barriers of guideline implementation for low back pain management	SR Qualitative	Canada, UK, USA, Germany, New Zealand, Israel, Norway, Ireland, The Netherlands	17	Participants: PCPs only including GPs, family practitioners, physiotherapists, chiropractors and occupational therapists sample size: 614	Low back pain	Yes-CASP checklist for qualitative studies	Thematic analysis
Smeets <i>et al.</i> , 2016 ³³	Exploration of PCPs' perceptions regarding barriers and enablers for managing heart failure patients in primary care	SR Qualitative	UK, Australia, Canada, Uzbekistan	23	Participants: GPs Sample size: Not specified	Heart failure	Yes-CASP checklist	Thematic analysis

Continued

Table 2 Continued

Included review	Objective/aim	Review type	Countries/regions where the primary studies were conducted	No. of included studies	Participants and sample size	Health topic of the review	Quality assessment of the papers analysed in the review	Data synthesis method of the review
Swaithes <i>et al.</i> , 2020 ³⁴	Exploration of the influencing factors for the CPGs implementation in primary care for osteoarthritis management	SR Qualitative	UK, The Netherlands	4	Participants: PCPs including GPs and nurses, and patients. Sample size: GPs (n=28), nurses (n=13) and patients (n=46)	Osteoarthritis	Yes-CASP checklist	Thematic analysis
Tan and Black, 2019 ³⁵	Exploration of the barriers and facilitators to implementation of a guideline for HIV testing	SR Mixed	USA	12	Participants: PCPs including GPs, nurses and social workers Sample size: Not specified	HIV testing	Not specified	A framework was used to guide the data analysis
Unverzagt <i>et al.</i> , 2014 ³⁶	Exploration of the strategies of guideline implementation for cardiovascular diseases in primary care	SR Quantitative	Spain, Canada, UK, USA, Belgium, Sweden, Israel, Taiwan, Pakistan, Germany, Italy, Switzerland, The Netherlands	54	Participants: PCPs including physicians, pharmacists or nurses in primary care setting; and patients. Sample size: Physicians (n=8785), patients (n=2 56 550)	Cardiovascular diseases	Yes-Cochrane Collaboration risk of bias tool	Meta-analysis
Rubio-Valera <i>et al.</i> , 2014 ³⁷	Exploration of the barriers and facilitators for the implementation of primary prevention and health promotion (PP and HP) in primary care	SR Qualitative	UK, Denmark, USA, Sweden, Switzerland, Spain, Germany, Israel, Ireland, The Netherlands, Canada, Australia, New Zealand	35	Participants: PCPs only, mainly including GPs and nurses Sample size: around 880	Chronic diseases and health promotion	Yes-A modified checklist for quality appraisal of qualitative studies	Meta-ethnographic
Wood <i>et al.</i> , 2017 ³⁸	Exploration of the barriers and facilitators to implementing guideline recommendations for depression in primary care	SR Qualitative	UK, USA, Canada, Germany	18	Participants: PCPs only such as GPs, primary care psychological therapies Sample size: Not specified	Depression	Yes-CASP checklist for qualitative studies	Thematic analysis

*Hawker *et al.*, Appraising the evidence: reviewing disparate data systematically. Qualitative health research. 2002 Nov;12(9):1284-99.

†Two of the included articles from one same study.
SR, systematic review.

Table 3 Methodological quality of the included reviews

Included review	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Overall quality
Egerton <i>et al.</i> , ²⁷ 2017	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	NA	Yes	No*	8/10
Ezeani, ²⁸ 2016	Yes	Yes	Unclear	Yes	Yes	Unclear	Yes	Yes	NA	Yes	Yes	8/10
Mathieson <i>et al.</i> , ²⁹ 2018	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	9/11
Neale <i>et al.</i> , ³⁰ 2020	Yes	Yes	Yes	Yes	Yes	Unclear	Unclear	Yes	NA	Yes	Unclear	7/10
Rushforth <i>et al.</i> , ³¹ 2016	Yes	Yes	Unclear	Yes	Yes	No	Yes	Unclear	NA	Yes	Yes	7/10
Slade <i>et al.</i> , ³² 2015	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	NA	Yes	Yes	9/10
Smeets <i>et al.</i> , ³³ 2015	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes	No*	9/10
Swaithes <i>et al.</i> , ³⁴ 2020	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	NA	Yes	Yes	9/10
Tan and Black, ³⁵ 2019	Yes	Yes	Yes	Yes	Unclear	Unclear	Unclear	Yes	No	Yes	Yes	7/11
Smeets <i>et al.</i> , ³⁶ 2016	Yes	Yes	Unclear	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	9/11
Swaithes <i>et al.</i> , ³⁴ 2020	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes	NA	Yes	Yes	9/10
Wood <i>et al.</i> , ³⁸ 2017	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	Yes	Yes	10/10

Item 1 — 'Is the review question clearly and explicitly stated?'; Item 2 — 'Were the inclusion criteria appropriate for the review question?'; Item 3 — 'Was the search strategy appropriate?'; Item 4 — 'Were the sources and resources used to search for studies adequate?'; Item 5 — 'Were the criteria for appraising studies appropriate?'; Item 6 — 'Was critical appraisal conducted by two or more reviewers independently?'; Item 7 — 'Were there methods to minimise errors in data extraction?'; Item 8 — 'Were the methods used to combine studies appropriate?'; Item 9 — 'Was the likelihood of publication bias assessed?' (not be applicable to systematic reviews of qualitative evidence); Item 10 — 'Were recommendations for policy and/or practice supported by the reported data?' and Item 11 — 'Were the specific directives for new research appropriate?' (p3)²³

*Not reported.

Table 4 Categories, subcategories and examples of the barriers and enablers to implementing clinical practice guidelines

Category	Subcategories	Examples of the barrier	Examples of the enablers
Political, social and culture factors		<ul style="list-style-type: none"> ▲ Language barriers in multiethnic countries^{28,37} ▲ Policy barriers: too many state and federal regulations³⁵ 	<ul style="list-style-type: none"> ▲ Cooperation between the State or national health department and community organisations and clinics³⁵
	Institutional environment and resources factors	<ul style="list-style-type: none"> ▲ Time constraints/ heavy workload/PCPs shortage^{27,28,30-32,35,37,38} ▲ lack of administrative support/staff and administrative hassles associated with CPG implementation^{35,37} 	<ul style="list-style-type: none"> ▲ Technical improvement³⁰: technical systems such as the payment system²⁷, electronic health records²⁸, flexible booking system³⁷, integrated systems of promoting collaboration and clear communication between PCPs and other professionals eg, specialists, distant health professionals^{30,36}
Guideline-related factors		<ul style="list-style-type: none"> ▲ Perceived limited applicability of the CPGs in real-world practice^{28,32-34} ▲ Inconsistent guidelines³⁵ 	<ul style="list-style-type: none"> ▲ Evidence/recommendations that are easy to use, cost-effective and time-saving²⁹ ▲ Developing locally (context-specific) CPGs to overcome the uncertainty³³
Healthcare provider-related factors	Knowledge and skills	<ul style="list-style-type: none"> ▲ Lack of training, knowledge and/or skills about the CPGs or the recommended practice in CPGs^{27,31,32,35,37} ▲ Poor communication/language skills of PCPs contributing to unsatisfied conversations between GPs and patients^{27,31} 	<ul style="list-style-type: none"> ▲ Provision of timely education and training to PCPs^{28,30,33,35,36} ▲ Professional development of the PCPs such as maintaining existing skills, developing new skills and knowledge²⁹
		Professional role and identity	<ul style="list-style-type: none"> ▲ Lack of clear delineation about the role, identity and responsibility of PCPs for CPGs implementation^{30-32,34,37}
	Beliefs about capabilities	<ul style="list-style-type: none"> ▲ Lack of self-confidence in their capacities and experiences to deal with health issue³⁷ 	<ul style="list-style-type: none"> ▲ providing enough training to staff on the CPGs³⁶ to improve their confidence to deliver the intervention^{37,38}
	Beliefs about consequences	<ul style="list-style-type: none"> ▲ Doubts about treatment effectiveness^{27,37} 	<ul style="list-style-type: none"> ▲ Clinicians accept and have positive attitudes towards programmes and guidelines³⁵
	Emotion/ motivation	<ul style="list-style-type: none"> ▲ Feel overloaded with the volume of guidelines³², the information in CPGs and experienced 'guideline fatigue'³³ 	

Continued

Table 4 Continued

Category	Subcategories	Examples of the barrier	Examples of the enablers
Patient-related factors	Motivations and adherence	<ul style="list-style-type: none"> ▶ Lack of interest and poor adherence of patients for advice and care plans^{27 28 30 31 37} 	<ul style="list-style-type: none"> ▶ Provision of timely education and training to patients^{27 28 35 36}
	Knowledge/literacy	<ul style="list-style-type: none"> ▶ Patients' low literacy and health literacy make it difficult to educate patients^{30 35} 	<ul style="list-style-type: none"> ▶ Improved patient's expectations and their self-management capability via early education²⁷
	Expectations	<ul style="list-style-type: none"> ▶ Dissonant patient expectations/goals with disease management^{27 28 32} 	
	Beliefs about consequences	<ul style="list-style-type: none"> ▶ Underestimate^{30 35} or overestimate³⁴ the disease consequence; the disease consequence) 	
	Personal characteristics	<ul style="list-style-type: none"> ▶ Patients' socioeconomic characteristics^{31 35}; age (motivation increases with age), psychological comorbidity³⁷ 	
	Attitudes/views towards CPGs	<ul style="list-style-type: none"> ▶ Negative attitudes towards CPGs as the patients and/or caregivers were experienced for asthma management²⁸ 	
Behavioural regulation and reinforcement		<ul style="list-style-type: none"> ▶ Lack of financial incentives for the healthcare practice or the professional³⁷ 	<ul style="list-style-type: none"> ▶ Audit and feedback^{28 36}

CPG, clinical practice guideline; GP, general practitioner; PCP, primary care providers.

Political, social and cultural factors

Barriers

This category emerged from five reviews,^{28 30 35 37 38} with the number of included original studies ranging from 12 to 35. The frequently mentioned barriers were the limited healthcare networks^{35 38} and poor interprofessional communication pathways^{28 30 38}; conflicts between the public's views and recommendations in CPGs^{35 37} and language barriers and culture diversities particularly in multiethnic contexts.^{28 37} Other reported barriers were too many state/federal regulations for CPGs implementation,³⁵ uneven health resources distributions due to socio-economic and political impacts,³⁷ and poor coordination between different levels of care.³⁷

Breakdowns in networks and communication pathways were seen as major barriers in many papers reviewed. (Wood, *et al.*, 2017, p39)³⁸

Within the domain of 'social influences', insufficient communication between members of the healthcare team was identified as a barrier. (Neale, *et al.*, 2020, p10)³⁰

Language barrier also hindered PCPs [primary care professionals] in Singapore from effectively educating their multiethnic asthmatic patients (Ezeani, 2016, p83)²⁸

"Citizens' views can also affect what the professional feels is feasible to do in PC [primary care]. For instance, drinking advice may be in conflict with citizens' views about drinking as a social activity.", (Rubio-Valera, *et al.*, 2014 p8)³⁷

Enablers

Only one review³⁵ reported enablers in this category, which were developing supportive policy like congruent federal guidelines and making the recommended practice as routines; improving public's views towards the recommended practice via public education; and state/county health department engagement with primary care.

HIV providers believed that state/county health department engagement with community based organizations and clinics was a facilitator to testing (Tan & Black, 2019, p5)³⁵

Institutional environment and resources factors

Barriers

This category was clustered based on nine reviews,^{27-32 35 37 38} with the number of included original studies ranging from 8 to 35. The frequently mentioned barriers were time constraints and heavy workload of PCPs,^{27 28 30-32 35 37 38} financial burden including increased expenditure and inadequate funding^{28 31 35 38}; limited availability of resources like medicines, specialists and some certain equipment and devices^{27 28 30 31 37}; lack relevant strategies/plan for guideline implementation and dissemination^{28 31 35}; poor referral pathway or resources^{27 35 37}; limited technical support such as unfriendly used software/system for disease management^{30 38}; administrative barriers such

as lack of administrative support/staff^{35 37} and limited services for specific patient groups or needs.^{31 35} Other additional barriers were changing the organisations' structure,^{29 38} other priorities of the clinics³⁷ and variations in practice operations.³⁰

Inadequate time has been highlighted as a major barrier..... Inadequate time hinders meaningful physician and patient asthma management education. Health care professionals had inadequate time to discuss patient's medication, use of WAAP and management of asthma symptoms with their patients. (Ezeani, 2016 p84)²⁸

Time Constraints Make it Difficult to Implement the Guidelines: Clinicians appeared to be facing an information overload. The volume of all the guidelines with which clinicians are faced can be overwhelming in terms of having time to read them and assimilate into clinical practice (Slade, *et al.*, 2016, p80)³²

Financial factors were the most cited barrier in six articles and included lack of reimbursement from third party insurance providers; lack of financial support to conduct testing; and the cost of rapid testing (Tan & Black, 2019, p4)³⁵

Enablers

The commonly reported enablers were identified from nine reviews,^{27-30 34-38} which were increasing capable healthcare providers and managers³⁸; increasing technical support and assistance such as establishing electronic payment system,²⁷ health records,²⁸ disease management plan,²⁸ flexible booking system³⁷ and integrated systems of collaboration promotion between PCPs and other professionals (eg, specialists, distant health professionals)^{30 36}; financial support such as federal funding³⁵; clearly and easily accessible health networks like multi-discipline corporations²⁹; effective interprofessional communication through standardised care pathways^{30 35}; incorporating CPGs recommendations into current clinic workflow^{28 35}; and a clear leadership structure for the CPGs implementation.^{35 38}

The use of computers, particularly the adoption and implementation of electronic health records (EHRs) can facilitate adherence to the use of asthma management guidelines. The technological system can be used to remind physicians when certain patients' require asthma care. The system can be used in the development of asthma management plans and management of asthma prescription and medication activities. Technological systems can also be used to promote patient's education by distributing educational materials electronically, (Ezeani, 2016 p96)²⁸

Guideline itself related factors

Barriers

This category emerged from nine reviews^{27 28 30-35 37} with the number of included studies ranging from 8 to 35.

Perceived limited applicability of the CPGs in real-world situations^{28 32–34}; lack of clarity or specificity of CPGs^{27 30}; not suitable for some specific patients like those with comorbidities^{30 33} and conflicts between the guideline recommendations and the commonly used medical heuristics^{28 34} were the frequently mentioned barriers in relation to the guidelines. Some other identified barriers were frequent change of the CGPs³⁰; perceived limited credibility of the CPGs^{28 31 32}; depersonalised and invalidated guidelines within specific context³⁷; the guideline can restrict current clinical judgement and challenge the autonomy of PCPs,³² and complicated implementation procedures.³⁵

Additionally, GPs felt that guidelines were rarely applicable to real-world practice (Smeets, *et al.*, 2016, p3)³³

A substantial number of studies highlighted physicians' concerns about the applicability of the asthma management guidelines in certain situations. (Ezeani, 2016, p81)²⁸

Clinicians perceived that the guidelines lacked clarity or specificity. They indicated that there are issues with how guidelines are written, for example, the level of detail they provide and whether they are easily implementable in clinical practice”, (Egerton, *et al.*, 2017 p631)²⁷

Some clinicians (chiropractors, GPs, and PTs) believed that current guidelines were constraining and prescriptive, designed to control practice and subjugate clinical judgment by reducing medicine to algorithms, were autocratic in nature, and stifled professional autonomy and clinical reasoning. (Slade, *et al.*, 2016, p807)³²

Enablers

Some enablers regarding guideline itself were also identified from four^{28 29 32 33} reviews, which were developing tailored guideline with considering patients' needs²⁸; involving PCPs into guideline development process²⁸; adopting cost-effective, time-saving and easy-to-use approaches as recommendations²⁹; adaption and validation of the guideline within specific context³³ and a good compatibility of the recommendations with current practice.³²

Some GPs suggested the development of locally drafted guidelines to ensure a locality based, contextualised approach to overcome local organisational factors around the provision of specialised services and professional interactions between primary and secondary care, (Smeets, *et al.*, 2016 p9)³³

They (professionals) agreed with the LBP guidelines, found them compatible with their current practice, and believed that using them would help in preventing persistent disability (Slade, *et al.*, 2016, p807)³²

Healthcare provider-related factors

This category was clustered based on ten reviews,^{27 28 30–35 37 38} with the number of studies analysed in the reviews ranging from 4 to 35. Lack of relevant knowledge and skills,^{27 31 32 35 37} unclear role and identity for CPGs implementation,^{30–32 34 37} lack of self-confidence and/or self-efficacy regarding their capacity of using guideline to manage health conditions,^{28 37} negative beliefs towards the consequence of guideline,^{27 28 37} and low motivation or interests^{27 28 33 37 38} were the commonly reported barriers.

Knowledge and skills

Barriers

Lack of training, knowledge and skills about the CPGs content or recommended practice^{27 31 32 35 37} was the most mentioned healthcare provider-related barrier. In addition, lack of communication/language skills,^{27 31} and lack of knowledge about risk evaluation, motivational interview and counselling³⁷ were also identified as significant barriers.

Professionals think that the curriculum in university and the pharmaceutical industry have an impact on their behavior. Lack of undergraduate training in PP&HP activities is perceived as a barrier, (Rubio-Valera, *et al.*, 2014 p8)³⁷

Specific gaps in provider knowledge that created barriers included lack of knowledge about CDC guidelines (Tan & Black, 2019, p7)³⁵

Clinicians lack knowledge about recommended practice': some clinicians' comments demonstrated that they, or their colleagues, were not familiar with specific treatments recommended in CPGs, (Egerton, *et al.*, 2017 p631)²⁷

Enablers

Relevant enablers were provision of timely education and training for PCPs^{28 30 33 35 36} to maintain their existing skills, and developing new skills and knowledge related to guideline implementation. For example, developing good communication skills to promote effective communication and rapport and trust relationships between PCPs and patients.

It has been recommended that there should be workshops and seminars for training PCPs about guideline use. (Ezeani, 2016, p93)²⁸

To evaluate the influence of multimodal strategies including provider education, a second analysis was performed and 11 additional trials with multimodal strategies were included. The resulting overall OR was 1.34 (95% CI 1.08 to 1.65). A sensitivity analysis included only two trials with overall low risk of bias (16,47) where the effect was stated (OR 1.48; 95% CI 0.97 to 2.24). For these reasons, a moderate increase of physician adherence by strategies including provider

education can be considered to be robust.,(Unverzagt, *et al.*, 2014 p259)³⁶

Professional role and identity

Barriers

Lack of clear delineation about the role, identity and responsibility of PCPs for CPGs implementation^{30-32 34 37} was the most frequently reported barrier. Misunderstanding or underestimation of the role of PCPs for disease management by other healthcare professionals³⁰ was another barrier.

Nurses' and physicians' roles have evolved as diabetes care has become integrated into primary care, with nurses playing a central role. However, both physicians and nurses express uncertainty or disagreement over who is responsible for various elements of patient care,(Rushforth, *et al.*, 2016 p e116 & e119)³¹

A number of barriers relating to the professional role of PCPs were reported. Six studies reported barriers that were related perceived misunderstanding about the role of PCPs in the management of CKD by other healthcare professionals (for example nephrologists). Some studies reported that general practitioners felt that other healthcare providers underestimated their role, and did not appreciate their expertise or their ability to competently manage the disease.,(Neale, *et al.*, 2020 p6)³⁰

Enablers

Several reviews also mentioned some facilitators within this subcategory, which were ensuring the ownership, flexibility and autonomy of the PCPs²⁹; and well-organised practice and a clear clarification about the role of PCPs in disease management.³⁰

A 'bottom-up' approach, including early engagement and collaborative working, and the ability of community nurses to tailor the innovation to meet individual needs was an important facilitator (Mathieson, *et al.*, 2018, p7)

A facilitator is a well-organized practice where everyone knows their role regarding PP&HP and which has referral services within the practice,(Rubio-Valera, *et al.*, 2014 p4)³⁷

Beliefs about capabilities

Barriers

The subcategory mainly refers to the lack of self-efficacy²⁸ and self-confidence³⁷ of PCPs in terms of their capacities and personal experiences to deal with health problem based on patients' experiences and needs.

Inadequate self-efficacy as a result of low confidence may result in non-adherence to the established asthma management guidelines. Four studies included in this review highlighted that this barrier impacted on preventative health education indicating that lack of self-efficacy can be a significant barrier to the

adoption and implementation of the asthma management guidelines,(Ezeani, 2016 p84)²⁸

Intrapersonal factors:, and their self-concept (self-confidence in their capacities and personal experiences with the problem: e.g., a smoker physician dealing with tobacco cessation or an obese nurse dealing with nutrition recommendations),(Rubio-Valera, *et al.*, 2014 p3)³⁷

Enablers

Within this subcategory, several enablers were identified, including sufficient training for PCPs to improve their confidence^{37 38}; fully understanding the patients' socio-economic and psychological characteristics, expectations and cultural background^{27 32 35 37}; and strength of peer learning and support.³⁸

Papers found having structured management plans for patients, made of high quality materials provided alongside in-depth staff training, and confident staff to deliver it were key elements in the successful implementation of Collaborative Care,(Wood, *et al.*, 2017 p39)³⁸

Beliefs about consequences

Barriers

The barriers within this category were doubts about the effectiveness^{27 37}; negative attitudes towards the disease and disease management²⁷ and lack of expectation²⁸ regarding the outcomes of using CPGs.

'Doubts about treatment effectiveness': a lack of belief in effectiveness or adequacy of available interventions was evident in participant quotations and in the summary of findings from two articles,(Egerton, *et al.*, 2017 p632)²⁷

Outcome expectancy can be described as the anticipation that certain behavior will result in a given outcome. If a general practitioner believes that a recommendation will not result in improvement of a particular outcome, there is less likelihood that the practitioner will follow the guideline recommendation. An important reason for the general practitioners nonadherence to the laid down asthma management guidelines is the belief that they will not be effective,(Ezeani, 2016 p84)²⁸

Enablers

In this occasion, healthcare providers' positive attitudes towards the programmes and guidelines³⁵ was reported as one important enabler.

Attributes of providers facilitating testing included positive attitudes toward programs and guidelines. Clinician acceptance of the implemented testing program was associated with its success in a pediatric emergency department (Tan & Black, 2019, p8)³⁵

Emotion/motivation

Barriers

Clinical inertia (eg, low motivation/interests) of PCPs²⁸ due to reasons such as fear of damaging the patient-physician relationship and personal stress^{32 38} or negative emotions^{27 31} due to the volume of guideline were identified barriers within this subcategory.

Clinical inertia can be described as the PCPs reluctance to diverge from the established code of practice, and is usually entrenched in over-estimation of the quality of the prevailing clinical practices, personal disagreement with the recommended changes or PCPs ignorance,(Ezeani, 2016 p82)²⁸

The professionals prefer not to implement PP&HP when they are concerned about damaging the patient-physician relationship, for instance, in dealing with issues related to alcohol consumption when this is not the motive for the consultation,(Rubio-Valera, *et al.*, 2014 p4)³⁷

Enablers

No significant enabler within this subcategory was identified from the included reviews.

Patient-related factors

Barriers

This category emerged from eight reviews,^{27 28 30–32 34 35 37} with the number of included original studies ranging from 4 to 32. The frequently mentioned barriers included lack of interest and poor adherence^{27 28 30 31 37}; lack of knowledge and low literacy and health literacy^{28 30 31 35}; dissonant expectations/goals with disease management^{27 28 32 34}; misconceptions about the disease consequence³⁰; patients' characteristics such as psychological comorbidity,^{31 35 37} competing health needs and level of self-empowerment capacity³⁵ and negative attitudes towards CPGs.³¹

Low patient adherence to management strategies, particularly lifestyle strategies, were reported as a common barrier (Neale, *et al.*, 2020, p6)³⁰

Lack of education about HIV and low literacy/health literacy also contributed to low testing rates (Tan & Black, 2019, p7)³⁵

The data suggest that GPs are challenged by patient expectations that are not in agreement with their own views, but still influence GP management of the disease.,(Egerton, *et al.*, 2017 p633)²⁷

PC-P [primary care provider] felt that due to the asymptomatic nature of CKD, patients did not understand the seriousness of CKD and were unlikely to prioritise its management until the disease reached a more severe stage with symptoms,(Neale, *et al.*, 2020 p6)³⁰

Patients' socioeconomic situation, occupation, carer status, comorbidities, mobility problems, polypharmacy, and self-empowerment capacity acting as barriers to care (Rushforth, *et al.*, 2016, p117)³¹

Some of the responses provided by patients/caregivers indicated that they view the asthma management guidelines as only suitable to certain patient populations, particularly those with severe asthma and youngsters being taken care of in schools. Parents/caregivers viewed asthma management plans as inappropriate or unnecessary since they had adequate knowledge on what they could do if their child's asthma became worse,(Ezeani, 2016 p88-89)²⁸

Enablers

Some of the enablers within this category were timely education and training for patients^{27 28 35 36}; use of appropriate education materials that can be easily understood by patients³⁸; patient's appropriate expectations²⁷; alignment between CPGs recommendations and the views of PCPs and patients.³⁴

We state a moderate increase of physicians' adherence (on guideline implementation) by strategies including patient education (Unverzagt, *et al.*, 2014, p259)³⁶

Behavioural regulation and reinforcement

Barriers

The barriers within in this category were mainly related to inadequate reinforcement for the implementation behaviours,^{30 34 37} for example, lack of remuneration, rewards or incentivisation.

the way in which practices were rewarded and incentivized for meeting Quality and Outcomes Framework (QOF) targets, significantly affected their prioritization of workload and desire to implement best practice for a condition that produced no financial gain,(Swaithes, *et al.*, 2020 p106)³⁴

Enablers

Several enablers were identified, which included regular supervision schedules and feedback³⁸; appropriate follow-ups³⁸; continuous audit programmes²⁸; using reminder systems^{36 37}; and appropriate remuneration²⁸ and financial incentives.³⁷

Audit and feedback (A&F) is a continuous improvement initiative that can be used to evaluate performance and present reports that reflect on the status of guideline use. It was suggested that this process can result improved asthma care by modifying clinical practice behavior in primary care settings,(Ezeani, 2016 p95)²⁸

DISCUSSION

Summary of the findings

To our best knowledge, this is the first overview of SRs that aim to explore the barriers and enablers to implementing CPGs in primary care. Numerous barriers and enablers

were identified in this overview by synthesising 12 SRs with 275 original studies, which could provide evidence for the development of a theoretical basis for creating CPG implementation strategies in the primary care setting. Barriers related to 'healthcare provider-related factors' were most commonly reported, particularly a perceived lack of knowledge and skills about CPGs, which was followed by 'institutional environment and resources factors' (time constraints), 'patient-related factors' (poor motivations and adherence), 'guideline-related factors' (poor applicability of CPGs in real-world practice), 'political, social and culture factors' (suboptimal healthcare networks and interprofessional communication pathways), and factors about 'behavioural regulation and reinforcement' (inadequate reinforcement, eg, remuneration). The study findings were supported by a previous overview conducted by Correa *et al*,¹⁹ which examined the barriers of CPGs implementation by including studies in different levels of care (primary, secondary and tertiary care). In Correa *et al*'s study,¹⁹ five categories of barriers were identified except for the category of 'behavioural regulation and reinforcement'. Changes in individuals' behaviours are important requirements for new practice implementation.²⁴ According to the Theoretical Domains Framework for implementation research,²⁴ behavioural regulation and reinforcement are important contributors to changing individuals' behaviours. Presence of technical support ('institutional environment and resources factors'), and timely education and training for PCPs ('healthcare provider-related factors') and patients ('patient-related factors') were identified as frequently reported enablers in primary care, which was also consistent with the enablers identified in other levels of care such as secondary and tertiary care.¹⁹

For the detailed barriers within each category, some findings in this overview were in line with Francke *et al*'s¹³ and Correa *et al*'s overview.¹⁹ For example, time constraints and heavy workload of the healthcare providers, poor interprofessional coordination and communication, limited availability of resources, CPGs lack of clarity, conflicts between guidelines and PCPs, lack of knowledge and skills, unclear role and identity of PCPs, poor health literacy of patients, language and culture diversities, patients' dissonant expectations for disease management, and patients' negative attitudes towards CPGs. All of which indicated that some barriers commonly existed in different levels of care as both Francke *et al*'s¹³ and Correa *et al*'s study¹⁹ were not primary care focused. Those identified similar barriers highlighted opportunities for developing strategies (eg, integrated care pathways) that can be adopted by different levels of care to promote the management of patients' health conditions across primary, secondary and tertiary care. This overview also found some barriers that were not specified in Francke *et al*'s¹³ and Correa *et al*'s studies,¹⁹ such as limited healthcare networks, uneven health resources distributions, limited technical support, limited services for specific patient groups or needs, conflicts views

between the public and CPGs recommendations, limited applicability of the CPGs in real-world situations, PCPs' negative attitudes towards the consequences of CPGs, and inadequate reinforcement such as remuneration, rewards and incentivisation. Those specific barriers identified within primary care highlighted potential opportunities and implications for developing tailored and effective strategies to promote the implementation of evidence-based recommendations and health services into primary care practice. More specific implications are detailed in the section of implication for CPGs implementation in primary care and future research.

Quality of the evidence

Although the quality of the included reviews was generally appraised as robust, there were still some methodological limitations in some of the included reviews. Identification of all eligible studies through rigorous and comprehensive search strategies is an important feature of high-quality SRs.³⁹ However, 4 out of the 12 included reviews did not clearly present the detailed search strategies, which make it difficult to determine whether the used search strategies were appropriate or not. Quality appraisal and data extraction of an SR are required to be conducted by multiple individuals independently to minimise bias and errors.³⁹ However, several reviews failed to report whether the quality appraisal (n=5/12) and data extraction (n=3/12) were conducted by two or more independent reviewers. Guidelines such as the PRISMA guidelines²² should be used in future to improve the reporting quality of SRs in this area.

Implications for CPGs implementation in primary care and further research

Political and institutional barriers, such as limited healthcare networks, poor interprofessional communication and referral pathway, limited availability of resources and uneven health resources distributions, could be improved via the strategy of 'strengthening organisational governance arrangements' (p.9).¹⁹ Insufficient physical preparation and resources as the frequently reported barriers indicated that, prior to the implementation of CPGs, organisations' relevant physical situations and resources need to be fully investigated via approaches like comprehensive surveys or deep communications to ensure that the organisation is physically well prepared.³⁸ Care models such as GP-led and shared care models⁴⁰ that can highlight the leading role of PCPs in CPGs implementation and the importance of multidisciplinary collaborations between different care levels could be considered to improve the PCPs' recognition of their role, identify and responsibility for CPGs implementation. In addition, given barriers like the financial burden and PCPs shortage were prominent and frequently reported, smooth integration of the CPGs recommendations into existing care models should be considered to minimise the additional burden on the health system and PCPs. In addition, to address the issue of time constraints of



PCPs, the low efficient communication between PCPs and patients should be recognised, which could be improved via communication skills training and technical support such as an electronic disease management plan,³⁰ flexible booking system³⁷ and integrated systems of interprofessional collaboration promotion.^{30 36}

For barriers like language and culture diversities, the importance of needs assessment should be recognised particularly the culture and language-specific needs of minorities, which can facilitate more individualised and cultural-based recommendations that are tailored to the minorities. Providing necessary language support services could be an important strategy to overcome the language barrier. Disconnections between the guideline recommendations and 'real' clinical practice (applicability issue) were identified as one of the frequently reported barriers, which could be partly addressed by using a collaborative model of codesign and coproduction (involving clinical personnel and end-users such as PCPs, managers, patients in the guideline development process).⁴¹ In addition, a detailed description of the recommendations such as the dosage of the intervention (frequency, intensity and duration) could be another strategy to overcome the barrier of lack of clarity, specificity and applicability of CPGs.^{27 30} The collaborative partnerships between researchers and clinical personnel and end-users can transcend the boundaries between research and real world, as well as promote the compatibility of the recommendations with real practice.^{34 42} Moreover, the specific context that the guideline would be implemented in should be fully considered,³³ and necessary adaption and validation are needed to guarantee success and sustainability. Appropriate recommendations used in GPGs need to be determined based on not only its therapeutic effects but also the characteristics of cost-effective and time-effective, clinical utility and convenience.²⁹ Evidence resources of each recommendation should be clearly presented to increase the credibility of the guidelines.³¹ Guideline reporting checklist, such as Reporting Items for practice Guidelines in HealThcare and Appraisal of Guidelines, REsearch and Evaluation II assessment tool,⁴³ can be used to ensure the guidelines are reported in a clear, structured and easy-to-understand manner.

Some barriers that were related PCPs and patients, including inadequate knowledge and skills, lack of self-confidence, negative attitudes towards the consequences of guidelines, and low motivation and interests, low health literacy, and inconsistent expectation between PCPs and patients, could be well addressed through timely and adequate education and training. To improve the PCPs' adherence to guideline-related training and education, relevant education and training contents can be incorporated into existing education programmes such as the annual continuing professional development programmes for PCPs. As suggested by previous research, a lack of knowledge and skills can make PCPs feel underprepared²⁷ for using guidelines to manage patients' health issues, which can further decrease their confidence

and interests in using guidelines. Adequate education and training can help PCPs have a better understanding of the advantages of evidence-based recommendations and a more positive attitude towards the CPGs. A greater familiarity with guidelines can contribute to stronger confidence and higher adherence to recommendations.⁴⁴ Also, adequate knowledge and skills can promote effective conversations among PCPs and patients, which are vital in ensuring the delivery of high-quality care and the establishment of good patient-clinician relationship. Digital technology can be used to promote education and training such as distributing educational sessions and materials electronically, which is much more convenient particular for PCPs and patients who live in rural areas without easy access to face-to-face healthcare resources.⁴⁵ Given that changes of individuals' behaviours are usually required when implementing new practices,²⁴ strategies such as regular supervision schedules with feedback,³⁸ continuous practice audits^{28 36} and appropriate remuneration²⁸ and financial incentives³⁷ could be considered to reinforce the PCPs and patients' behaviours change and the sustainability of their adherence to the CPGs.

Although the above-mentioned implementation strategies were proposed based on the current literature and the identified enablers of CPG implementation in this current study, the CPG researchers, users and implementers should be aware that well-constructed empirical studies are still needed to further confirm the effectiveness of the potential strategies. In addition, whether a combination of implementation strategies (multifaceted strategies) is more effective than specific single strategies is worth further exploring as well in future research.

Study limitations

As most of the included SRs identified the barriers and enablers from the perspectives of PCPs only, more studies from the perspectives of patients in primary care can be conducted in future. Findings of this overview, to some extent, are difficult to be generalised to one specific type of health condition given that the included reviews focused on a wide range of health conditions and subgroup analysis based on the type of health conditions were not conducted due to the limited number of included studies and the variety of health conditions of the included studies. Different methods of barriers classification are another major challenge for categorising the barriers into predefined categories in this overview. For instance, in Ezeani's study,²⁸ time constraint was categorised as a barrier related to healthcare professionals, while it was coded as an institutional and resources-related factor in Neale *et al's* study.³⁰ Language bias was also a concern to hinder the generalisability of the study findings, as only English papers were included.

CONCLUSION

This study identified a wide range of barriers and enablers to implementing CPGs recommendations in primary care

settings. Given that the barriers involve different levels (healthcare system, organisational and individual level), policy-driven strategies should be developed to motivate different levels of implementation activities, which could include optimising resources allocations, promoting integrated care or other new care models, establishing well-coordinated multidisciplinary networks, increasing technical support, encouraging PCPs and patients' engagement in guideline development, standardising the reporting of guidelines, facilitating education and training, and increasing motivations via incentives. All the implementation strategies need to be conducted based on a full consideration of the social, cultural and community contexts to ensure the success and sustainability of CPGs implementation. Well-constructed empirical studies are also needed in future to further confirm the effectiveness of all the potential strategies.

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