Understanding factors influencing the use of clinical guidelines in low-income and middle-income settings: a scoping review

Stacey Orangi 1, Tiffany Orangi, 2 Kenneth Munge Kabubei, 3 Ayako Honda 4

ABSTRACT

Objective A scoping review was undertaken to determine the extent to which existing studies have examined factors influencing healthcare providers’ use of clinical guidelines in low and middle-income country (LMIC) settings and determine which factors constrain or facilitate the use of clinical guidelines by healthcare providers.

Design Scoping review.

Data sources The literature search was conducted using PubMed in January 2021.

Eligibility criteria We identified empirical studies, published between 2011–2021 in English, which included clinicians and/or nurses as healthcare providers, used a health facility as the study site, and were located in an LMIC.

Data extraction and synthesis Information extracted from the literature review was organised using themes and the findings synthesised using thematic analysis.

Results The review identified five types of interacting factors that influence healthcare providers’ use of and compliance with clinical guidelines. The factors identified are organisational factors, factors relating to individual healthcare providers, attributes of the clinical guidelines, patient-related factors and institutional factors. Organisational factors can be further divided into the physical work environment, organisational culture and working conditions. The effective use of clinical guidelines in LMIC settings is greatly impacted by the contextualisation of clinical guidelines, end-user engagement and alignment of the implementation of clinical guidelines with the institutional arrangements in the broader health system.

Conclusion The development and evaluation of concrete interventions is vital to facilitate the implementation of clinical guidelines and improve healthcare service quality. Further studies are necessary to examine the relative importance of the five identified factors on the effective use of clinical guidelines in different contexts.

INTRODUCTION

Ensuring access to quality healthcare services is a key goal in making progress towards universal health coverage (UHC). Clinical guidelines can be used as a tool to improve quality and safety in healthcare service delivery by supporting the use of evidence in clinical decision-making and healthcare practices and, in doing so, enhance health systems performance by improving patient health outcomes. 1,3 By facilitating the use of standardised care, clinical guidelines can also minimise unnecessary costs in healthcare service delivery. When being used as conditions in contracts between healthcare purchasers and providers, clinical guidelines can also enhance the linkages between available resources and the services delivered in the health system, which also improves equity and efficiency. 4

Despite the growing attention given to the effectiveness of clinical guidelines in improving the quality of healthcare service delivery and health outcomes, the uptake of and compliance with clinical guidelines vary greatly and are often suboptimal. 5 While prompts, such as audits, feedback, computerised systems, educational outreach visits, etc, facilitate the uptake of clinical guidelines, 1, 6 further research is necessary to explore the determinants of the implementation and effective use of clinical guidelines and the process through which those determinants contribute to healthcare provider use of and compliance with guidelines for healthcare service delivery. 7
While various studies and literature reviews have examined factors influencing the implementation of clinical guidelines in high-income settings, in low and middle-income countries (LMICs), where health systems are affected by limited resources, fewer studies have specifically examined the use of clinical guidelines and even less have synthesised the evidence from multiple sources. The effective implementation of interventions aimed at achieving healthcare service quality improvement can be impacted by a wide range of health system factors at national, local and organisational levels, which, in turn, are affected by the broader socioeconomic context in a country.3,4 Consequently, in this paper, a scoping review was used to: (1) systematically determine the extent to which existing studies have looked at factors influencing healthcare providers’ use of clinical guidelines in LMICs; (2) examine factors that constrain or facilitate the use of clinical guidelines by healthcare providers; (3) develop a conceptual framework to better understand the factors influencing the use of, and compliance with, clinical guidelines and (4) describe the research agenda necessary to enable effective use of clinical guidelines.

**METHODS**

Scoping reviews aim to rapidly and comprehensively synthesise available evidence.10 A key strength in scoping reviews is their rigorous, transparent nature and the relatively short time required for completion compared with systematic reviews.10 The scoping review had five stages: (1) identification of the research question; (2) identification of relevant studies; (3) selection of relevant studies; (4) data mapping and (5) collation, summarisation and reporting the results.10

The research questions guiding this scoping review are to what extent have the factors influencing healthcare provider use of clinical guidelines been studied in LMICs, and what factors facilitate and/or constrain use of clinical guidelines by healthcare providers in LMIC settings. Healthcare providers in this scoping review refer to clinicians and/or nurses delivering health services in a broad range of disease areas.

**Identifying the relevant studies**

The literature search was conducted in January 2021 using the PubMed database due to the comprehensive health-related research contained in the database. The search strategy consisted of four key terms: ‘clinical guidelines’, ‘adherence’, ‘facilitators’ and ‘barriers’. The search was expanded using Medical Subject Headings and synonyms, while limited to titles and abstracts in the articles in PubMed. Table 1 provides the detailed search strategy.

The literature search eligibility criteria required studies to be empirical studies published in English between 2011 and 2021, peer reviewed, include clinicians and/or nurses as healthcare providers; have study sites as a hospital or health facility, and be in LMIC settings. Due to the eligibility criteria, it is acknowledged that potentially relevant information was excluded from that data.

**Study selection**

Citations were imported into Rayyan for initial title and abstract screening.11 In the first stage of screening, titles and abstracts of studies identified in the database search were reviewed for eligibility. Articles with titles that appeared to meet the inclusion criteria but had abstracts with insufficient material were included for full article review.

Articles that were deemed eligible from the title and abstract screening and articles with adequate information in the abstract to determine eligibility underwent full-text review, where uncertainties in eligibility of studies were found, the study team discussed the papers to decide on eligibility.

**Charting of data**

The study objectives guided the data extraction. Specifically, data from the selected studies were entered into a spreadsheet under the following headings: title, author name(s), publication year, name of journal, geographical setting, type of study, study objectives, study methods, type of guidelines, type of care and facilitators and constraints to guideline use. Each full-text article was recorded and

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Table 1  PubMed search criteria

<table>
<thead>
<tr>
<th>#1</th>
<th>“clinical guide”</th>
<th>OR “standard of care”</th>
<th>OR “standards of care”</th>
<th>OR “care standard”</th>
<th>OR “clinical pathway”</th>
<th>OR “clinical protocol”</th>
<th>OR “clinical decision rule”</th>
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<th>OR “professional guideline”</th>
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<th>OR “Standard of Care”</th>
<th>Mesh: OR “Critical Pathways”</th>
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<td>OR implement</td>
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<td>OR complies</td>
<td>OR compliance</td>
<td>OR complying</td>
<td>OR compliant</td>
<td>OR uptake</td>
<td>OR up-take</td>
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<td>OR “take up”</td>
<td>OR concord</td>
<td>OR concordance</td>
<td>OR accord</td>
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<td>#3</td>
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<td>OR inhibit</td>
<td>OR facilitate</td>
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<td>Final query</td>
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</table>

*Was added to the end of the root of the word for truncation and to instruct data base to search for all forms of the word.*
any articles that did not meet the inclusion criteria were excluded.

**Summarising and reporting of findings**
A thematic approach was used to summarise the data extracted from the review of the identified literature. Themes emerging from the data on facilitating and constraining factors to implementation of clinical guidelines were identified and categorised into five broad themes: organisational factors, healthcare provider-related factors, clinical guideline-related factors, patient-related factors and institutional factors. Subthemes of the five major themes were further refined to add a greater meaning to the data. Categorisation of the themes was done through consultations among the coauthors.

**Patient and public involvement**
None.

**RESULTS**

**Articles included in the scoping review**
A summary of the scoping review process is shown in figure 1. Of the 6400 articles identified in the search, 43 met the inclusion criteria after review of the full text and so were included in this study.

![Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart of study selection process.](http://bmjopen.bmj.com/)

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General characteristics of included studies
The characteristics of the included studies are shown in online supplemental table 1. Publication dates ranged from 2011 to 2020 with 51% of the studies published in the past 5 years (2011–2016 (n=21); 2017–2021 (n=22)). The included studies were from different geographical regions, with the majority from the Africa Region, including studies from Benin, Burkina Faso, Cameroon, Ethiopia, Ghana, Kenya, Malawi, Mozambique, Senegal, Somalia, South Africa, Tanzania and Uganda (n=33). There were also studies from the South-East Asia Region, including studies from Bangladesh, India, Indonesia, Myanmar, Nepal and Thailand (n=8); the Western Pacific Region including studies from China, Malaysia and the Philippines (n=7); the Eastern Mediterranean Region including studies from Afghanistan, Iran and Palestine (n=6); and the Americas including studies from Brazil, Colombia and Mexico (n=3).

Most of the studies used qualitative methods (n=25, 58%), followed by quantitative methods (n=7, 16%) and mixed methods (n=7, 16%). In addition, there were studies that used systematic review (n=1), synthesis of the existing evidence (n=1) and a randomised control trial (n=1). The studies focused on a wide range of disease groups with the majority (n=13, 30%) focusing on maternal, newborn and child health; with some on specific disease areas, such as diabetes, hypertension and cardiovascular care (n=4), mental health (n=3), orthopaedics (n=3), blunt abdominal trauma (n=1), (HIV; n=1), tuberculosis (n=1), diarrhoeal disease (n=1) or haematology (n=1). Other studies focused on the type of care provided such as nursing care (n=3), emergency/critical care (n=3), primary care (n=3) or tertiary/multidisciplinary care (n=3).

Categorisation of facilitators and barriers to guideline use
The scoping review revealed that the use of clinical guidelines was influenced by five main factors: (1) organisational factors, (2) factors relating to individual healthcare providers, (3) the attributes of the clinical guidelines, (4) patient-related factors and (5) institutional factors. Organisational factors were further divided into the physical work environment, organisational culture (ie, how the people in the organisation relate to each other and external parties, which is often driven by the organisations’ mission, goals, conventions, etc) and working conditions. Figure 2 conceptualises the five categories of factors influencing provider use of and/or compliance with clinical guidelines. The facilitators and barriers are not mutually exclusive and interact with each other. Online supplemental table 1 indicates the factors influencing the use of guidelines in each of the studies examined in the scoping review.

Organisational factors
Physical work environment
A poorly equipped physical work environment, with erratic drug supply, inadequate resources and infrastructure and insufficient financial resources, was most frequently cited as negatively impacting on compliance with clinical guidelines in LMICs.3 12–42 For instance, in Malaysia, the restricted availability of combination hypertensive drugs and lack of infrastructure for medication storage were deterrents to implementation of hypertension management clinical guidelines.21 Similarly, in Uganda, a lack of medicine, non-human resource limitations and human resource shortages in health facilities were barriers to adherence with clinical guidelines for mental health.19 In Kosovo, some of the guidelines from WHO on the prevention and management of postpartum haemorrhage were not feasible in the local context due to a lack of infrastructure and resources.34

Organisational culture
The organisational culture in health facilities, referring to how the people in an organisation relate to each other and external parties—often driven by the organisations’
mission, goals, conventions, etc, can influence the use of, and compliance with, clinical guidelines. Collective agreement on clinical guidelines, in particular, can create peer pressure either for or against the use of clinical guidelines. For instance, Tessema et al. and Hasanpoor et al. indicate that an organisational culture that either promotes the use of guidelines as the core of service delivery or is in conflict with evidence-based management is likely to facilitate or constrain the use of clinical guidelines. Furthermore, the presence of an influencer or champion of clinical guidelines or evidence-based practice was reported to change attitudes towards guideline adherence in the workplace. The use of guidelines or evidence-based care is positively influenced by peer support from senior colleagues, constructive hierarchical relationships (either between junior and senior colleagues or between doctors and nurses) that promotes teamwork and interdisciplinary collaboration.

Factors related to individual healthcare providers

The use of clinical guidelines is influenced by factors related to individual healthcare providers. Knowledge of evidence-based practice or awareness of the existence of clinical guidelines, and the skill-level in clinical practice, all impact on compliance with clinical guidelines. The use of clinical guidelines can be constrained by healthcare provider perceptions of the guidelines, including their confidence in the quality of clinical guidelines, views on whether the use of clinical guidelines threatens their professional autonomy, interest in or attitude to evidence-based management, prioritising experience or personal beliefs. Individual beliefs on the consequences of guideline adherence including clinical outcomes, improving drug prescription efficiency, time and money savings and legal repercussions were also enablers in clinical guideline usage.

Attributes of clinical guidelines

Key attributes influencing the use of clinical guidelines by healthcare providers include clarity in the guideline contents, credibility (inclusion of current evidence), time and money savings and legal repercussions were also enablers in clinical guideline usage.

Patient-related factors

Healthcare provider service delivery is impacted by several patient-related factors. In particular, patient preferences that are based on their understanding of care and previous experience can influence healthcare providers’ compliance with clinical guidelines in service delivery.

In addition, patient access issues, in terms of both geographical accessibility and affordability of services, can constrain healthcare service delivery that is based on clinical guidelines as the limited access to services can interrupt the continuity of care. For example, a study examining factors influencing provider uptake
of the recommended package of antenatal care (ANC) interventions in Mozambique found that long distances to facilities and a lack of transport were barriers to women accessing healthcare facilities, which challenged provider delivery of ANC guidelines.\textsuperscript{13} In Mongolia, in the implementation of clinical guidelines for the treatment of arterial hypertension and diabetes, the suggested lifestyle change intervention was found to be difficult for people from less affluent backgrounds, who were far less likely to adhere to the suggested lifestyle change modifications because they were unable to afford the costly recommended foods.\textsuperscript{18,19}

**Institutional factors**

Factors related to the policies, laws, norms and customs under which healthcare providers operate affect the uptake of clinical guidelines by healthcare providers. These factors include government commitment to, or endorsement of clinical guidelines,\textsuperscript{44,46} coordination of relevant actor groups,\textsuperscript{12,21,22,27,28,32} availability of supporting policies,\textsuperscript{13,34} systems to provide on-going education to health professionals\textsuperscript{13,34} and evidence-based health systems.\textsuperscript{19,44} For example, inconsistency in planning and policy arising due to the political regime change in Iran was a perceived barrier to guideline use and adherence,\textsuperscript{48} while evidence-based healthcare system stewardship was reported to facilitate clinical guideline use in both Kenya and Iran.\textsuperscript{18,48}

**DISCUSSION**

This scoping review looked at factors influencing the uptake of, and compliance with, clinical guidelines in LMIC settings and identified five interacting factors: organisational factors, factors relating to individual healthcare providers, the attributes of the clinical guidelines, patient-related factors and institutional factors. Organisational factors can be further divided into the physical work environment, organisational culture, and working conditions.

While these factors were also found to be enablers or constraints to the implementation of clinical guidelines in high-income settings,\textsuperscript{5,7,55} there are a number of aspects of each category of factors that are specific to and/or more important in LMIC settings. For example, challenging physical work environments, with constraints on equipment and drug supplies, are often cited in the literature from LMIC settings as negatively impacting on the use of clinical guidelines. Similarly, limited patient access to healthcare services due to issues associated with affordability and availability also impact on provider compliance with clinical guidelines in LMIC settings. Addressing these factors requires broader policy responses, with additional investment in resources, including elimination of financial barriers to healthcare service access. Furthermore, calls to improve healthcare service quality in LMICs must continue to be matched with calls to expand service coverage and financial protection.\textsuperscript{56}

The findings on factors specific to LMIC settings support the argument that contextualisation of guidelines to local settings is critical for the effective implementation of guidelines.\textsuperscript{1} Accordingly, it is important to determine how best to transfer evidence-informed standards for care from one health system to another and understand how institutional arrangements for healthcare service delivery, socioeconomic background and availability of resources in various contexts, including the health workforce, financial resources, physical infrastructure, impact on the implementation of clinical guidelines. This has implications for the assessment of quality of the care in LMIC settings, with calls for approaches that reflect long term, trust-building engagement with health service providers in order to support continuous improvement.\textsuperscript{57} Such approaches provide a platform for the creation of standards of care, which are more likely to be used by healthcare providers. The Tailored Implementation in Chronic Disease project, which looked at determinants of clinical practice, suggests that ongoing monitoring of the determinants of practice is required to adapt healthcare quality improvement interventions to emerging needs and opportunities.\textsuperscript{58,59} This implies that the contextualisation of clinical guidelines is not just a once-off action/strategy but involves an iterative process that includes a range of the actor groups involved in healthcare service delivery.

As the study findings suggest, the implementation of clinical guidelines is influenced by attributes of the guidelines, such as clarity, practicality and applicability and/or adaptability to specific work settings. Existing studies that review the guidelines for managing chronic diseases such as diabetes and hypertension in countries with various socioeconomic settings found that areas of clinical care addressed by LMIC guidelines tend to be narrower and mainly target healthcare providers, with only a few studies including patients and policymakers as their target audience.\textsuperscript{60,61} Consequently, when developing guidelines, it is important to consider the perspectives of end-users, including healthcare facilities (as organisations), individual healthcare providers and patients. In fact, it has been argued that end-user engagement in the development of clinical guidelines and reflection of practical issues from both healthcare provider and patient perspectives enhances the implementation of clinical guidelines.\textsuperscript{1,6} In addition, communication between the stakeholders involved in the guideline development and implementation process can enhance knowledge sharing and further improve the use of guidelines.\textsuperscript{16,18,19,28,34,54}

The study also identified the role of health system institutional factors, such as government commitment, coordination of actor groups and availability of supporting policies, in the implementation of clinical guidelines. Brennan et al.\textsuperscript{4} argues that the use of guidelines should be considered as part of a broader health system rather than a separate intervention with unique objectives. Consequently, to facilitate institutional support for the use of clinical guidelines by the broader health system, it is...
important to align the implementation of clinical guidelines with the overall policies, laws, norms and customs under which healthcare providers deliver services to patients. This approach is exemplified in the intensive use of Emergency Triage Assessment and Treatment (ETAT) guidelines in preservice training in Kenya as a means to enhance the use of the ETAT guidelines in routine clinical care.62

This review applied a rigorous and transparent process, following standard methods for reporting scoping reviews and included different types of study designs from a range of LMIC settings. An iterative review process was used to identify themes that affect clinical guidelines; however, there were limitations due to the sole use of the PubMed database, exclusion of studies that were not publicly available, not in English and published before 2011.

CONCLUSION
Healthcare service quality is an important policy agenda item in progress towards UHC. Clinical guidelines facilitate the use of evidence in practice, improve quality and safety in healthcare service delivery and improve patient health outcomes. The optimal use of clinical guidelines requires the identification of factors that enable the uptake of and compliance with clinical guidelines by healthcare providers. Compared with high-income settings, there are relatively few studies examining the challenges and opportunities of implementing clinical guidelines in LMIC settings and there is a skewed geographical distribution and use of study methodologies. Consequently, further studies, using robust methodologies, are required to examine the development and implementation of clinical guidelines in resource-constrained settings to develop the current knowledge base. In addition, to enhance the effective use of clinical guidelines in LMIC settings, further studies should examine the relative importance of the five factors identified in this review, that is, organisational factors, factors relating to individual healthcare providers, factors involving the attributes of the clinical guidelines, patient-related factors and institutional factors. Such studies can also look at heterogeneity in the relative importance of the factors according to a number of determinants, such as clinical area and type of healthcare professional. In addition, it is important to develop and assess more concrete mechanisms to integrate the use of clinical guidelines into policy tools to improve quality in healthcare service delivery. Such mechanisms can include integration of clinical guidelines in healthcare purchasing arrangements to improve healthcare quality.

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Ethics approval Not applicable.

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REFERENCES


## Supplementary Table 1: Characteristics of included studies

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<th>Author and year of publication</th>
<th>Country of Study</th>
<th>Setting</th>
<th>Type of study</th>
<th>Study population</th>
<th>Participant sample size</th>
<th>Data collection approach</th>
<th>Type of care</th>
<th>Organisational factors</th>
<th>Healthcare provider related</th>
<th>Clinical Guideline related</th>
<th>Patient related</th>
<th>Institutional factors</th>
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<td>Valiee and Salehnejad (2020)&lt;sup&gt;2&lt;/sup&gt;</td>
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<td>-Applicability</td>
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<td>Mixed methods</td>
<td>Health care providers</td>
<td>11 KIs and 4 FGDS</td>
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<td>Hip fracture</td>
<td>-Workload -Infrastructure -Resources</td>
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<td>-Availability</td>
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<td>Health workers, managers, and patients</td>
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<td>Interviews</td>
<td>Amputee care</td>
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<td>-Credibility, -Clarity -Flexibility in implementation</td>
<td>NA</td>
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<td>41 Interviews and FGDs</td>
<td>Newborn care</td>
<td>-Time</td>
<td>-Human resources</td>
<td>-Procedure</td>
<td>-Experience</td>
<td>-Skilled healthcare system</td>
<td>-Motivation</td>
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<tr>
<td>Mala et al (2014)</td>
<td>Ethiopia</td>
<td>Low-income</td>
<td>Qualitative</td>
<td>Healthcare providers</td>
<td>39 FGDs</td>
<td>Tuberculosis</td>
<td>-Documentation</td>
<td>-Knowledge</td>
<td>-Clarity</td>
<td>-Healthcare access</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>Author and year of publication</td>
<td>Country of Study</td>
<td>Setting</td>
<td>Type of study</td>
<td>Study population</td>
<td>Participant sample size</td>
<td>Data collection approach</td>
<td>Type of care</td>
<td>Organisational factors</td>
<td>Healthcare provider related</td>
<td>Clinical Guideline related</td>
<td>Patient related</td>
<td>Institutional factors</td>
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<td>Deng and Liu (2020)³⁴</td>
<td>China</td>
<td>Upper-middle income</td>
<td>Quantitative</td>
<td>Physicians</td>
<td>815</td>
<td>Questionnaires</td>
<td>Antimicrobial use</td>
<td>-Support -Implementation -Beliefs</td>
<td>-Ease-of-use</td>
<td>NA</td>
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<tr>
<td>Turner and Short (2013)³⁵</td>
<td>Thailand, Malaysia, Philippines, Indonesia</td>
<td>Upper-middle income &amp; lower-middle income</td>
<td>Qualitative</td>
<td>Healthcare providers</td>
<td>179</td>
<td>Interviews</td>
<td>Maternal and child health</td>
<td>-Time -Resources -Multidisciplinary involvement -Human resources</td>
<td>-Skills -Knowledge -Beliefs</td>
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<td>NA</td>
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<tr>
<td>Radwan et al (2018)³⁶</td>
<td>Palestine</td>
<td>Lower-middle income</td>
<td>Qualitative</td>
<td>Doctors and nurses</td>
<td>20</td>
<td>Interviews</td>
<td>Diabetes care</td>
<td>-Time -Resources -Audit and feedback -Incentive</td>
<td>NA</td>
<td>Outdated</td>
<td>NA</td>
<td>-Political -economic condition</td>
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<tr>
<td>Kane et al (2016)³⁹</td>
<td>Uganda</td>
<td>Low-income</td>
<td>Qualitative</td>
<td>Healthcare providers and program developers</td>
<td>19</td>
<td>Interviews</td>
<td>Mental health</td>
<td>-Drug supply -Resources -Communication -Training</td>
<td>-Perception /Beliefs</td>
<td>Adaptability -Acceptability</td>
<td>Healthcare access -Knowledge Acceptability of intervention</td>
<td>NA</td>
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<td>Tessema et al (2019)⁴⁰</td>
<td>Ethiopia</td>
<td>Low-income</td>
<td>Qualitative</td>
<td>Health care providers</td>
<td>21</td>
<td>Interviews</td>
<td>Family planning</td>
<td>-Time -Human resources -Workload -Work culture -Support -Training -Incentives</td>
<td>-Knowledge -Perception -Reading culture</td>
<td>Access -Clarity -Outdated</td>
<td>Conditions</td>
<td>NA</td>
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<td>Author and year of publication</td>
<td>Country of Study</td>
<td>Setting</td>
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<td>Sharma et al (2017)&lt;sup&gt;13&lt;/sup&gt;</td>
<td>India</td>
<td>Lower-middle income</td>
<td>Quantitative</td>
<td>Doctors</td>
<td>183</td>
<td>Questionnaires</td>
<td>Hospital-based care</td>
<td>- Time</td>
<td>- Resources</td>
<td>- Guideline Perception</td>
<td>- Skill</td>
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<td>Puchalski Ritchie et al (2019)&lt;sup&gt;13&lt;/sup&gt;</td>
<td>Ethiopia</td>
<td>Low-income</td>
<td>Qualitative</td>
<td>Healthcare providers</td>
<td>26</td>
<td>Interviews, observations, document reviews</td>
<td>Emergency care</td>
<td>- Resources</td>
<td>- Support</td>
<td>- Knowledge</td>
<td>- Clarity</td>
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<td>Oluyemiet al (2017)&lt;sup&gt;14&lt;/sup&gt;</td>
<td>Nigeria</td>
<td>Low- and middle-income countries</td>
<td>Literature review</td>
<td>NA</td>
<td>NA</td>
<td>Secondary analysis</td>
<td>Haematology care</td>
<td>- Infrastructure</td>
<td>- Implementation support</td>
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<td>Kirk et al (2015)&lt;sup&gt;15&lt;/sup&gt;</td>
<td>Nepal</td>
<td>Lower-middle income</td>
<td>Quantitative</td>
<td>Nurses and nursing students</td>
<td>121</td>
<td>Survey</td>
<td>Nursing care</td>
<td>- Time</td>
<td>- Teamwork</td>
<td>- Awareness of guidelines</td>
<td>- Adaptability</td>
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<td>Chimeddamba et al (2015)&lt;sup&gt;16&lt;/sup&gt;</td>
<td>Mongolia</td>
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<td>Healthcare providers</td>
<td>40</td>
<td>Interviews and FGDs</td>
<td>Cardiovascular care</td>
<td>- Time</td>
<td>- Resources</td>
<td>- Knowledge</td>
<td>- Access</td>
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<tr>
<td>Ider et al (2012)&lt;sup&gt;17&lt;/sup&gt;</td>
<td>Mongolia</td>
<td>Lower-middle income</td>
<td>Mixed methods</td>
<td>Healthcare providers</td>
<td>375 procedures observed &amp; 36 interviews</td>
<td>Interviews and observations</td>
<td>ICU care</td>
<td>- Teamwork</td>
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<td>- Knowledge</td>
<td>- Outdated</td>
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<td>Pather and Mash (2019)&lt;sup&gt;18&lt;/sup&gt;</td>
<td>South Africa</td>
<td>Upper-middle income</td>
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<td>Physicians</td>
<td>27</td>
<td>Interviews</td>
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<td>- Access</td>
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<td>Zhao et al (2019)&lt;sup&gt;19&lt;/sup&gt;</td>
<td>China</td>
<td>Upper-middle income</td>
<td>Qualitative</td>
<td>General practitioners</td>
<td>32</td>
<td>FGDs</td>
<td>Primary care</td>
<td>- Time</td>
<td>- Resources</td>
<td>- Guideline Perception</td>
<td>- Applicability</td>
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</tbody>
</table>
| Biswas et al (2020)\(^1\)      | Bangladesh      | Lower-middle-income | Ethnography | Healthcare providers and patients | 138 | Interviews and observations | Diarrhoeal disease care | -Time | -Knowledge  
-Workload  
-Infrastructure  
-Resources  
-Work conditions  
-Training | NA | -Knowledge | -Policy Change |
| Baker et al (2012)\(^2\)       | Burkina Faso, Ghana, Tanzania | Low-income & Lower-middle-income | Qualitative | Healthcare providers, decision makers, NGOs | 38 | Document reviews | Maternal health care | -Human resources  
-Implementation  
-Training | -Attitude | -Access  
-Clarity  
-Involvement in development  
-Credibility | NA | NA |
| Visser et al (2018)\(^3\)      | South Africa    | Upper-middle-income | Mixed methods | Healthcare providers, patients | 14 FGD participants | -Survey  
-Document reviews, FGDs | HIV care | -Workload  
-Reimbursement  
-Infrastructure  
-Drug supply  
-Leadership  
-Training | NA | NA | NA |

\(^*\)Multi-disciplinary care referring to Surgical care, general medicine, hand hygiene, critical care, newborn care, dental care, pain management, adverse drug reaction [5]. NA=Not Applicable, NS=Not specified, FGD=Focus group discussions
References


