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Healthcare workers' perceptions and experiences of primary healthcare integration: a scoping review of qualitative evidence (Review)

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TABLE OF CONTENTS

[Qualitative Review]

Healthcare workers' perceptions and experiences of primary healthcare integration: a scoping review of qualitative evidence

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ABSTRACT

Background

Primary healthcare (PHC) integration has been promoted globally as a tool for health sector reform and universal health coverage (UHC), especially in low-resource settings. However, for a range of reasons, implementation and impact remain variable. PHC integration, at its simplest, can be considered a way of delivering PHC services together that sometimes have been delivered as a series of separate or 'vertical' health programmes. Healthcare workers are known to shape the success of implementing reform interventions. Understanding healthcare worker perceptions and experiences of PHC integration can therefore provide insights into the role healthcare workers play in shaping implementation efforts and the impact of PHC integration. However, the heterogeneity of the evidence base complicates our understanding of their role in shaping the implementation, delivery, and impact of PHC integration, and the role of contextual factors influencing their responses.

Objectives

To map the qualitative literature on healthcare workers' perceptions and experiences of PHC integration to characterise the evidence base, with a view to better inform future syntheses on the topic.

Search methods

We used standard, extensive Cochrane search methods. The latest search date was 28 July 2020. We did not search for grey literature due to the many published records identified.

Selection criteria

We included studies with qualitative and mixed methods designs that reported on healthcare worker perceptions and experiences of PHC integration from any country. We excluded settings other than PHC and community-based health care, participants other than healthcare

workers, and interventions broader than healthcare services. We used translation support from colleagues and Google Translate software to screen non-English records. Where translation was not feasible we categorised these records as studies awaiting classification.

Data collection and analysis

For data extraction, we used a customised data extraction form containing items developed using inductive and deductive approaches. We performed independent extraction in duplicate for a sample on 10% of studies allowed for sufficient agreement to be reached between review authors. We analysed extracted data quantitatively by counting the number of studies per indicator and converting these into proportions with additional qualitative descriptive information. Indicators included descriptions of study methods, country setting, intervention type, scope and strategies, implementing healthcare workers, and client target population.

Main results

The review included 184 studies for analysis based on 191 included papers. Most studies were published in the last 12 years, with a sharp increase in the last five years. Studies mostly employed methods with cross-sectional qualitative design (mainly interviews and focus group discussions), and few used longitudinal or ethnographic (or both) designs. Studies covered 37 countries, with close to an even split in the proportions of high-income countries (HICs) and low- and middle-income countries (LMICs). There were gaps in the geographical spread for both HICs and LMICs and some countries were more dominant, such as the USA for HICs, South Africa for middle-income countries, and Uganda for low-income countries. Methods were mainly cross-sectional observational studies with few longitudinal studies. A minority of studies used an analytical conceptual model to guide the design, implementation, and evaluation of the integration study.

The main finding was the various levels of diversity found in the evidence base on PHC integration studies that examined healthcare workers' perceptions and experiences. The review identified six different configurations of health service streams that were being integrated and these were categorised as: mental and behavioural health; HIV, tuberculosis (TB) and sexual reproductive health; maternal, women, and child health; non-communicable diseases; and two broader categories, namely general PHC services, and allied and specialised services. Within the health streams, the review mapped the scope of the interventions as full or partial integration. The review mapped the use of three different integration strategies and categorised these as horizontal integration, service expansion, and service linkage strategies. The wide range of healthcare workers who participated in the implementation of integration interventions was mapped and these included policymakers, senior managers, middle and frontline managers, clinicians, allied healthcare professionals, lay healthcare workers, and health system support staff. We mapped the range of client target populations.

Authors' conclusions

This scoping review provides a systematic, descriptive overview of the heterogeneity in qualitative literature on healthcare workers' perceptions and experience of PHC integration, pointing to diversity with regard to country settings; study types; client populations; healthcare worker populations; and intervention focus, scope, and strategies. It would be important for researchers and decision-makers to understand how the diversity in PHC integration intervention design, implementation, and context may influence how healthcare workers shape PHC integration impact. The classification of studies on the various dimensions (e.g. integration focus, scope, strategy, and type of healthcare workers and client populations) can help researchers to navigate the way the literature varies and for specifying potential questions for future qualitative evidence syntheses.

PLAIN LANGUAGE SUMMARY

Healthcare workers' perceptions and experiences of primary healthcare integration: a scoping review of qualitative evidence

What is primary healthcare integration?

Primary healthcare integration is a way of combining different primary healthcare services that have previously been delivered separately. The aim of this integration is usually to give people better access to healthcare and to make more efficient use of limited health resources.

Why is it important to know about healthcare workers' views and experiences?

Primary healthcare integration has been implemented in many different countries with varying success. Healthcare workers can influence the extent to which such changes in health services are implemented successfully. Learning about healthcare workers' views and experiences of primary healthcare integration can help us understand how healthcare workers might influence its implementation and its success or failure.

What was the purpose of this scoping review?

This scoping review searched for and mapped qualitative studies (studies with no numerical data) about healthcare workers' views and experiences of primary healthcare integration. We wanted to describe the available research to help inform future systematic reviews and research studies in this area.

How did we identify and map the evidence?

We searched for all published qualitative studies that reported on healthcare workers' views and experiences of primary healthcare integration up to 28 July 2020. We described the different study methods, countries, the scope and type of primary healthcare integration approaches, and the different types of healthcare workers and client groups involved. We then grouped the studies into categories.

What did we find?

We included 184 studies. The studies were from 37 countries. About half the studies took place in high-income countries and half in low- and middle-income countries.

The studies we found in our review covered a variety of settings, participants, and types of primary healthcare integration. There were different configurations for which healthcare service programmes were being combined for integrated service delivery. These were categorised into the following six configurations: mental health; HIV, tuberculosis, and sexual reproductive health; maternal, woman, and child health; non-communicable diseases (for example, heart disease, diabetes); general primary health integration, and allied and specialised services. We also explored whether integrated service delivery was fully or partially integrated, and the different integration strategies used to link and co-ordinate services.

The people participating in the implementation of integration interventions included policymakers, senior managers, middle and frontline managers, clinicians, allied healthcare professionals, lay health workers, and health system support staff. A wide range of clients were recipients of the integrated services.

Author's conclusions

This scoping review shows the variety of primary healthcare integration approaches that have been studied. Researchers and decision-makers need to understand the relationship between different integration approaches and contexts, and the ways in which healthcare workers influence the impacts of this integration. The study categories we have developed can help researchers to understand these different types of integration approaches and to identify more focused questions for future systematic reviews.

BACKGROUND

Efforts to promote delivery of integrated health services and systems at the primary healthcare (PHC) level have existed since the late 1970s. PHC was centrally embedded within the Alma Ata Declaration of 1978 as a mechanism for achieving health for all by 2000 (WHO 1987). Integration of PHC services (or PHC integration), at its simplest, can be considered "a way of delivering a series of targeted technologies and interventions together that sometimes have been delivered as a series of 'vertical' programmes" (Dudley 2011). PHC integration is considered one way to provide efficient and high-quality services that are potentially cost-effective, and that can lead to accessible and equitable healthcare for people most in need (Foreit 2002; Oleribe 2015).

PHC integration has been promoted globally as a tool for health sector reform that can promote universal health coverage (UHC), especially in low-resource settings (Walley 2008). There is a renewed focus on PHC integration; first, the Millennium Development Goals (MDGs) and now the Sustainable Development Goals (SDGs) recognise that PHC integration is a vehicle for the delivery of comprehensive PHC services and UHC more broadly (Oleribe 2015). In its support to countries, the World Health Organization (WHO) has kept integration as a core mechanism for achieving UHC, through its approach of integrated People-Centred Care (WHO 2013). More recently, this has been expressed in the Astana Declaration of 2018, emanating from the Global Conference on Primary Health Care (WHO 2018). However, despite the persistence of the concept of PHC integration as a mechanism, implementation has been slow and uneven, and the anticipated substantial, demonstrable, positive impact on universal access to quality healthcare has not been realised (Chuah 2017; Dudley 2011; Haldane 2017; Haldane 2018). Instead, research has shown variable and inconclusive impacts on service utilisation and disease outcomes (Baxter 2018a; Chuah 2017; Haldane 2017; Haldane 2018). Contributing factors have been shown to include political commitment, logistics, the burden of disease, health systems fragmentation, and financing arrangements (Hall 2003; Mounier-Jack 2017; Schierhout 1999; Walley 2008).

The lack of a single, standard agreed-upon definition and different approaches on how to achieve integration at a primary level may also be contributing to the variable impact of PHC integration implementation (Armitage 2009). Despite the tenaciousness of the thinking that integration is needed, there remains little coherence around what PHC integration is. This is evidenced in the plethora of definitions found across research studies and programme reports (Armitage 2009; Valentijn 2015). In practice, many governments, bilateral agencies, and non-governmental organisations have attempted some form of PHC integration, but all using their own understanding, and even then, without necessarily having a shared understanding within their approaches. Yet, within this definitional morass, it is healthcare workers who are charged with the task of implementing integration and ensuring successful PHC coverage and UHC for all. Street-level bureaucracy theory helps to show that healthcare workers determine interventions, arguing that what clients (or patients) and communities receive is based on healthcare workers' understanding of their task and shaped by their discretionary power in delivering the task (Erasmus 2011). To achieve the visions of the Alma Ata and Astana declarations, it would therefore be useful to better understand how integration is being operationalised by healthcare workers in PHC. To do so, it is essential that we first understand how healthcare workers perceive the meaning of PHC integration and how they experience the practice of integration in PHC.

We attempted to perform a qualitative evidence synthesis (QES) of healthcare workers' perceptions and experiences of PHC integration (Moloi 2020). However, as with the plethora of definitions found, the available evidence was plentiful and widely heterogeneous. An adequate synthesis would have required a reduction of the material through sampling. Still, such sampling seemed too soon, as we had not fully been able to get a clear understanding of the diversity of the available evidence. Therefore, we changed our approach, beginning with a scoping of what studies have been conducted on healthcare workers' perceptions and experiences of PHC integration, in the hope that this, at a further date, may inform comprehensive and meaningful QES.

Description of the topic

Typically, within health systems, senior members of the system, such as policymakers and senior managers, will decide on what interventions to implement and will decide on the form of these interventions (Buse 2012; Hudson 2009). Yet, it is healthcare workers who are tasked with implementing these interventions, including primary care reform and integration. Healthcare workers are the face of health delivery throughout the world. As such, healthcare workers can and do shape how policy options are delivered, especially when working in challenging contexts in the public sector (e.g. chronic shortages, multiple demands, poor performance management) (Erasmus 2011). Healthcare workers may exercise their discretionary power as 'street-level bureaucrats', to act in support of the policy or not, to decide which services are offered, how services are offered, and the benefits and sanctions allocated to citizens who are seeking the services (Erasmus 2008; Gilson 2015; Walker 2004). Therefore, a premise of this scoping review is that healthcare workers may shape how integration is delivered or implemented in PHC.

For the purpose of this review, we considered PHC integration as a set of interventions aimed at strengthening co-ordination and linkages in the organisation, management and delivery of health services and systems, for improved access to comprehensive, effective, and efficient healthcare. Integration can allow clients access to comprehensive multidisciplinary services attuned to their needs; clients may receive multiple services during a single visit, either from a single healthcare worker or different healthcare workers and health services (Msuya 2004; Walley 2008).

In some settings, PHC services are sometimes delivered as separate, stand-alone, or specialised services, often referred to as vertical health programmes. Vertical programmes are commonly implemented to ensure good access to priority health programmes, good coverage of these priority health services, and efficient monitoring and quality improvement systems (Atun 2008). Potential problems of vertical programmes include fragmentation and duplication of service delivery, inconvenience and inefficiencies for both clients and staff, and potentially a lack of effective coverage of comprehensive PHC needs of the population (Sundaram 2017). PHC integration attempts to address the access and efficiency problems associated with vertical services by reducing service fragmentation and promoting access to comprehensive care delivery options. This is sometimes referred to as horizontal integration to show the contrast with the siloed

approach of vertical integration (Kumar 2016; Msuya 2004; Oleribe 2015; Walley 2008).

Approaches to integration lie on a continuum in terms of scope, from delivering more comprehensive clinical services at the point of care during a single visit to the integration of and across health system functions such as leadership and management functions, financial systems, human resource management, information systems, and equipment and drug supply systems. Integrated services may be delivered to different levels of integration of clinical and support services (full or partially integrated functions and levels), to enable the delivery of integrated clinical care and integrated health service systems. For example, the integration of preventive health screening services, together with the delivery of disease treatment services, may require not only the joint delivery of screening tests and medical treatment in one consultation, but may also require changes to human resources (who does what), drug supply systems (to provide the screening tests), and information systems (to allow for documentation of the integrated service) (WHO 2016). One example is the shift from vertical, stand-alone delivery of priority disease programmes (such as HIV and tuberculosis (TB) services) to a more unified, integrated (horizontal) delivery of two or more disease programmes (such as integrating various elements of HIV and TB services for joint delivery at the point of care) (Kumar 2016; Oleribe 2015; Walley 2008).

Why is it important to do this scoping synthesis?

The evidence base on implementation and evaluation of PHC integration is large and diverse, including studies on healthcare workers' perceptions and experiences of different types of PHC integration. Healthcare workers may be involved with the implementation of PHC integration along the full continuum (from policy formulation to service delivery), and in different roles, as senior-level decision-makers, managers, and frontline implementers. Frontline healthcare managers and staff are also recipients of integration interventions that are planned higher up in management. Integration may have different meanings in different settings based on geographic, social, political, cultural, and historical contexts (Armitage 2009; Baxter 2018b). The role of context may also shape the design, delivery and implementation perceptions and experiences of PHC integration (Armitage 2009; Ryman 2012a).

Diverse understandings of what PHC integration is, and the diverse forms it can take, may influence healthcare workers' perceptions, and shape their responses and implementation experiences. Examining the perceptions and experiences of healthcare workers can help understand how they shape the implementation and delivery of PHC integration, and how contextual factors influence their responses. However, the heterogeneity of the evidence base complicates our efforts at understanding. Premature synthesis across the heterogeneous literature may lead to premature conclusions and missed opportunities to understand contextual influences.

This scoping review maps the qualitative literature on healthcare workers' perceptions and experiences to characterise the evidence base, with a view to informing future evidence synthesis (Sutton 2019). The value of a scoping review prior to conducting further quantitative or QES is to identify and better understand heterogeneity in the evidence base. This can allow for more focussed research synthesis questions that take account of heterogeneity, as well as allow for more precise search terms or better sampling strategies.

OBJECTIVES

To map the qualitative literature on healthcare workers' perceptions and experiences of PHC integration to characterise the evidence base, with a view to better inform future syntheses on the topic.

- To map the study characteristics in terms of the publication date and study design
- To map the context of the studies in terms of geographical and service settings
- To map the integration intervention characteristics in terms of the:
  - stakeholders (the client target population of the intervention and the healthcare workers who are the respondents in the study)
  - intervention components, including the health services that are being integrated, the scope of the integration intervention, and strategies used to deliver integrated services
- To identify the conceptual models used in the studies

Review author reflexivity

Our review team have diverse backgrounds, which have likely shaped our contributions to the review. Our team consists of emerging and senior researchers in health policy and systems, public health, clinical research, and social sciences. As a team, we have skills in primary and secondary qualitative and quantitative research methods. Furthermore, four members of the review team have conducted and completed at least one full Cochrane QES study as lead or senior authors. All in our team have experience of research in low- and middle-income countries (LMICs), and some team members have experience working for and with international health organisations, including the WHO. In the development of the QES protocol that preceded this scoping review (Moloi 2020), we included a public sector health policymaker and a mid-level health service manager to help guide our thinking about information health authorities would find useful. This thinking also informed our approach to the scoping review.

This review team includes researchers based in South Africa and one review author from Kenya. The review question is of interest to the review team because both countries support different types of PHC integration. In South Africa, the National Department of Health has a record of health reforms that include PHC integration, especially for priority disease programmes such as HIV, TB, and mental health. In Kenya and South Africa, the delivery of PHC has often been characterised by successful priority health programmes that are delivered vertically (separately or in parallel to other PHC services), for example, immunisation, HIV prevention care and treatment, and most recently, the COVID-19 response. However, to achieve UHC, Kenya and South Africa have embraced service integration within PHC to improve access to integrated PHC services.

Based on our collective and individual experiences and interests, both methodologically and in terms of content, we brought a richness of insights and a balance of views to conducting the

review. The review authors are generally in agreement that PHC integration is potentially a useful tool for promoting UHC, while also being aware of the complexity of the intervention, and the importance of contextual influences. The team remained mindful of our presuppositions; we discussed these views, especially when faced with difficult judgements during the screening process. Through these discussions, we supported each other to minimise the risk of us skewing our analysis and interpretation of our findings. In the absence of standard definitions of PHC integration and related strategies, we often had to apply our judgement in categorising information for extraction. We consulted with each other and checked with a local policymaker (Tracey Naledi), to help us develop a common understanding of key areas.

METHODS

Scoping reviews can be used to map a broad overview of the evidence on a topic, including identifying sources and types of evidence, clarifying key concepts and conceptual boundaries underpinning the topic area, and identifying gaps in evidence (Arksey 2005; Sutton 2019; Tricco 2016). The review objective is in line with that of scoping reviews, where the aim is 'to explore and define conceptual and logistic boundaries around a particular topic with a view to informing a future predetermined systematic review or primary research' (Sutton 2019). We used the 2020 JBI (formerly Joanna Briggs Institute) guide for scoping reviews (Peters 2015). Thus, for this scoping review, we include components such as the criteria for considering studies for this review, search methods for identification of studies, selection of studies, data extraction, management, and analysis. We describe these components in more detail below. There was no formal critical appraisal of the studies, as this is not required for scoping reviews (Tricco 2016). The review report is guided by the reporting format suggested in the PRISMA for Scoping Reviews extension (Page 2021; Tricco 2018).

Criteria for considering studies for this review

Criteria for inclusion

Studies

- We included primary studies that used qualitative study designs such as observational, cross-sectional, case, and process evaluations study.
- We included mixed methods studies (quantitative and qualitative methods) where it was possible to extract the data that were collected and analysed using qualitative methods.

Participants

- We included studies that reported healthcare workers' perceptions and experiences of PHC integration. We defined healthcare workers as:
  - clinical healthcare workers and lay healthcare workers (where the lay healthcare workers were classified as healthcare workers rather than volunteers), on both healthcare provision and management levels;
  - other individuals involved in supporting the provision and management of PHC integration interventions. These individuals could include administrative, managerial, supervisory staff, advisors, and policymakers.

Interventions

- We included PHC integration interventions that had a focus on PHC-level services, including community-based services.
- This could have included a range of integration-type interventions such as:
  - horizontal integration of previously vertical programmes;
  - multidisciplinary teams working together to deliver more integrated care;
  - health systems functions combined (i.e. human resource and finance systems) to deliver more integrated management of disease programmes;
  - expansion of services towards more comprehensive care (e.g. adding a new service to an existing disease programme, such as screening for non-communicable diseases (NCDs) in HIV/TB care). Or introducing a new PHC service that was previously delivered at a specialist level (e.g. such as PHC-based follow-up for cancer care clients that are now being delivered by general or specialised nurses in a PHC setting);
  - integration interventions that differ in scale and scope. These could be on a continuum from full to partial integration efforts. There are no standard definitions for full or partial integration. We made judgements based on the extent to which the intervention aimed to deliver integrated clinical services at the point of care, and the extent to which healthcare service support functions were integrated into support of that integrated clinical service. We also considered the extent to which the integrated service delivery was embedded in existing general PHC services, versus the need for additional, specialised staff to deliver integrated services at the PHC level. For full integration, for example, we considered the extent of integration of health service support functions, such as management, finances, human resources, information systems, and supply systems. Where a new service was devolved from the hospital for delivery at the PHC level, we considered the extent of efforts to embed the new service within existing generalised PHC staff skills and capacity, or whether a new or specialised cadre of healthcare workers was required to deliver the service at PHC level.

Settings

- We defined PHC services as including all therapeutic, preventive, promotive, and rehabilitation services delivered at the first contact point of healthcare (Awofeso 2004), including at the level of PHC and community-based healthcare (Muldoon 2006).
- We included studies of PHC integration in public and private healthcare settings and public–private partnerships.
- We included studies of PHC integration in any country and both rural and urban settings.

Criteria for exclusion

Studies

- Hypothetical studies (planned, modelled, but not implemented and evaluated), for example, where there was a situational analysis or healthcare workers were asked about the feasibility of providing integrated services (planned, anticipated) in the absence of actual implementation of such integrated services.
- We excluded studies that collected data using qualitative methods but did not analyse these data using qualitative

analysis methods (e.g. open-ended survey questions where the response data were analysed using descriptive statistics only).

Participants

- We excluded studies that did not report on healthcare workers' perceptions and experiences of being involved in PHC integration or if it was not possible to separate the data on the views and experiences of healthcare workers from the views and experiences of other stakeholders.

Interventions

- Transitional care between PHC and levels above (hospital, secondary), for example, a referral from PHC to secondary care or discharge from secondary care to PHC. This includes services around emergency care services where linkages are required between PHC and hospital care. Improved referral services could be considered part of designing integrated services, but given the additional layer of complexity around interorganisational linkages, we consider this warrants a separate review.
- Integration of non-health programmes with PHC health programmes. We excluded all programmes addressing social determinants of health (e.g. social services, social protection, nutrition, safety, housing, and legal help). We recognised that certain conditions related to social dynamics and social determinants require a non-medical intervention, such as housing and employment. This may warrant a separate review.
- Digital tools being evaluated in PHC, where the digital tool intervention was not the key element of facilitating the PHC integration intervention.
- Training of health workers for PHC integration. We excluded evaluation of training for PHC integration unless it was also linked to evaluating the health workers' experience of implementing PHC integration.
- 'Care co-ordination' strategies, where the core intervention was one person co-ordinating care for a group of clients for a specific area (e.g. elder care). We recognise that care co-ordination is a specific and widespread intervention strategy with its own set of variations, and feel this may warrant a separate review.
- We excluded alternative medicine interventions. Alternative medicine refers to a broad set of practices that a country may not consider mainstream biomedical/clinical medicine and this includes traditional, faith healing, and Chinese medicine. We excluded these as they are not central to the focus of our review and may warrant a separate review.

Settings

- Inpatient community-based services, for example, drug rehabilitation centres, step-down physical rehabilitation, and hospice centre for inpatient palliative care.
- Non-health delivery site, that is, integration occurring in schools, jails, retirement complexes/nursing homes, workplace health services, and home-based care.

Search methods for identification of studies

The Effective Practice and Organisation of Care (EPOC) Information Specialist developed the search strategies for different databases in consultation with our scoping review team. To develop the search strategy, we used the PI (Phenomenon of Interest) and the R (Research type) from the SPIDER framework to develop the MEDLINE search strategy (www.nccmt.ca/knowlege-repositories/search/191). We did not use the S (Sample), as the scoping review included health workers (professionals and non-professionals).

We did not apply geographic location limits and language limits, and we searched all databases from 1948 to the date the search was conducted. This date range was used to include health workers' experiences and perceptions since the Alma Ata declaration on PHC (WHO 1987). The search was completed on 15 February 2020 and reran to update the results on 28 July 2020. Appendix 1 shows the MEDLINE search strategy, which we adapted for other databases.

Electronic searches

We searched PDQ-Evidence, Epistemonikos Foundation, for related reviews to identify eligible studies for inclusion (www.PDQ-evidence.org/), and the following electronic databases on 28 July 2020.

- MEDLINE and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Daily and Versions 1946 to 24 July 2020, Ovid
- CINAHL from 1981, EBSCOhost
- Scopus Elsevier
- Global Index Medicus, WHO

Grey literature

We found an extensive peer-reviewed dataset from our database search. Thus, we did not conduct a grey literature search to identify studies not indexed in the databases. Also given a large number of records included, we did not screen the reference list of included studies to identify more records.

Selection of studies

Two review authors independently assessed the titles and abstracts of the identified records to evaluate eligibility, and a third review author resolved conflicts. We retrieved the full text of the titles and abstracts identified as potentially eligible. Two review authors independently assessed the full-text articles, and a third review author resolved conflicts. All review authors participated in at least one online training and practice session (led by HM or NL, or both), prior to abstract and full-text screening, to ensure a standard approach to screening.

Where multiple publications reported on the same intervention study, we collated these publications (and treated them as one data source), so that each unique intervention (rather than each publication/study) was the unit of interest for analysis.

We included a PRISMA flow diagram to show our search results and the process of screening and selecting studies for inclusion. Additionally, we included a table of excluded studies with reasons for exclusion.

Translation of languages other than English

We considered all studies regardless of the language of publication. We found 17 non-English studies: three in French, two in German, one in Japanese, one in Italian, eight in Portuguese, and two in Spanish.

We performed an initial translation through open-source software (Google Translate) for all the titles and abstracts of studies not published in English. If Google translation was not sufficient

to decide on inclusion or exclusion, we asked members of Cochrane networks, Social Science Approaches for Research and Engagement in Health Policy and Systems (SHAPES) networks, or other networks that are proficient in that language to assist us. We received translation assistance from six SHAPES network members.

From the translated studies, if this translation indicated inclusion, or if the translation was too limited to inform a decision, we retrieved the full text of the paper. We followed the same process for translating and screening the full text. For all studies included after the full-text screening, we used Google Translate and also asked members of the SHAPES network proficient in that language to translate key information items needed for data extraction. If we could not do this for a study in a particular language, we listed the study as 'studies awaiting classification' to ensure transparency in the review process.

Data extraction

Two review authors (HM and NL) extracted data. We used a customised data extraction form with items for data extraction and sorting. We expanded the form with further subcategories based on emerging data. Table 1 shows items extracted and their subcategories. We used a combination of an inductive and deductive approach to data extraction and synthesis. We drew lightly on two frameworks to identify useful categories for data extraction. The SURE framework on implementation factors, guided us to identify data on key stakeholders, such as the providers and recipients of care, and the care setting (Sure Collaboration 2011). The Health Systems framework guided us to identify different health systems functions that were being integrated, such as human resources, information systems, and supply systems (van Olmen 2010). We also drew on various sources of taxonomies for integrated care to guide the categorisation of intervention type, scope, breadth, and strategies (Atun 2004; Kodner 2002; Valentijn 2015). Given the plethora of definitional sources, we adapted these a priori concepts on type, scope, and strategies as part of our deductive approach to data extraction. In places where there were no predefined definitional categories, we used an inductive approach based on emerging data, as in the case of identifying the health stream configurations.

For consistency between the review authors, HM and NL initially performed duplicate extraction on a sample of 10 studies (5%) and compared their data. The duplicate extraction process continued for another 10 studies (in total 10%) until there was sufficient agreement for single review author extraction. As an additional quality check, the senior author (NL) reviewed the data extraction of 40 studies (22% of the total sample) completed by HM.

Management and analysis

We imported and managed all the retrieved studies in Covidence (www.covidence.org). We screened and assessed the eligibility of all retrieved studies in Covidence.

After data extraction into our Excel template, we refined the extraction by providing drop-down lists for subcategories for some of the indicators. For example, categorising country-income levels, health stream interventions, and intervention scope and strategies. We then used the sorting function in Excel to present the information quantitatively by counting the number of studies per indicator and converting these into proportions. Where relevant, we provided additional qualitative descriptive information. Where appropriate, we disaggregated indicators per country income level. Below we provide details on how we analysed and categorised information for the indicators for research participants, intervention descriptions, and conceptual models.

Research participants

Studies listed a wide range of research participants who provided information on their perceptions and experiences of being involved in implementing integration interventions. We categorised these research participants as follows: policymakers and provincial managers, district managers, clinical managers, clinical healthcare workers, allied healthcare workers, lay healthcare workers, health systems support staff, civil society (i.e. community leaders and chiefs involved in clinic decisions) and health system advisors (researchers, programme managers, non-governmental organisation (NGO) managers, technical advisors, and operational managers).

Intervention

Health service streams that were integrated

In the literature, we found no predefined, standardised PHC integration intervention categories to describe combinations of health programmes that were being integrated. We created categories based on emerging data. Six categories of health service stream configurations emerged from the analysis.

- Mental and behavioural health services
- HIV, TB, and sexual and reproductive health (SRH) services
- Maternal, child, and women's health (MCWH) services
- NCD services
- General PHC services
- Allied and specialised health services

Some interventions overlapped across the health service streams listed above, and we placed them in the stream where we thought they would fit best. For example, where a mental and behavioural health service was being integrated into an NCD service, we placed it in either the 'Mental and behavioural health service' or the 'NCD service' stream, depending on our assessment of the primary aim and direction of integration for joint service delivery. We used the category of 'General PHC services' for interventions that went beyond the integration of clinical components of health programmes, to focus more explicitly on the integration of cross-cutting health system functions (such as the functions of management and administration, human resources, or health information systems), as well as integrated interventions that did not easily fit under the other categories. In 'Allied and specialised health services', we highlighted the introduction at the PHC level, of previously specialised services (such as dental services) and services delivered by allied health professionals (e.g. occupational therapists).

Scope of the integration

When we analysed the interventions included in this scoping review, we found a continuum in terms of the scope of health services (e.g. the number and extent of clinical tasks being integrated for joint delivery). There was also a continuum regarding the extent to which cross-cutting (transversal) health system functions were integrated to enable joint delivery of care (e.g.

financial systems, human resource management, information systems, and supply systems). Based on the analysis of the included studies, and drawing on concepts in the literature, we categorised interventions as having a full or partial integration scope, as described below.

Full integration scope

We defined this as the integrated delivery of two or more PHC service programmes previously delivered vertically or in silos (e.g. joint delivery of HIV and TB services), or where there is a substantial expansion of a health service for integrated delivery at PHC level. One example is devolving mental health services from specialised care level to the PHC level in a way that mental health is more fully integrated with the delivery of other PHC services. Another example is where multiple PHC service organisations co-ordinate and interlink their service delivery for general PHC clients or for a specified target group, such as maternal and child health. For instance, this could be done through the colocation of health services within one facility.

Partial integration scope

This is where only one or a small component of a health service or clinical task is integrated or a limited number of clinical (e.g. disease screening for TB) to a different (main) health service (e.g. HIV treatment services). We refer to this as 'partial integration' to indicate that only a part of the health service (and not all the health service/clinical tasks for that disease programme) were delivered jointly. Another element is when the service is devolved from specialised services to PHC level but is not fully embedded for integrated delivery by general PHC staff. For instance, when specialised staff are employed at the PHC level to deliver a previously specialised service, such as mental health care.

In some studies, the integration scope represented a mix of full and partial integration efforts. The intervention descriptions were not always sufficiently detailed to make well-informed judgements about its scope. Also, there are no standard definitions of full and partial integration. Therefore, we considered these tentative classifications to provide an initial map of the scope of integration interventions.

Intervention strategies used

Through an analysis of the included studies, we ascertained that within both full and partial integration, the interventions also differed in terms of the main strategies used for the delivery of integrated care. We did not find standardised categories of service strategies in the literature, so we categorised strategies based on data emerging from our analysis. Table 2 provides a list of the categories of integration strategies we identified.

We categorised integration interventions as 'service linkage' when the focus was on linkages between clinical staff in different health services. An example included liaison amongst healthcare workers, or amongst PHC service organisations, delivering different NCDs services, or between different PHC service platforms such as health facility-based and community-based service platforms. We categorised integration strategies as 'service expansion' when the focus was on expanding a component of one health service and adding it as standard care in another health programme (e.g. NCDs risk screening for HIV clients). Some integration interventions used a combination of service linkage and service expansion strategies.

In full integration, we added a third strategy, named 'horizontal integration'. This is where two or more previously verticalised PHC health services were amalgamated for joint delivery into one health programme. For example, previously verticalised HIV and TB services were now being delivered jointly. The integration scope here is assumed to be wide and to include the integration of supportive health system functions (e.g. financing, human resources management, health information systems, and supply systems).

Conceptual frameworks used

We were interested in extracting data on whether an analytical, conceptual model was used to guide the study design, implementation, and evaluation. The assumption was that the use of analytical models in studies may potentially produce deeper conceptual or theoretical insights, as well as promote comparability between study findings. To extract data on analytical models, we used the 'Find' function in the PDF programme to search in the text of each study for the following keywords: 'conceptual', 'framework', 'model', and 'theoretical'. We found that these terms were sometimes used to describe not only analytical models but also for describing a particular model of the PHC integration intervention that was being implemented (e.g. the Chronic care model). We labelled the latter as 'service models' to indicate that it focused only on describing the integration intervention, and not on guiding the evaluation. Therefore, we reported on the use of both analytical and service models. Analytical models include named frameworks (e.g. integrated Promoting Action on Research Implementation in Health Services (i-PARIHS) framework, and theories, such as Complexity theory).

On a different note, studies also sometimes used terms such as model, framework, or theory, to describe their methodological approach to qualitative data analysis (e.g. 'thematic framework' or grounded theory). We excluded these from our analysis as these are methodological approaches rather than models.

Summary of key characteristics of included studies

We presented a summary of the 'Key characteristics of included studies' in a table that combines study characteristics and key findings. We did not present our findings in the 'Summary of qualitative findings' table as these are scoping review findings that are presented as indicators, with supporting data tables. We did not conduct a critical appraisal of included studies. Scoping reviews do not typically analyse and appraise the data of included studies; rather they provide a map or detailed description of the scope of studies (Peters 2015).

The key items listed in our key characteristics table are author, publication date, study design, country income level, country name, target client population to receive the intervention, research participants, health service streams, scope of integration, and intervention strategies used.

Linking the synthesised qualitative findings to a Cochrane intervention review

The findings of this scoping review were not intended to be integrated with the Cochrane intervention review on PHC integration. Nevertheless, findings from the scoping review could inform future updates of the Cochrane integration effects review (Dudley 2011). Findings can also inform future quantitative

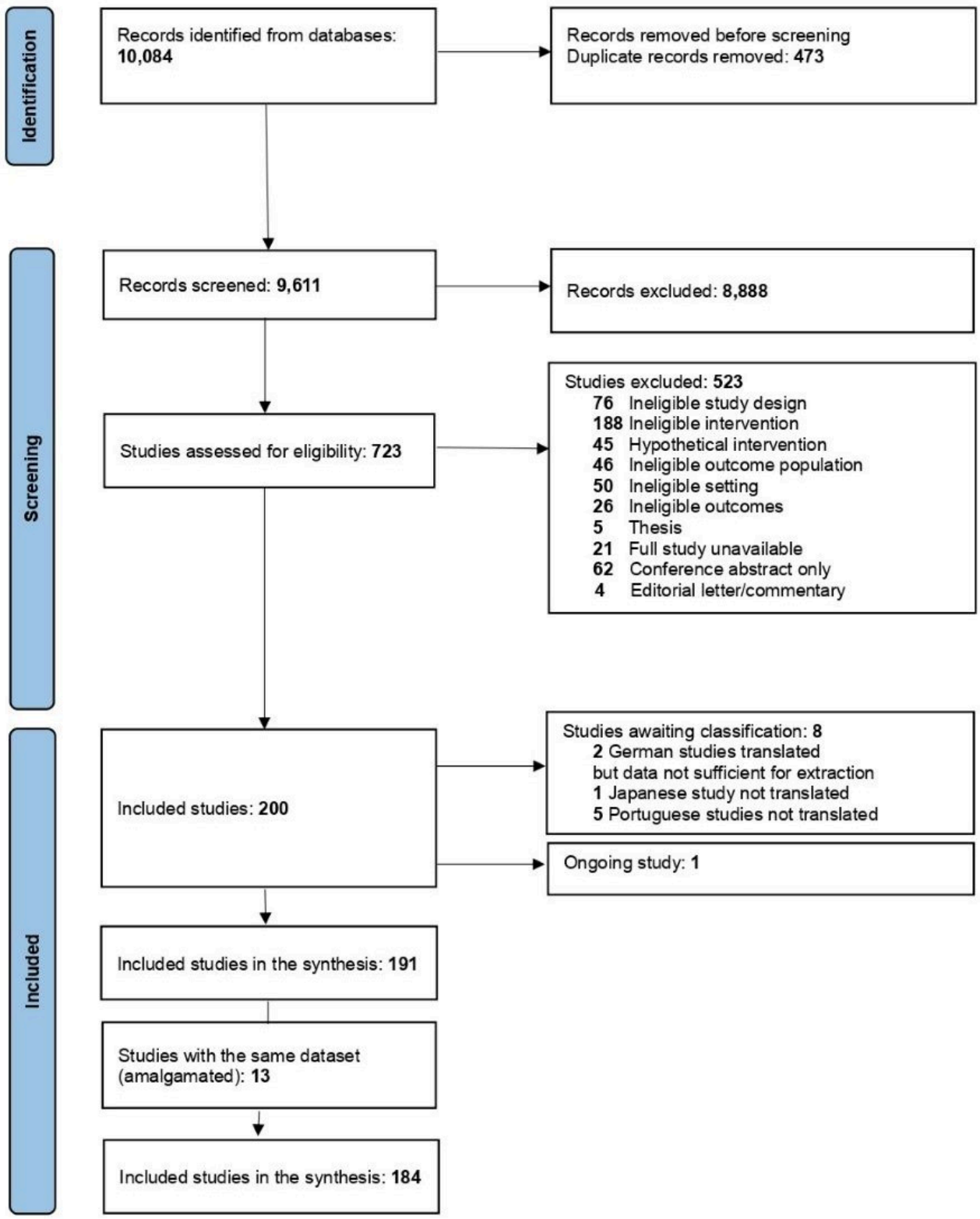
and qualitative synthesis questions that take account of the heterogeneity of the evidence, and by informing more approaches to developing search terms and sampling strategies.

RESULTS

Results of the search

We detailed the literature search results according to the PRISMA Statement. Figure 1 shows that we retrieved 10,084 records from searching the electronic databases. After removing duplicates, we assessed 9611 records for eligibility based on title and abstract. We assess the full texts of 723 records, and removed 523 records with reasons for exclusion. Due to many excluded studies, we presented a sample of 63 (12%) excluded studies with reasons in Table 3. We selected these studies by categorising all excluded studies alphabetically and then picked a sample of studies, from the topic of the alphabetical list, under each of the different exclusion criteria categories. The exclusion categories for the sample we describe were: ineligible study design (nine studies), ineligible intervention (18), hypothetical intervention (nine), ineligible outcome population (nine), ineligible setting (nine), and ineligible outcomes (nine).

Figure 1. Figure 1: PRISMA flow diagram



Thirteen publications had the same intervention found in at least one other publication. Publications with the same intervention were amalgamated, which resulted in six publications with unique intervention studies. Thus, 184 studies with a unique intervention, based on 191 papers, were analysed in this scoping review.

Eight studies are awaiting classification, and one study is ongoing.

Key characteristics of included studies

Table 4 provides a summary of the key characteristics of included studies. The table contains the following details: author and publication date, study design, country-income level, country name, client target group, research participants, health service streams integrated, integration type/scope and integration strategy.

In the section below, we provided a narrative summary of the key result areas, illustrated by graphs where appropriate. We did not include references for each result area due to the large number of studies included. The references are presented in data tables in the appendices.

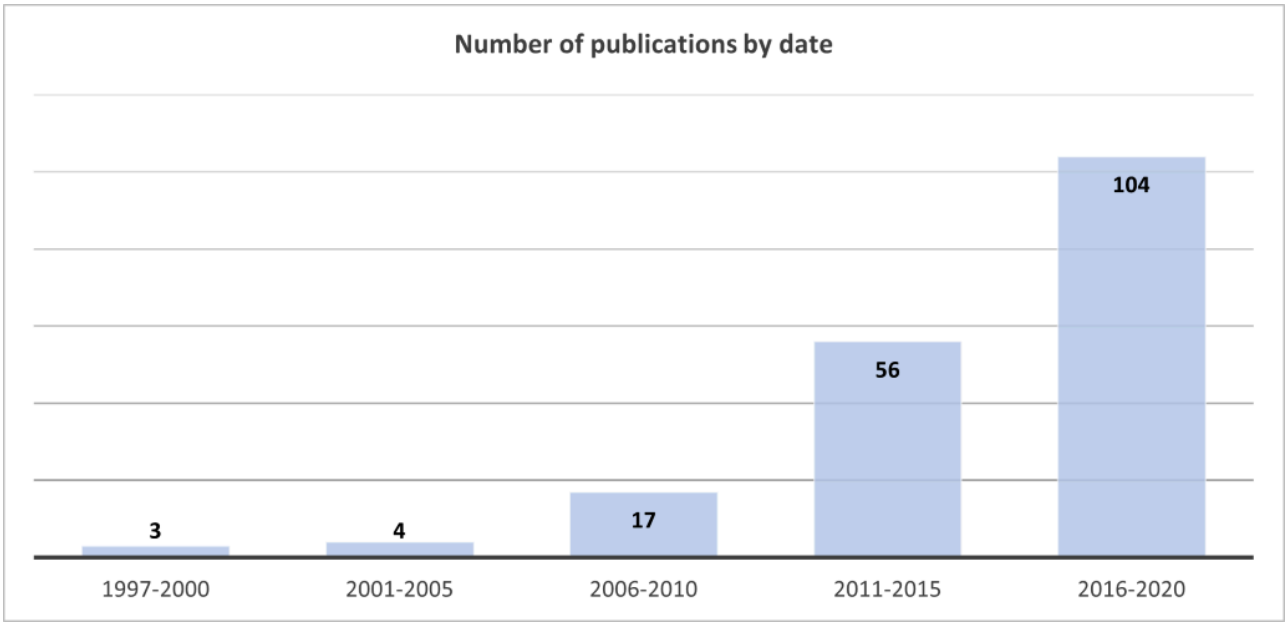
Description of studies

In this section, we presented the quantitative results and narrative summaries of results based on the 184 analysed studies.

1. Publication date

The earliest publication was in 1997, and the latest publication was in 2020 (Figure 2). Most studies, 160 (87%), were published in the last 10 years, since 2011. Nearly one-third, 56 studies (30%), were published between 2011 and 2015. The number of publications doubled in the last five years (2016 to 2022), with more than half of the total number of studies, 104 studies (57%), published in this period.

Figure 2. Number of publications by date



2. Study methods

2.1. Study design

Most studies (121 studies, 66%) used only qualitative methods in their study design, and the remainder (63 studies, 34%) were mixed-method studies. Studies collected data using the following methods: individual interviews (IIs) only in 123 studies (67%), focus group discussions (FGDs) only in 11 studies (6%), and both IIs and FGDs in 27 studies (15%). In 23 studies (12%), researchers used other forms of qualitative data collection methods in addition to IIs and FGDs. These included a combination of document reviews (nine), field/site/clinical observations (15), and research diaries. Only two studies used a more in-depth, longitudinal study approach described as 'ethnographic' methods.

2.2. Sample size

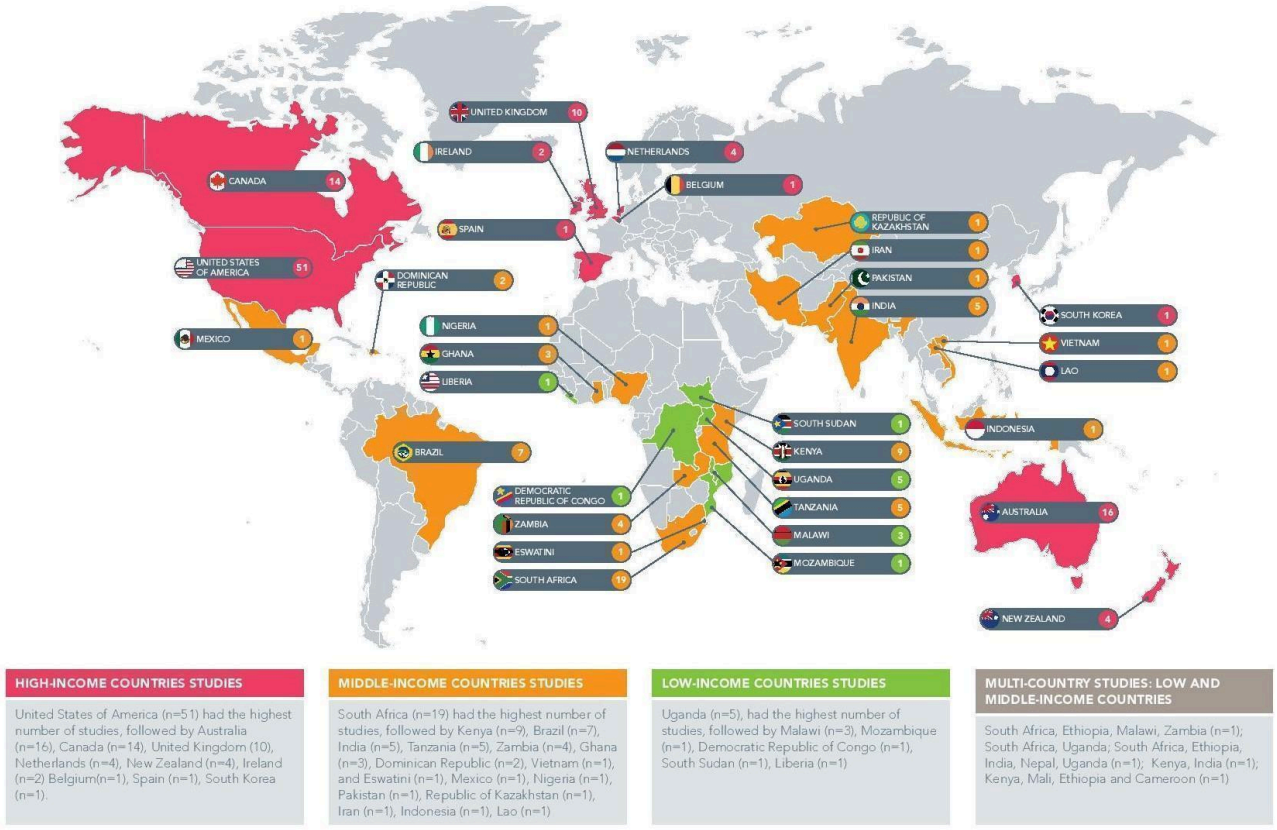
In total, 14 studies (8%) did not provide details on the sample size and 170 studies (92%) provided sample size. The studies that provided a sample size interviewed 4303 individual participants through IIs, and conducted 186 FGDs. We did not calculate the total number of individuals who participated in FGDs as not all studies provided details on the number of people in each focus group. In Appendix 2 and Appendix 3, we presented references for study designs and sample size.

3. Settings

3.1. Country income level and country

Figure 3 is a diagrammatic presentation of the number of studies per country, as well as the breakdown of the countries represented per country income level. The single-country studies represented 33 different countries. Amongst the multicountry studies, six countries were also represented in the single-country studies, while four were not represented. Therefore, the total number of countries represented was 37. Regarding geographic distribution, 104 (56%) single-country studies were conducted in 10 high-income countries (HICs). Sixty-three (34%) single-country studies were conducted in 17 different middle-income countries (MICs). Twelve (7%) single-country studies were conducted in six low-income countries (LICs). There were also five multicountry studies, all conducted in LMICs.

Figure 3. Geographic distribution and number of studies per country



Within each of the country-income settings, some countries were more dominant. In HICs, 51 studies (49%) were from the USA only. In MICs, 19 studies (30%) were from South Africa only. In LICs, five studies (42%) were from Uganda.

In Appendix 4; Appendix 5; Appendix 6; and Appendix 7, we presented references of country income level and country.

3.2. Urban/rural

Eighty-two studies (45%) did not indicate the urban/rural location of the study setting. Of the remaining 102 studies reporting this, 43 studies (42%) were urban, 24 studies (23%) rural, and 35 studies (34%) reported a mix of rural and urban locations for interventions.

There were variations in urban/rural locations for interventions across HICs and LMICs. In HICs, the dominant location was urban only in 33 studies (61%), followed by urban and rural in 17 studies (31%), and rural only in four studies (7%). In MICs, the dominant location was rural only in 14 studies (39%), followed by urban and rural in 13 studies (36%), and urban only in nine studies (25%). In LICs, the dominant location was rural only in five studies (63%), followed by urban and rural in two studies (25%), and urban only in one study (12%). In multicountries, the dominant location was urban and rural in three studies (60%), urban only in one study (20%), and rural only in one study (20%). In Appendix 4; Appendix 5; Appendix 6; and Appendix 7, we presented references of urban/rural location or setting.

3.3. Healthcare level

The review focussed on interventions delivered on the PHC delivery platform. However, there were different forms of PHC service platforms. Most studies referred to PHC clinics as the primary intervention site (144 studies, 78%). Some interventions involved delivering PHC services on a level below, at a community-based service level (e.g. providing TB services in community health centres) (26 studies, 14%). While in some cases, PHC services were also delivered at the district hospital level as the entry point for care (e.g. family planning, and sexual and reproductive services) (7 studies, 4%). In some cases, PHC interventions were delivered across all three levels of care, PHC clinics, community-based service level, and hospital level (7 studies, 4%) (e.g. community healthcare workers working with nurses from PHC clinics and nurses work with obstetricians from district hospitals to allow women to access pregnancy and childbirth care).

PHC service platforms also had different institutional arrangements, with some being structured as public–private partnerships (PPPs), where the government contracted non-governmental agencies (for profit or not for profit) to deliver PHC health services (e.g. Australia, the UK, the USA).

4. Target client populations

We categorised the target client population according to the health service stream configurations described later. We provided proportions when presenting different health service streams and focussed here on providing descriptive details of the different types of the target client population.

4.1. Mental and behavioural health service clients

The target client population in this category was those needing mental health services only; these were common mental disorders such as anxiety and depression, and severe mental disorders such as schizophrenia and major depression. This target client population also included people seeking mental health and other PHC services. These included PHC clients seeking care for substance use disorder, and mental health and behavioural services as part of that care. Clients needing mental health services and support for their chronic illnesses are also included here.

4.2. HIV, tuberculosis, and sexual and reproductive health service clients

The target client population in this category was those needing services for one disease only (HIV, TB, or SRH), or a combination of these services. Examples were refugees needing TB latent services; the youth needing SRH services only; and clients needing a combination of HIV, TB, or SRH services. An example of the latter is clients in need of both a combination of TB and HIV services, or clients with either TB or HIV, or both, who also sought access to other SRH services, such as family planning services.

4.3. Maternal, child, and women's health service clients

The target client population in this category was children and women. The children targeted were aged between five and 18 years. Children were a target group for interventions such as common children's illnesses, behavioural services, and oral healthcare in general PHC settings or within a programme of integrated child management services. Women were a target client population for interventions that included children's services. These included women being offered antenatal and postpartum, HIV, family planning, and sexual and reproductive services alongside those for children such as immunisation services, malaria services, and HIV services.

4.4. Non-communicable diseases service clients

The target client population in this category was those in need of NCDs services. These groups included the general PHC population, such as clients in need of general NCD prevention services (general PHC clients at risk for NCDs). This also included specific clients at higher risk of NCDs, such as older people. The target client population also include those with specific NCDs (e.g. people with diabetes) and those with multimorbid NCDs and those with complex medical regimens. Clients needing chronic care services, such as chronic services for HIV, TB, mental health, and pulmonary disease were also targets of this health stream.

4.5. General primary healthcare service clients

The target client population for this category was those needing general PHC services. These included acute and minor health needs and general services linked to community healthcare and PHC clinics and clients for health promotion services. These included lay healthcare workers working alongside PHC workers to provide services to people living in rural areas. Also, lay healthcare workers provide health promotion services to the community. One example is the Family Health Strategy in Brazil used to provide PHC that addresses a full package of health promotion, prevention, treatment, rehabilitation, palliative care, and health surveillance services. Another example, also in Brazil, is the integration of services across primary care services to better address men's health needs.

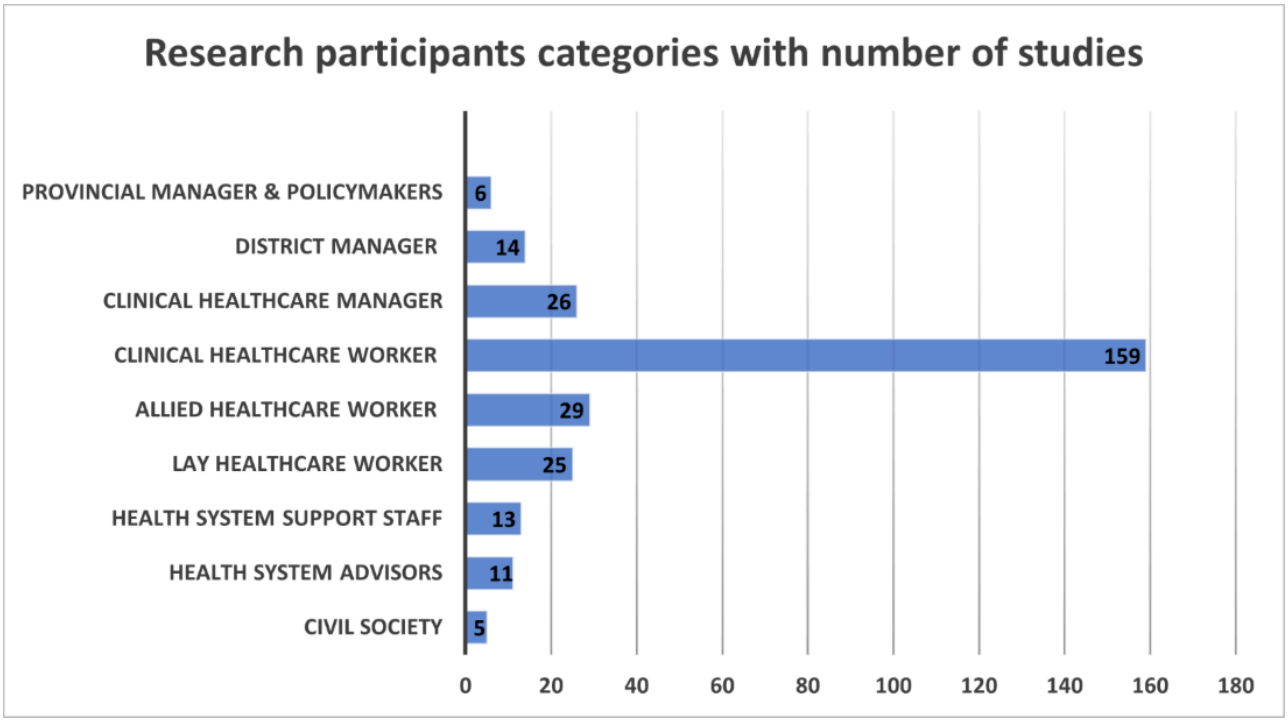
4.6. Allied and specialised health service clients

The target client population for this category was children, youths, and adults needing allied and specialised services that were not always readily available at the PHC level. These included clients with specific needs for occupational or physiotherapy services, such as people living with disabilities. Also included were clients with specific health needs that were previously offered in specialised settings (i.e. children and adults in need of oral health and dental services, adults in need of specialised care for substance use disorder, follow-up treatment for cancer survivors, people needing gender-based violence services, and mental health services). The latter was covered under the mental and behavioural health stream mentioned above.

5. Research participants

A range of research participants provided information on their perceptions and experiences of being involved in implementing integration interventions (Figure 4). We categorised participants in terms of their roles in the health system. We found that the clinical healthcare worker category was dominant, listed in 159 studies (86%). This was followed by the category of clinical managers, listed in 36 studies (19%). The allied healthcare worker category was listed in 29 studies (16%), and the lay healthcare worker category was listed in 25 studies (13%). The category of district managers was listed in 14 studies (8%), health system support staff in 13 studies (8%), and health system advisors in 11 studies (6%). The categories of research participants that were least commonly found in studies were policymakers and provincial managers, listed in six studies (3%) and civil society in five studies (2%).

Figure 4. Research participant categories per number of studies



6. Intervention description

6.1. Health service streams

We provided details of the health service streams configured for delivering integrated services. We began by presenting an overview of the health service streams for integration interventions as shown in Figure 5. Thereafter, we presented them per country income level as shown in Figure 6.

Figure 5. Health service streams for integration interventions

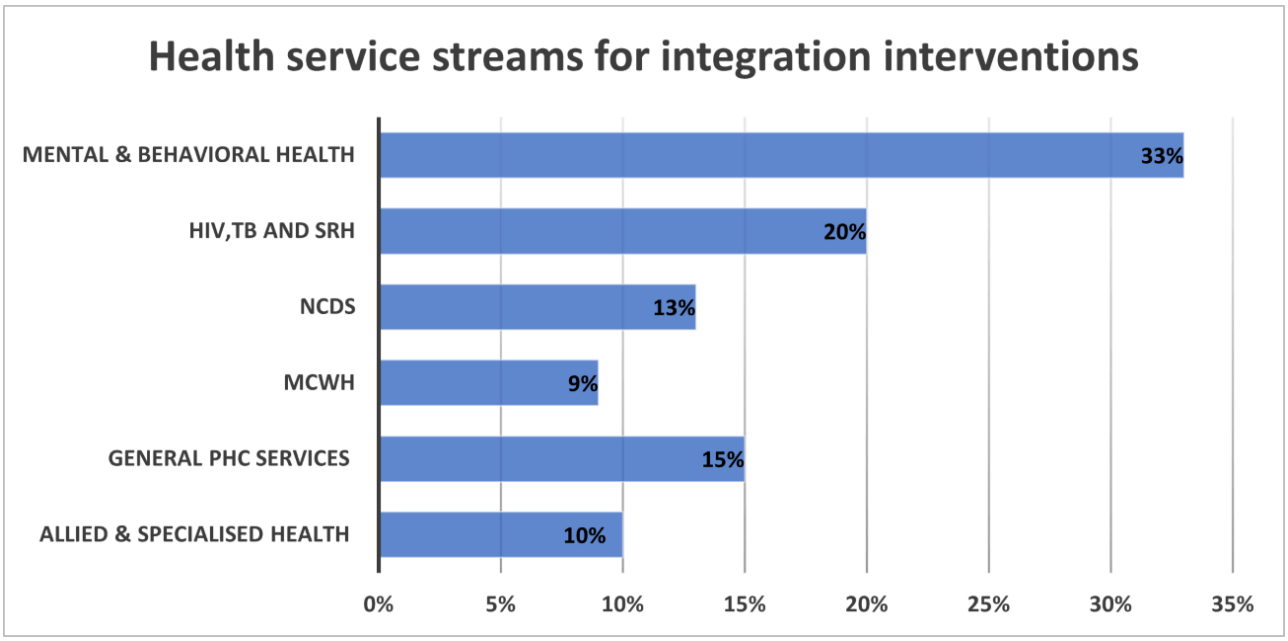
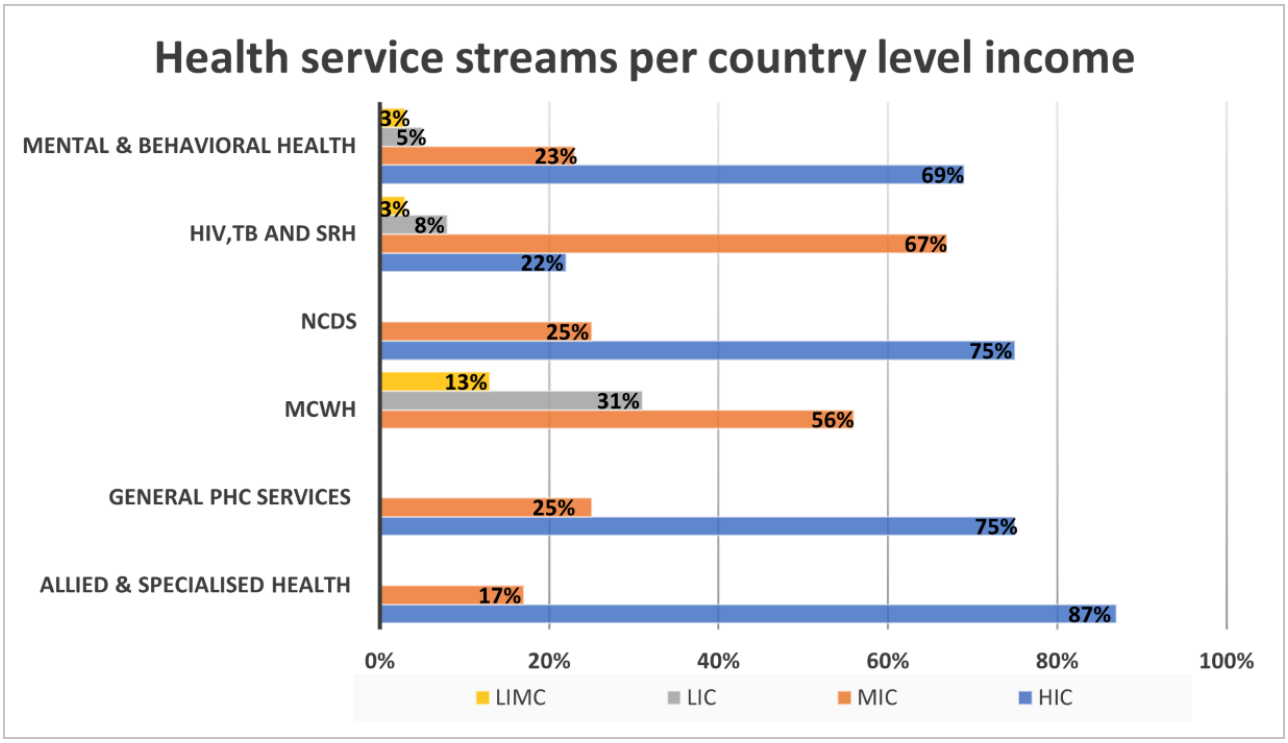


Figure 6. Health service streams for integration per country income level



Mental and behavioural health services was the most frequent health programme area of integration of services, making up one-third (61 studies, 33%) of all studies. Integration of HIV, TB, and SRH services was the second most frequent health programme area for integration (37 studies, 20%), followed by interventions related to the integration of NCD services (24 studies, 13%) and MCWH (16 studies, 9%).

A quarter of the included studies (46 studies, 25%) had wider focus areas, and these could not easily be categorised in the earlier health service stream configuration categories. We subdivided these studies into two different categories. We labelled one as general PHC services (28 studies, 15%). These interventions focused on integration within and across the provision of general PHC services (e.g. facility and community-based or curative and preventive medicine), and were interventions not limited to specific disease/health programmes. The other category we labelled as allied and specialised services (18 studies, 10%). This included interventions where there was an introduction at the PHC level, of specialised services that were not previously on offer at the PHC level. This included PHC-based services by allied health professionals (e.g. occupational therapy), or by specialised health professionals (e.g. mental health specialists).

6.1.1. Mental and behavioural health services per country income level

Mental and behavioural health services was the most frequent health service integration stream, with 61 studies (33%). Most (42 studies, 69%) were from HICs. Within the HICs, most (31 studies, 73%) came from only one country, the USA. The remainder (11 studies, 27%) were from six other HICs. Fourteen mental and behavioural health services studies (23%) were from MICs, with six studies (43%) being from one country, South Africa, and the remainder (eight studies, 57%) from six other MICs. Three mental and behavioural health-related studies were from LICs (5%) (all from Uganda), and two studies (3%) were set in multiple LMICs.

There were different configurations of how mental health services were being integrated at the PHC level. One configuration was devolving whole mental health services from hospital/specialised service settings, for delivery within PHC clinics or general practitioner practices. Such services could be accompanied with specialised mental health staff being placed at the PHC level to provide services directly to clients, or to support general PHC staff to deliver mental health services. On the other end of the spectrum, interventions may introduce a smaller extension of mental health service that was not previously on offer at the PHC level, such as providing mental health screening for common and serious mental health conditions, but with referral to specialised care elsewhere. In Appendix 8, we presented references for studies of mental and behavioural health service stream integration per country income level.

6.1.2. HIV, tuberculosis, and sexual and reproductive health services per country income level

HIV, TB, and SRH services was the second most frequent health service integration stream, with 37 studies (20%) focused on various combinations of integration of HIV, TB, and SRH services. Most studies were from MICs (25 studies, 67%). This was followed by eight studies (22%) from HICs, three studies (8%) from LICs, and one study (3%) set in multiple LMICs. Most MIC-based studies (10 studies, 40%) came from one country, South Africa, with the remainder (60%) spread across seven other MICs. Of the eight HIC-based studies, six studies (75%) were from one country, the USA, and the remainder (two studies, 25%) were from Canada. Of the three LICs studies, two (67%) were from Uganda, and one (33%) was from Malawi.

Interventions in this stream consisted of different integration configurations of linking HIV, TB, and SRH services. This included HIV treatment being devolved from the hospital level to be delivered at the PHC level. It also included linkages between and joint delivery at the point of care of previously siloed (vertical) PHC-based services for HIV, TB, and SRH services. Another configuration was expanding HIV prevention and health promotion services to community-based settings. For example, at the PHC level or expanding to comprehensive HIV and TB services for maternal and child health (e.g. via the PHC). Other interventions focused on expanding HIV, TB, and SRH screening services (through point-of-care testing) for a range of client target groups, including those with NCDs, in maternal and child health care (e.g. via the Prevention of Mother to Child Treatment (PMTCT) programme); also, for gender-based violence, and other health conditions. In Appendix 9, we presented references for studies of HIV, TB, and SRH service integration per country income level.

6.1.3. Maternal, child, and women's health services per country income level

MCWH integration services was the least common health service integration stream, with 16 studies (9%). Most studies were from MICs (nine studies, 56%). Three of the MICs studies (33%) were from Kenya, and the remainder (6 studies, 67%) were spread across five different MICs. Five studies (31%) were from LICs; amongst these, two studies (40%) were from Malawi. Two studies (13%) were in multicountries, with Kenya found in two multicountry studies. There were no studies set in HICs.

Studies included integrating broader maternal and child services with vaccination services, calcium supplementation for pregnant women, point-of-care testing for infectious diseases, linkage with skilled birth attendants and community health workers, and outreach to community-based settings. In Appendix 10, we presented references for studies of MCWH service integration per country income level.

6.1.4. Non-communicable diseases services per country income level

NCDs services was the fourth most common health service integration stream, with 24 studies (13%) focusing on the integration of various combinations of NCDs and integration of NCDs programmes with other disease programmes. Of the 24 studies with NCDs service integration, most were from HICs (18 studies, 75%). Six of these studies (33%) were from one country, the USA, and the remainder (12 studies, 67%) were spread across six HICs. Six studies (25%) were from MICs, with two studies (33%) each from South Africa and Brazil, and one study (17%) each from India and Pakistan. There were no NCDs-related studies from LICs.

Integration interventions in this stream focused on joint management for multiple chronic diseases (such as diabetes and hypertension) that were previously not delivered in an integrated manner. Other configurations involved delivery and linkage of NCDs services within PHC services for prioritised client groups, such as for geriatric care and for those with multimorbid diseases. NCD-related interventions included mechanisms for more effective and accessible NCD care (e.g. co-location of NCD services, pharmacist-led medication reviews, and community health worker outreach for expanding health promotion and prevention services for NCD). Interventions also included expanding components of NCD services to other disease services (e.g. NCD screening and NCD risk assessment for clients with TB, HIV, mental health disorders, or a combination of these; and cardiovascular screening by pharmacists). In Appendix 11, we presented references for studies of NCD service integration per country income level.

6.1.5. General primary healthcare services per country income level

General PHC services was the third most common health service integration stream, with 28 studies (15%). This category comprised integration interventions focussed on improving linkages across different components of the PHC system, without necessarily focussing on specific disease/health programmes. Most studies were from HICs (21 studies, 75%), with six (29%) studies each from the USA and UK, and the remainder (9 studies, 42%) spread across four different HICs. There were seven studies (25%) from MICs, three (43%) from Brazil, and the remainder (4 studies, 57%) spread across four other MICs. There were no studies from LICs settings.

In this stream, we grouped a range of different integration interventions that were difficult to classify as part of the above categories. One set of intervention approaches focused on increased linkages between the management of acute and preventive services (health promotion) at both health facilities and community-based service levels. Another set of interventions were aimed at increasing linkages between different PHC service organisations, to serve certain target client populations. One example is a purpose-built 'Super clinic' in Australia that houses general practitioners and allied medical services in one building to improve service linkages for chronic care. Other configurations included integration across adult and child services in a family health strategy approach (e.g. combining the delivery of parent and child health services at one PHC centre). Other examples are linkages across PHC services to address men's health needs (in Brazil, as part of implementing their Men's Health Policy), and linkages across facility, community, and home-based agencies for aged care.

Another set of interventions focused on studying the implementation and delivery strategies of the integration efforts more generally, be it via a focus on various health system functions, such as administrative and management systems, human resource management, information systems, and or via studying of change management processes. Examples included studies on the evaluation of administrative capacity for integrated monitoring and evaluation of HIV–TB care, use of electronic health information systems in mental health service integration, organisational leadership, and change management processes in implementing integration and studying the political dynamics of the change management process efforts to integrate of HIV–TB service delivery systems. Others focused on studying the introduction of different cadres of health workers into the PHC setting, such as nurse-led teams, multidisciplinary teams, community health workers, dental and oral health workers, and pharmacists. In Appendix 12, we presented references of studies on general PHC service integration intervention per country income level.

6.1.6. Allied and specialised health services per country income level

Allied and specialised health service was the fifth most common health service integration stream, with 18 studies (10%). The focus was on making allied services (e.g. occupational therapy) or specialised services (e.g. dental services) available for delivery at the PHC level. 'Specialised' services refer here to those services that were previously only provided at a hospital or specialised or

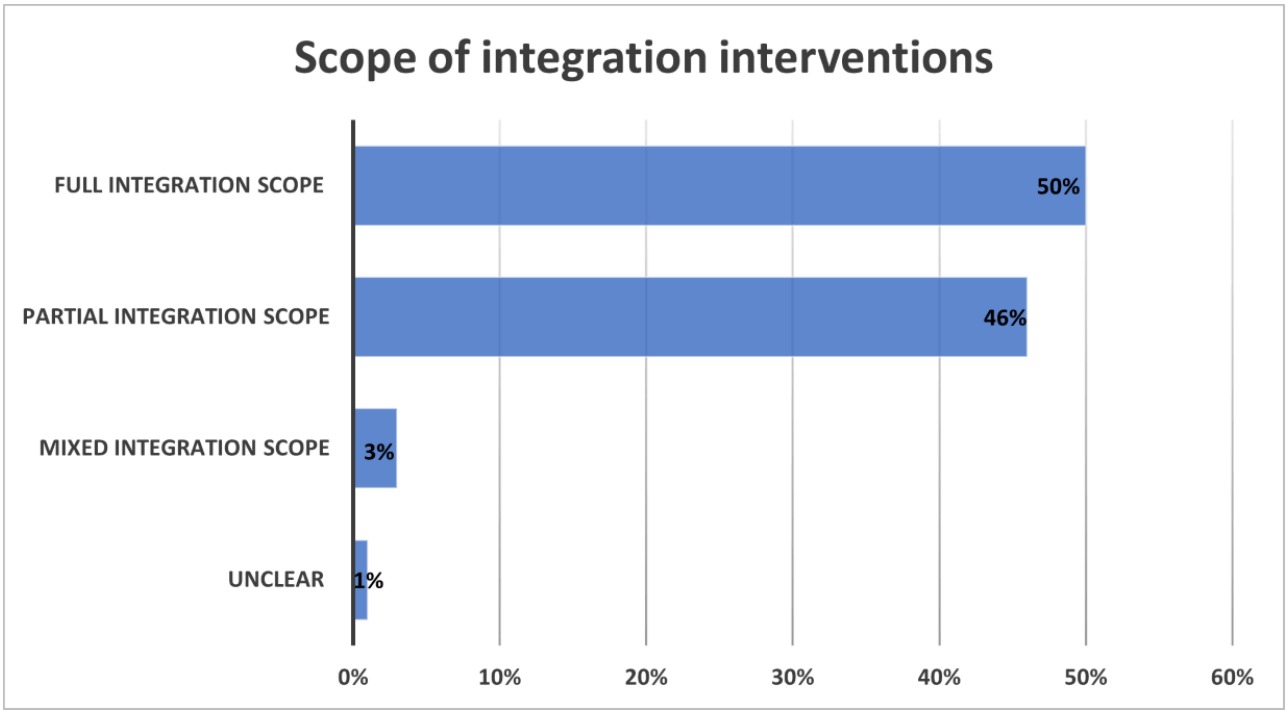
standalone level of the healthcare system (e.g. a dental clinic). These services would not previously have been available at the PHC level or where available, it was not considered a comprehensive level service at the PHC level. The majority were from HICs (15 studies, 83%), of which five studies (33%) were from one country, Canada, and the remainder (10 studies, 67%) were spread across five different HICs. Three studies (17%) were from MICs. There were no studies from LICs settings.

In this stream, we included intervention models that aimed to enhance the scope of general PHC services. These included the provision of comprehensive oral health services and dental services, and the provision and integration of occupational therapists, dieticians, and pharmacists into primary care teams. Other interventions included the integrated management of substance use disorders (that include opioid abuse), integrated cancer screening and cancer care, integrated care for disabilities, and molecular point of care testing for influenza and treatment of rare diseases (such as the tropical disease Human African Trypanosomiasis). In Appendix 13, we presented references of studies on allied and specialised health service integration intervention per country income level.

6.2. Scope of the integration

In half of all studies (92 studies, 50%), we categorised the integration scope as 'full Integration', and in 85 studies (46%), we categorised the scope of integration as 'partial integration' (Figure 7). (See the Methods section for details on how we defined full and partial integration.) In five studies (3%), the scope of the intervention was a mixture of full and partial integration. In two studies (1%), there was insufficient information to assess the scope of integration.

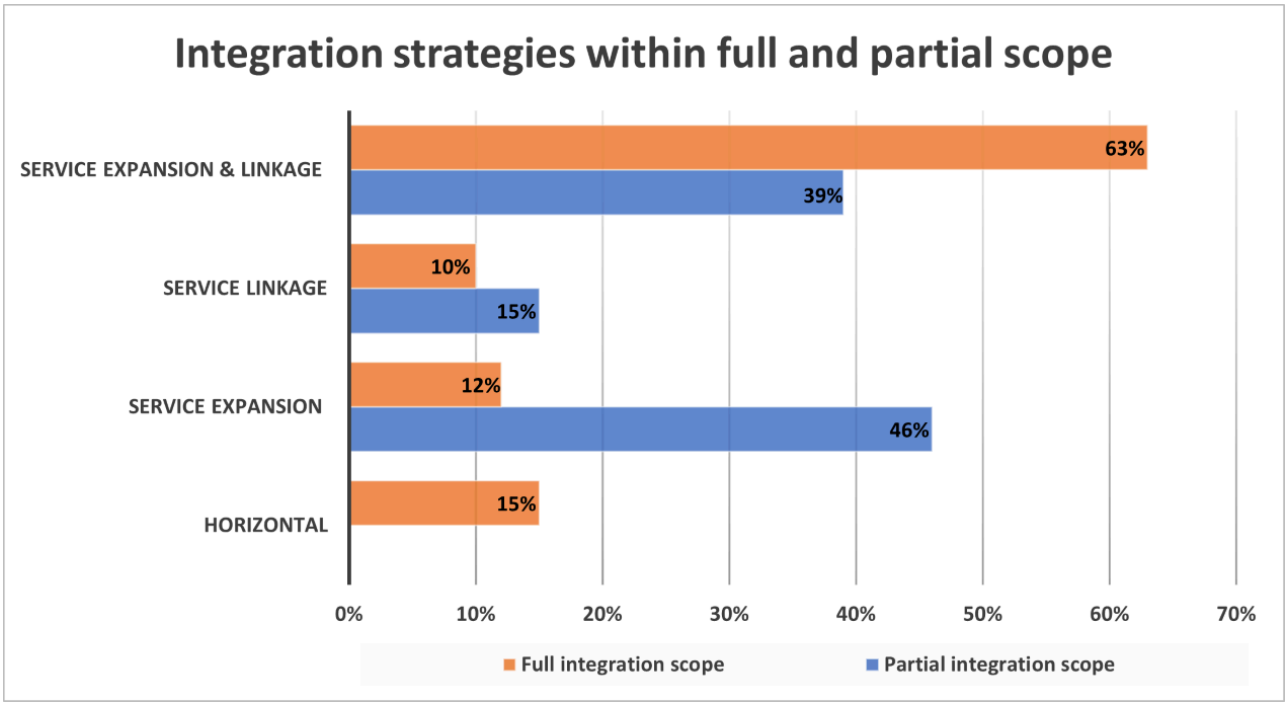
Figure 7. Scope of the integration interventions



6.3. Intervention strategies

In terms of integration strategies, the most common strategy across both full and partial integration scope was the strategy that combined service expansion and service linkage, with close to half of all the studies (91 studies, 49%) reporting using this combined strategy (Figure 8). The second most common strategy was service expansion, used in 50 studies (27%), followed by service linkage, used in 22 studies (12%). Fourteen studies (8%) used horizontal integration strategies and only in the full integration intervention scope. (See the Methods section for details on how we defined the different strategies.)

Figure 8. Integration strategies within full and partial integration scope

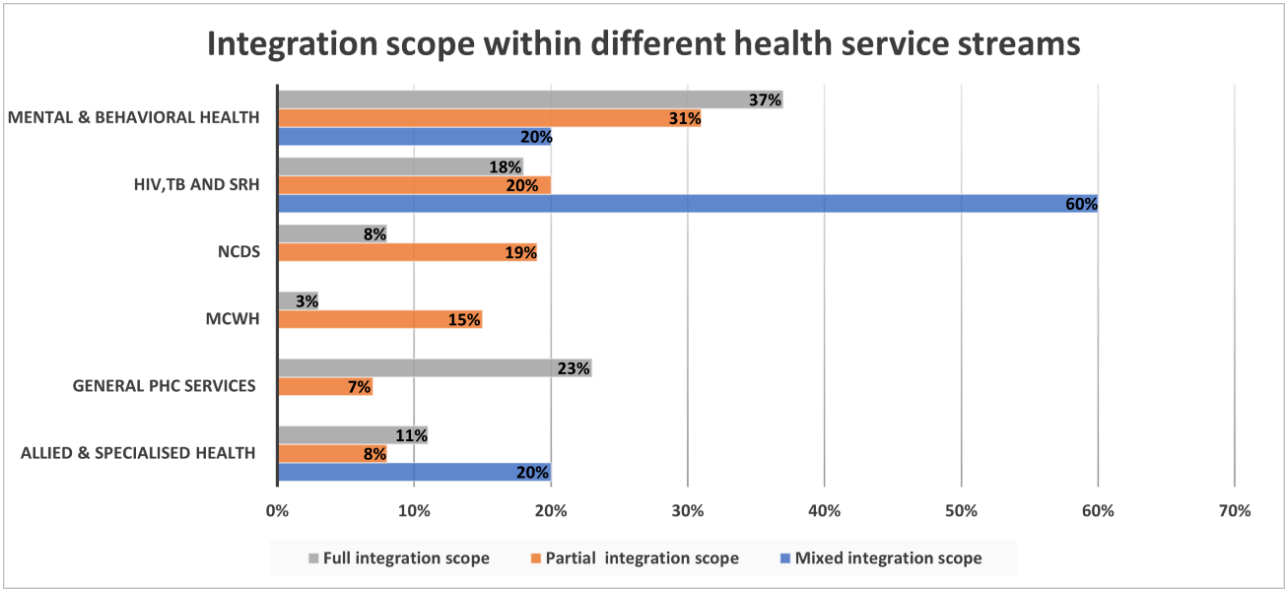


Within the full integration intervention scope, close to two-thirds (58 studies, 63%) used the combined strategy of service expansion and linkage making the combined approach the most frequent strategy. This was followed by the horizontal integration strategy in 14 studies (15%), then service expansion (11 studies, 12%), and the least frequent strategy was service linkage (9 studies, 10%).

Within the partial integration intervention scope, 39 studies (46%) used service expansion, making it the most frequent strategy. A total of 33 studies (39%) used combined service linkage and expansion strategies, and 13 studies (15%) used service linkage only. In Appendix 14, we presented references for studies using different integration strategies within the full and partial integration scope.

Within the studies classified as full integration scope, the most frequent health service integration stream was mental and behavioural health services, with just over one-third of studies (34 studies, 37%) (Figure 9). This was followed by studies classified as general PHC services (21 studies, 23%), and studies with HIV, TB, and SRH services (17 studies, 18%). Allied and specialised health services had 10 studies (11%) with full integration, NCDs integration had seven studies (8%), and MCWH health services had three studies (3%). In Appendix 15, we presented references for studies categorised as having 'full integration' scope across health service integration streams.

Figure 9. Integration scope used within different health service streams



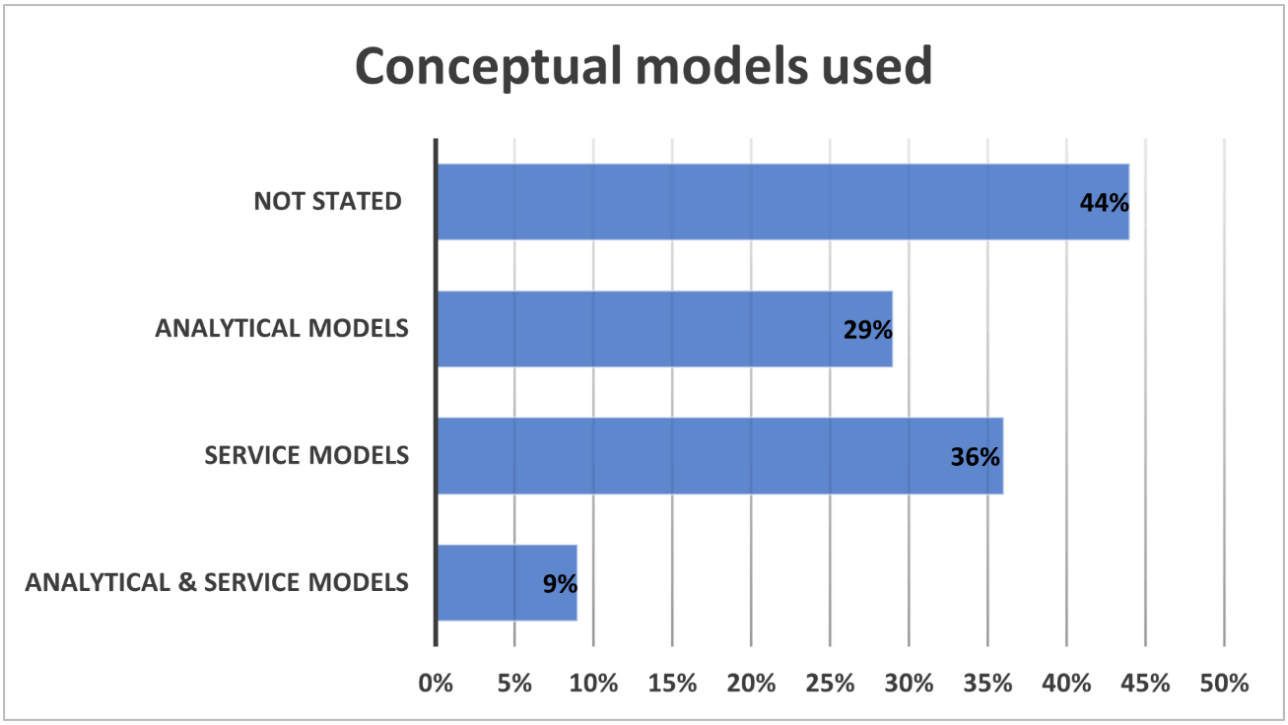
Within the studies classified as partial integration scope, the most frequent health service integration stream was mental and behavioural health services, making up close to one-third of the studies (27 studies, 31%). This was followed by studies classified as HIV, TB, and SRH services (17 studies, 20%); NCDs integration had 16 studies (19%), and MCWH health services had 13 studies (15%). Allied and specialised health services had seven studies (8%) with partial integration, and general PHC services had six studies (7%). In Appendix 16, we presented references for studies categorised as having 'partial integration' scope across health service integration streams.

Of the five studies categorised as mixed, three studies (60%) were HIV, TB, and SRH services, with one study (20%) each from the mental and behavioural health services and allied and specialised services.

7. Conceptual models

About half of the studies (103 studies, 56%) made reference to using any model (analytical, service, or both) (Figure 10). (See the Methods section for details on how we defined 'analytical' and 'service' models.) Of the total sample, less than one-third of studies (53 studies, 29%) reported using an analytical model to guide their study design, implementation, evaluation, or a combination of these; and just over one-third (66 studies, 36%) reported using a service model to describe the integration intervention. Amongst these, some studies (16 studies, 9%) reported using both models.

Figure 10. Conceptual models used in studies



Of the 103 studies that reported any model, 53 studies (51%) reported using an analytical model, while 66 studies (64%) reported using a service model. In Appendix 17, we provided the references for studies in each of these categories.

7.1. Analytical models

A total of 53 studies reported using an analytical model, mostly by itself (37 studies, 70%), or in combination with a service model (16 studies, 30%). Eleven studies (21%) referred to logic models or other frameworks without specifying the name and 42 studies (79%) specified the name of the analytical model. We identified 28 different analytical models that were explicitly named. Most models (18 models, 64%) were referred to in only one study, while 10 models (36%) were referred to twice. The most frequently used model was the Consolidated Framework for Implementation Research (CFIR) which was referred to in four studies. Models referred to in two studies were: Complex Adaptive Systems, Context Mechanism Opportunity (CMO) model, Donabedian's Structure-Process-Outcome Quality of Care Framework, Health System Governance approach, i-PARIHS framework, Organizational theory, Rainbow Integrated Care Model, Realistic Evaluation Method, and the Transtheoretical Model of Behaviour Change. These models included a focus on organisational and behaviour change, as well as on implementation processes and on integration-related processes.

7.2. Service models

Sixty-six studies reported using a service model, either by itself (50 studies, 76%) or in combination with other models (16 studies, 24%). The service models mostly described the intervention components in more detail or referred to named intervention models for PHC integration. Examples of service models included those that focused on generic integrated care, for example, Chronic Disease Model, Community-Based Outreach Model, Collaborative Care Team Model, Consumer-Directed Care Model, and the C2C Task-Shifting Model. Others referred to integration models specific to health programmes, for example, Maternal and Child Health Integrated Program (MCHIP), Interdisciplinary Models of HIV Care, Programme for Improving Mental Health Care (PRIME), Primary Care Behavioral Health (PCBH) Model of Integrated Primary Care, and Integrated Behavioral Health Model of Psychiatry in Pediatric Primary Care.

DISCUSSION

Summary of results

PHC integration has been promoted as a healthcare reform for UHC since the late 1970s, but for a range of reasons, implementation and impact remain variable (Kumar 2016). Healthcare workers are known to shape the success of implementing reform interventions (Erasmus 2011). Understanding healthcare workers' perceptions and experiences of PHC integration can provide insights into the role healthcare workers play in shaping implementation efforts and the impact of PHC integration. However, the heterogeneity of the evidence base complicates our understanding of their role in shaping the implementation, delivery, and impact of PHC integration, and the role of contextual factors influencing their responses. This review provides insights into the diversity of the literature in terms of country contexts, stakeholders, and characteristics of integration interventions, and it identifies gaps in the literature.

Despite a 40-year history of promoting PHC integration, especially in LMICs, and a large evidence base on implementation, we found that most qualitative academic studies on healthcare worker perceptions and experiences of PHC integration were only published since 2011, with a sharp increase since 2016. Recent

growth may be due to renewed interest in PHC integration reform for universal healthcare as advocated in international health goal-setting (Kumar 2016), as well as increased recognition of the influential role of healthcare workers as 'street-level bureaucrats' in delivering on policy reforms (Erasmus 2011).

About 56% of studies were from HIC countries, and the remainder were from LMIC settings (with the bulk of these being from MIC settings). Of note was the dominance of some countries within HICs (nearly half were from the USA), LMICs (nearly one-third were from South Africa), and LICs (Uganda). This dominance (especially from the USA) may be skewing the overall picture, with implications for interpreting the findings. For example, while mental health and behavioural service-related integration was the most frequent type of health service stream (one-third of studies), most of these were from the USA. A similar, though less dramatic skewing was seen in LMICs, with nearly one-third of mental health studies from South Africa. In terms of geographical representation of HICs, there are few European and Nordic countries represented. For MICs, there were gaps in studies from Eastern Europe and the Russian Federation. For LICs, there were fewer studies from Asia (Middle, East, and Southeast Asia), Latin America, and from the African countries north of Sub-Saharan Africa.

The design and implementation of PHC integration interventions are complex. They require appropriate methods for studying complex interventions, such as longitudinal and ethnographic methods, but only two studies used such methods. Further, the use of analytical models can strengthen the study design, deepen theoretical insights, and improve comparability with other studies. Still, less than one-third of studies used an analytical model.

The minority of studies that referred to using an analytical model named 28 different models, but most of those only appeared in one study. The CFIR was referred to the most frequently (Damschroder 2009). This may indicate a growing interest in implementation science research approaches for studying integration interventions. Of interest is that just over one-third of studies referred to using a model or conceptual framework that described the components of the integration intervention service (which we referred to as 'service models'). Some of these service models referred to generic approaches to the integration of primary care services, while others referred to integration models specific or customised for a health service (or both), such as for HIV, mental health, chronic care, and paediatric care.

The major finding in this review is the diversity of the evidence base on healthcare workers' perceptions and experience of PHC integration. There was diversity on several levels. The wide geographic spread has implications for variations in health service contexts, and the implication for how this may influence healthcare worker experience and responses. Other areas of diversity include different configurations of health service streams being integrated as well as the various client target populations who were recipients of integrated care. It is unclear if and how the experience and response of healthcare workers may differ based on the type of health service stream configurations they may be implementing. Nevertheless, it may be worth paying attention to this, as, for example, the complexity of the integrated clinical care being delivered, or the healthcare workers' attitudes to integrated service delivery for certain health services may differ. For instance, integrated delivery of mental health services (often considered more specialised by healthcare workers), with other PHC services, may be considered to have more challenges, than for instance integrated delivery of clinical care for hypertension and diabetes. The scope of integration efforts varied on a continuum of full to partial integration. Another level of diversity was the different strategies used to deliver integrated care (such as service expansion and service linkages). Further, there was diversity in the range of different stakeholders who participated in the research and, by proxy, in the delivery of integrated services; ranging from senior to frontline managers, to clinical staff in different healthcare professions and including community-based stakeholders (such as community healthcare workers and non-governmental organisations).

Comparison with other studies or reviews

This scoping review offers confirmatory evidence of the heterogeneity of the evidence base on PHC integration, and it goes further by characterising the nature of the heterogeneity. Such heterogeneity has been alluded to in the literature on the taxonomy of health integration interventions (Valentijn 2013; Valentijn 2015). This review identified heterogeneity for country contexts, health service streams, type/scope and strategies used, targeted client populations, and participating healthcare workers, all factors that could potentially influence the context of how healthcare workers perceive and experience PHC integration. A review of reviews on evidence-to-practice gaps in complex PHC interventions similarly illustrated diversity on four levels: external context, organisational mechanisms, professionals involved, and the intervention design itself (Lau 2015). The review authors concluded that the "fit" between the intervention and the context is critical in determining the success of implementation (Lau 2015). Other studies point to how different country and health system contexts shape approaches and outcomes of integration interventions (Mounier-Jack 2017; Ryman 2012a), and suggested that greater emphasis should be placed on describing the context and articulating the relationships between the factors they identified (Lau 2015; Mounier-Jack 2017).

Strengths and limitations

There are several limitations to our scoping review. We did not search grey literature, but the comprehensive search identified over 10,000 records for screening and many studies are included in our analysis.

We did not explicitly search databases in languages other than English, so some studies published in other languages may have been missed. We focused on English databases and identified some foreign language studies that were eligible for inclusion. Although we had assistance from colleagues and Google Translate, we are not certain of our assessments of these papers at the full-text stage, given that it was not feasible to obtain full translations. Potentially eligible foreign language papers that we were unable to translate were thus categorised as 'awaiting classification'.

We did not undertake data extraction in duplicate due to feasibility constraints related to the very large data set. However, we performed several quality checks, detailed in the Methods section, to ensure accurate and consistent data extraction between the two main data extractors.

We found inconsistent reporting and gaps in intervention descriptions across studies. This limited the detail we could

extract about the intervention descriptions. In some places, this limited our ability to accurately categorise the scope and strategies involved in delivering the intervention. The absence of standard definitions for key terms, such as full and partial integration, horizontal integration, service expansion, and service linkage, further hampered our efforts at categorisation. While we excluded interventions at the screening stage that used service co-ordination as its core strategy, we found that many included studies used strategies that closely resembled service co-ordination. To avoid confusion, we labelled these as 'service linkage', but there may still be overlap. In the absence of standard definitions, it will remain difficult to distinguish and categorise differences in integration scope and strategies. Limited intervention description is common in reporting on health systems and researchers may want to consider the use of frameworks to guide their reporting of interventions, such as the template for intervention description and replication (TIDieR) framework (Hoffmann 2014).

The search date was July 2020. As the review identified large numbers of included studies, we suggest that it is unlikely that additional studies published since the last search would change the review findings in important ways. Further, any future QES would be identifying further updated sources, and would most likely need to sample from their included studies, as a large number of studies would create challenges for qualitative analysis. Furthermore, it is uncertain if different types of integration strategies may have emerged had we searched grey literature.

AUTHORS' CONCLUSIONS

Implications for a subsequent qualitative evidence review

This scoping review provides a systematic, descriptive overview of the heterogeneity in qualitative literature on healthcare worker views of primary healthcare (PHC) integration, pointing to diversity in country settings, study types, target client populations, healthcare worker populations, intervention focus, scope, and strategies. It would be important for researchers and decision-makers to understand how the diversity in PHC integration intervention design, implementation, and context may influence how healthcare workers shape PHC integration impact. Our classification of studies along various dimensions (e.g. integration focus, strategy, type of healthcare worker) can help to navigate the way the literature varies and to specify potential questions for future qualitative evidence syntheses. In the next step, a full qualitative evidence synthesis on healthcare workers' perceptions and experience of PHC integration would be informative for decision-makers. Research investigating and synthesising evidence on healthcare workers' experience needs to take account this diversity in the evidence base by, for example, designing more focused research questions, and by paying closer attention to how the diverse characteristics of studies point to complexity and the need for more nuanced understanding of healthcare workers' perceptions and experiences of PHC integration.

Future synthesis questions to consider could include the following.

- How do healthcare workers' perceptions and experience of PHC integration differ in terms of country and health service context, interventions focus, scope, and complexity of the intervention?
- How do the perceptions and experiences of healthcare workers compare in terms of the different roles they play in implementing PHC integration? For example, as policymakers and planners, managers at different levels of the health systems, clinical oversight roles, frontline workers, and support staff.
- How might varied management styles and approaches, resource demands, and implementation support mechanisms differ across the different approaches to integration and be shaping healthcare workers' responses to PHC integration?
- What are the common models of integrated care, and how might healthcare workers' experience of integration differ across these models?

The categories in this scoping review can help identify further questions for evidence synthesis, for example, questions could focus on synthesising evidence on specific health stream integration approaches; different types and levels of complexity of the integrated care that is being delivered (e.g. mental health, non-communicable diseases (NCDs), or broader and cross-cutting PHC service systems); or on countries with comparable health system contexts. Another area for synthesis is studying the experience of different cadres of healthcare workers depending on their role as implementers (and recipients) of the intervention.

Categories of heterogeneity identified in this review could also help to inform the development of search terms to more accurately focus the search strategy for synthesis questions. It could also guide criteria for sampling strategies in future qualitative evidence synthesis studies.

As noted earlier, the evaluation of complex interventions such as PHC integration would benefit from in-depth research methods, but we found only two studies that used longitudinal methods that may be better suited for in-depth study. This has implications for future qualitative evidence syntheses that may, in the absence of such in-depth studies, have to rely on less in-depth data sources.

Implications for research

The complex and dynamic nature of PHC integration as a health reform requires that we produce evidence that can provide rich, in-depth descriptions and analyses of the implementation processes and the responses of stakeholders. Key research areas to consider include:

- use of more in-depth qualitative and mixed-method research designs. Specifically, research methods using longitudinal and ethnographic research suitable for studying complex health interventions;
- use of conceptual frameworks to guide the design, implementation, and evaluation of integration interventions. Frameworks that can help to deepen insights and promote comparability across different interventions. Some of the implementation frameworks mentioned in this scoping review could present a starting point;
- use of PHC integration service models for guiding the design of the integration intervention. Design of new integration interventions may gain from drawing on existing models of integrated care;
- broader geographical representation in studies, in both high-income countries and low- to middle-income countries (LMICs);
- with the growing burden of NCDs and comorbidity in LMICs, more NCD-related integration research in LMICs is needed, as these were under-represented in the literature;

- expand the range of healthcare worker stakeholders studied, to increase inclusion of policymakers and managerial level staff, as well as the non-clinical staff who may be responsible for health system support services (such as those working in human resource management, information, and supply systems);
- including an equity lens in the evaluation of integration interventions;
- including clients utilising integrated healthcare services. Although not the focus of this scoping review, client voices and the effects of interactions between clients and healthcare workers, are important areas for research.

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The following people conducted the editorial process for this review.

- Sign-off Editor (final editorial decision): Simon Lewin, Norwegian University of Science and Technology.
- Managing Editors (selected peer reviewers, collated peer reviewer comments, provided editorial guidance to authors, edited the article): Elizabeth Paulsen, Cochrane EPOC and Luisa Fernandez Mauleffinch, Cochrane Central Editorial Service.
- Copy Editor (copyediting and production): Anne Lawson, Cochrane Central Production Service.
- Peer reviewers (provided comments and recommended an editorial decision): Heather Menzies Munthe-Kaas, Centre for Epidemic Intervention Research, Norwegian Institute of Public Health (methods review); Angela Harden, University of London (methods review); Dena Javadi, Harvard School of Public Health (clinical/content review); Steve McDonald, Cochrane Australia (search review). One of additional peer reviewers provided clinical peer review but chose not to be publicly acknowledged.

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CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Aantjes 2014

Study characteristics
Notes

Acri 2018

Study characteristics
Notes

Aerts 2020

Study characteristics
Notes

Aitken 2014

Study characteristics
Notes

Akatukwasa 2019

Study characteristics
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Aleluia 2017

Study characteristics

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Allen 1997

Study characteristics

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Allen 2007

Study characteristics

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Allen 2015

Study characteristics

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Ameh 2017

Study characteristics

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Amo-Adjei 2014

Study characteristics

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An 2015a

Study characteristics

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An 2015b

Study characteristics

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Anand 2018

Study characteristics

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Anku 2020

Study characteristics

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Athié 2016

Study characteristics

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Ayon 2019

Study characteristics

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Baker 2007

Study characteristics

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Baker 2018

Study characteristics

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Banfield 2017

Study characteristics

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Beckingsale 2016

Study characteristics

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Beehler 2017

Study characteristics

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Beere 2019

Study characteristics

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Benjumea-Bedoya 2019

Study characteristics

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Benson 2018

Study characteristics

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Bentham 2015

Study characteristics

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Bentley 2015

Study characteristics

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Berkel 2019

Study characteristics

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Bernard 2016

Study characteristics

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Billings 2019

Study characteristics

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Blasi 2018

Study characteristics

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Bradley 2008

Study characteristics

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Brooks 2020

Study characteristics

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Burgess 2016

Study characteristics

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Busch 2013

Study characteristics

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Busetto 2015

Study characteristics

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Butler 2018

Study characteristics

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Carman 2019

Study characteristics

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Church 2015

Study characteristics

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Cifuentes 2015

Study characteristics

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Clark 2017

Study characteristics

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Cole 2015

Study characteristics

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Cooper 2020

Study characteristics

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Davis 2015

Study characteristics

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Dayton 2019

Study characteristics

Notes

De Lusignan 2020

Study characteristics

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De Nóbrega 2014

Study characteristics

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Derrett 2014

Study characteristics

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Donnelly 2013

Study characteristics

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Douglas 2017

Study characteristics

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Duma 2019

Study characteristics

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Dunbar 2018

Study characteristics

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Edelman 2016

Study characteristics

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Fitzpatrick 2017

Study characteristics

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Fitzpatrick 2018

Study characteristics

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Fleury 2016

Study characteristics

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Fong 2019

Study characteristics

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Foster 2009

Study characteristics

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Foster 2016

Study characteristics

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Gadomski 2014

Study characteristics

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Gavin 2008

Study characteristics

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Gear 2016

Study characteristics

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Geelhoed 2013

Study characteristics

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Gerber 2018

Study characteristics

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Gerrish 1999

Study characteristics

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Ghorbani 2018

Study characteristics

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Glasgow 2012

Study characteristics

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Greene 2016

Study characteristics

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Gucciardi 2016

Study characteristics

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Gunn 2015

Study characteristics

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Haddow 2007

Study characteristics

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Harnagea 2018

Study characteristics

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Hepworth 2015

Study characteristics

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Hlongwa 2019

Study characteristics

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Hunter 2018

Study characteristics

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Ion 2017

Study characteristics

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Jacobs 2012

Study characteristics

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Jauregui 2016

Study characteristics

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Jewett 2013

Study characteristics

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Johnson 2020

Study characteristics

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Jorgenson 2014

Study characteristics

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Kawonga 2016

Study characteristics

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Khan 2018

Study characteristics

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Kirchner 2004

Study characteristics

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Lane 2017

Study characteristics

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Langer 2014

Study characteristics

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Lawn 2014

Study characteristics

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Limbani 2019

Study characteristics

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Lombard 2009

Study characteristics

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Lovero 2019

Study characteristics

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Lucas 2016

Study characteristics

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Ma 2018

Study characteristics

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Main 2007

Study characteristics

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Malachowski 2019

Study characteristics

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Marais 2015

Study characteristics

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Martin 2018

Study characteristics

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Mathibe 2015

Study characteristics

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Mayer 2016

Study characteristics

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Mayhew 2017

Study characteristics

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McGeehan 2007

Study characteristics

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McNamara 2020

Study characteristics

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Meyer-Kalos 2017

Study characteristics

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Miguel-Esponda 2020

Study characteristics

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Mishra 2014

Study characteristics

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Mugisha 2016

Study characteristics

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Mulenga 2019

Study characteristics

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Murphy 2018

Study characteristics

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Mutabazi 2020

Study characteristics

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Mutemwa 2013

Study characteristics

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Mykhalovskiy 2009

Study characteristics

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Ndwiga 2014

Study characteristics

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Nelson 2019

Study characteristics

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Newell 2018

Study characteristics

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Newmann 2013

Study characteristics

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Newmann 2016

Study characteristics

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Nooteboom 2020

Study characteristics

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Norfleet 2016

Study characteristics

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Nxumalo 2013

Study characteristics

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Oishi 2003

Study characteristics

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Ojikutu 2014

Study characteristics

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Okot-Chono 2009

Study characteristics

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Oliff 2003

Study characteristics

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Patwa 2019

Study characteristics

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Payne 2017

Study characteristics

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Peer 2020

Study characteristics

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Pereira 2011

Study characteristics

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Petersen 2009

Study characteristics

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Petersen 2011

Study characteristics

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Petersen 2019

Study characteristics

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Pfitzer 2019

Study characteristics

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Pidano 2011

Study characteristics

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Piper 2018

Study characteristics

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Piper 2020

Study characteristics

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Porter 2002

Study characteristics

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Ramanuj 2018

Study characteristics

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Reinschmidt 2017

Study characteristics

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Rissi 2015

Study characteristics

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Robertson 2018

Study characteristics

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Rodriguez 2006

Study characteristics

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Rodriguez 2019

Study characteristics

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Rojas 2015

Study characteristics

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Ross 2000

Study characteristics

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Ryman 2012b

Study characteristics

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Ryman 2012c

Study characteristics

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Sakeah 2014

Study characteristics

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Savickas 2020

Study characteristics

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Shattell 2011

Study characteristics

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Shelley 2019

Study characteristics

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Sheth 2020

Study characteristics

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Shin 2018

Study characteristics

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Shrivastava 2020a

Study characteristics

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Shrivastava 2020b

Study characteristics

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Siantz 2018

Study characteristics

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Sieverding 2016

Study characteristics

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Sinai 2018

Study characteristics

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Smit 2012

Study characteristics

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Sobo 2008

Study characteristics

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Souza 2019

Study characteristics

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Souza Gleriano 2019

Study characteristics

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Ssebunnya 2010

Study characteristics

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Stadnick 2020

Study characteristics

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Surjaningrum 2018

Study characteristics

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Tai-Seale 2010

Study characteristics

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Terry 2018

Study characteristics

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Topp 2010

Study characteristics

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Topp 2013

Study characteristics

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Treloar 2014

Study characteristics

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Tsasis 2012

Study characteristics

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Tshililo 2019

Study characteristics

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Tsui 2018

Study characteristics

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Uebel 2013

Study characteristics

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Urada 2014

Study characteristics

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Uwimana 2013

Study characteristics

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Venables 2016

Study characteristics

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Venancio 2016

Study characteristics

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Vestjens 2018

Study characteristics

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Vickers 2013

Study characteristics

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Wakida 2018

Study characteristics

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Wakida 2019

Study characteristics

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Wallace 2013

Study characteristics

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Wallace 2014

Study characteristics

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Waterworth 2015

Study characteristics

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Wener 2016

Study characteristics

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Wiese 2011

Study characteristics

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Wilunda 2017

Study characteristics

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Yessimov 2019

Study characteristics

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Young 2019

Study characteristics

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Zimbudzi 2019

Study characteristics
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Zotti 2010

Study characteristics
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Zulu 2015

Study characteristics
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Zulu 2019

Study characteristics
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Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Adeokun 2002	Ineligible outcome
Aguirre 2013	Ineligible population outcome
Aguirre-Duarte 2015	Ineligible intervention
Ahmed 2015	Ineligible study design
Almeida 2018	Ineligible intervention
Altabaibeh 2020	Ineligible setting
Anastas 2019	Ineligible setting
Anderson 2016	Ineligible study design
Angus 2018	Ineligible outcome
Antunes 2019	Ineligible intervention
Atchison 2018	Ineligible study design

Study	Reason for exclusion
Au 2018	Ineligible intervention
Aufegger 2020	Ineligible intervention
Aune 2014	Ineligible intervention
Ayangade 1984	Ineligible study design
Bagayogo 2018	Ineligible setting
Bajorek 2015	Hypothetical intervention
Balira 2015	Ineligible study design
Baltaxe 2019	Ineligible intervention
Barchi 2009	Ineligible intervention
Barclay 2019	Ineligible intervention
Bardwell 2019	Ineligible intervention
Barraclough 2016	Hypothetical intervention
Barros 2019	Ineligible intervention
Bauman 2013	Ineligible setting
Baxter 2002	Ineligible intervention
Baxter 2009	Ineligible intervention
Benzer 2015	Ineligible setting
Berenson 2016	Ineligible intervention
Bergmark 2018	Ineligible outcome population
Bertrand 2010	Ineligible intervention
Bhattacharyya 2016	Ineligible study design
Blakey 2014	Ineligible outcome population
Boehmer 2019	Ineligible outcome population
Bourgeault 2000	Ineligible intervention
Bracey 2010	Ineligible intervention
Brant 2020	Ineligible study design
Brechat 2018	Ineligible study design
Breton 2019	Ineligible setting

Study	Reason for exclusion
Brindis 2005	Ineligible outcome
Briones-Vozmediano 2018	Ineligible setting
Brook 2017	Ineligible intervention
Brousselle 2010	Ineligible setting
Byrne 2019	Hypothetical intervention
Carroll 2018	Hypothetical intervention
Cash-Gibson 2014	Ineligible outcome
Catalao 2018	Ineligible study design
Chubak 2012	Hypothetical intervention
Coelho 2018	Ineligible outcome population
Contandriopoulos 2015	Ineligible outcome
Cooper 2015	Hypothetical intervention
Correa 2018	Ineligible outcome population
DeBoer 2019	Hypothetical intervention
Dhondt 2017	Ineligible outcome population
Duffy 2017	Ineligible outcome
Evans 2016	Ineligible outcome population
Fernandes 2014	Ineligible outcome population
Freeman 2012	Hypothetical intervention
French 2006	Hypothetical intervention
Hallberg 2005	Hypothetical intervention
Henao-Martinez 2008	Ineligible outcome
Ingram 2019	Ineligible outcome
Kaehne 2016	Ineligible outcome

Characteristics of studies awaiting classification *[ordered by study ID]*

Amelung 2015

Notes	German study, full text was translated. However, the translated data were not sufficient for data extraction.

Aoki 2017

Notes	Portuguese study, full text not translated. We could not find a translator.

da Silva Bastos 2011

Notes	Portuguese study, full text not translated. We could not find a translator.

Kondo 2014

Notes	Japanese study, full text was not translated. We could not find a translator.

Rodrigues 2010

Notes	Portuguese study, full text was not translated. We could not find a translator.

Ruppert 2017

Notes	German study, full text was translated. However, the translated data were not sufficient for data extraction.

Santos 2011a

Notes	Portuguese study, full text was not translated. We could not find a translator.

Villela 2009

Notes	Portuguese study, full text was not translated. We could not find a translator.

Characteristics of ongoing studies *[ordered by study ID]*

Wodchis 2018

Study name	A research program on implementing Integrated Care for Older Adults with Complex Health Needs (iCOACH): an international collaboration
Starting date	

Wodchis 2018 *(Continued)*

Contact information	walter.wodchis@utoronto.ca
Notes	

ADDITIONAL TABLES

Table 1. Items extracted and their subcategories

1. Study ID: author – publication, date, title, aim
2. Study methods: study design, data source
3. Setting: income level, country, urban/rural, healthcare level
4. Target client population to receive the intervention
5. Research participants
6. The intervention description:
6.1. Health service streams that were being integrated
6.2. The scope of the integration intervention (e.g. full or partial)
6.3. Intervention strategies used
7. Conceptual models used in the study

Table 2. Integration strategies within full and partial integration

Full integration
1. Horizontal integration strategy
2. Service expansion strategy
3. Service linkage strategy
4. Service expansion and linkage strategy
Partial integration
1. Service expansion strategy
2. Service linkage strategy
3. Service expansion and linkage strategy

Table 3. Characteristics of excluded studies

Study	Reason for exclusion

Table 3. Characteristics of excluded studies *(Continued)*

1. Ahmed 2015	Ineligible study design
2. Anderson 2016	
3. Atchison 2018	
4. Ayangade 1984	
5. Balira 2015	
6. Bhattacharyya 2016	
7. Brant 2020	
8. Brechat 2018	
9. Catalao 2018	
1. Aguirre-Duarte 2015	Ineligible intervention
2. Almeida 2018	
3. Antunes 2019	
4. Au 2018	
5. Aufegger 2020	
6. Aune 2014	
7. Baltaxe 2019	
8. Barchi 2009	
9. Barclay 2019	
10. Bardwell 2019	
11. Barros 2019	
12. Baxter 2002	
13. Baxter 2009	
14. Berenson 2016	
15. Bertrand 2010	
16. Bourgeault 2000	
17. Bracey 2010	
18. Brook 2017	
1. Bajorek 2015	Hypothetical intervention

Table 3. Characteristics of excluded studies *(Continued)*

2. Barraclough 2016	
3. Byrne 2019	
4. Carroll 2018	
5. Chubak 2012	
6. Cooper 2015	
7. DeBoer 2019	
8. Freeman 2012	
9. French 2006	
1. Adeokun 2002	Ineligible outcome
2. Angus 2018	
3. Brindis 2005	
4. Cash-Gibson 2014	
5. Contandriopoulos 2015	
6. Duffy 2017	
7. Henao-Martinez 2008	
8. Ingram 2019	
9. Kaehne 2016	
1. Aguirre 2013	Ineligible outcome population
2. Bergmark 2018	
3. Blakey 2014	
4. Boehmer 2019	
5. Coelho 2018	
6. Correa 2018	
7. Dhondt 2017	
8. Evans 2016	
9. Fernandes 2014	
1. Altabaibeh 2020	Ineligible setting
2. Almeida 2018	

Table 3. Characteristics of excluded studies *(Continued)*

3. Anastas 2019
4. Bagayogo 2018
5. Bauman 2013
6. Benzer 2015
7. Breton 2019
8. Briones-Vozmediano 2018
9. Brousselle 2010

Table 4. Key characteristics of included studies and key indicators

Author, publication date	Study design	Country income level	Country	Patient target group	Research participants	Health service streams integrated	Integration type and scope (FI or PI)
Aantjes 2014	Mixed methods	LMIC	Malawi, Zambia, South Africa, Ethiopia	General PHC and HIV patients	• Provincial managers and policymakers • Clinical managers • Health system support staff • Civil society	HIV, TB, SRH	FI: service expansion and linkage
Acri 2018	Qualitative	HIC	USA	Children 5–18 years old	• Clinical health workers	Mental and behavioural health	PI: service expansion
Aerts 2020	Qualitative	HIC	Belgium	PHC patients with chronic disease	• Clinical health workers	NCDs	FI: service expansion and linkage
Aitken 2014	Qualitative	HIC	Australia	General PHC patients	• Clinical managers • Clinical health workers • Health system support staff • Health system advisors	PHC and other services	FI: service expansion and linkage
Akatukwasa 2019	Qualitative	MIC	Uganda	Youth with SRH service needs	• District managers • Clinical managers • Clinical health workers • Lay workers • Health system advisors	HIV, TB, and SRH	FI: horizontal
Aleluia 2017	Qualitative	MIC	Brazil	PHC patients with diabetes and hypertension	• Provincial managers and policymakers • District managers • Clinical managers • Clinical health workers	NCDs	FI: service linkage
Allen 1997	Mixed methods	HIC	New Zealand	Community members and patients in need of mental health services	• Clinical health workers • Health system support staff	Mental and behavioural health	FI: service expansion and linkage
Allen 2007	Qualitative	HIC	Australia	Population who utilises acute and community health services	• District managers • Clinical health workers	PHC and other services	FI: service linkage

Table 4. Key characteristics of included studies and key indicators *(Continued)*

					• Health system support staff • Health system advisors		
Allen 2015	Mixed methods	HIC	USA	Community members with chronic disease needs community members with high care needs	• Lay health workers	NCDs	PI: service expansion
Ameh 2017	Qualitative	MIC	South Africa	People with chronic diseases	• Clinical health workers	NCDs	FI: service expansion and linkage
Amo-Adjei 2014	Qualitative	MIC	Ghana	People with TB	• Clinical health workers	HIV, TB, SRH	FI: horizontal
An 2015a; An 2015b	Mixed methods	MIC	Tanzania	Women attending antenatal care	• Clinical health workers	HIV, TB, and SRH	Mixed: FI + PI
Anand 2018	Qualitative	MIC	India	People with TB	• Clinical managers • Clinical health workers	NCDs	PI: service expansion
Anku 2020	Qualitative	MIC	Ghana	People with TB or HIV, or both	• Clinical health workers	HIV, TB, and SRH	FI: horizontal
Athié 2016	Mixed methods	MIC	Brazil	General PHC patients	• Clinical managers • Clinical health workers	Mental and behavioural health	FI: service expansion and linkage
Ayon 2019	Mixed methods	MIC	Kenya	Women who inject drugs	• Lay health workers • Civil society	Mental and behavioural health	PI: service expansion and linkage
Baker 2007	Mixed methods	MIC	Dominican Republic	Lymphatic filariasis patients	• Clinical health workers	PHC, allied and specialised services	FI: service expansion
Baker 2018	Qualitative	MIC	Tanzania	Patients accessing maternal and newborn services at PHC and hospitals	• Clinical health workers	MCWH	PI: service linkage
Banfield 2017	Qualitative	HIC	Australia	PHC patients, especially patients at risk for NCDs, seeking care via the public-private partnership	• Clinical managers • Clinical health workers • Health system support staff	NCDs	FI: service expansion and linkage

Table 4. Key characteristics of included studies and key indicators *(Continued)*

Beckingsale 2016	Qualitative	HIC	New Zealand	People with chronic diseases	• Allied health workers	PHC, allied and specialised services	PI: service expansion and linkage
Beehler 2017	Mixed methods	HIC	USA	People with mental health problems	• Clinical health workers • Allied health workers	Mental and behavioural health	FI: service expansion and linkage
Beere 2019	Mixed methods	HIC	Australia	People with mental health problems	• Clinical managers • Clinical health workers • Health system support staff	Mental and behavioural health	FI: service expansion and linkage
Benjumea-Bedoya 2019	Mixed methods	HIC	Canada	Refugees in need of TB services	• Clinical health workers	HIV, TB, and SRH	PI: service expansion and linkage
Benson 2018	Mixed methods	HIC	Australia	People with complex medication regimens or multiple comorbidities, or both	• Clinical health workers • Allied health workers	PHC, allied and specialised services	FI: service expansion and linkage
Bentham 2015	Mixed methods	HIC	USA	People in need of anxiety and depression services	• Clinical health workers	Mental and behavioural health	FI: service expansion and linkage
Bentley 2015	Mixed methods	HIC	USA	Aged care patients in PHC or GP practices	• Clinical health workers	PHC and other services	PI: service linkage
Berkel 2019	Qualitative	HIC	USA	All PHC patients	• Clinical health workers	Mental and behavioural health	FI: service expansion and linkage
Bernard 2016	Mixed methods	HIC	USA	People living with HIV	• Clinical managers • Clinical health workers • Health system support staff	HIV, TB, and SRH	FI: service expansion and linkage
Billings 2019	Qualitative	HIC	UK	PHC facility, community service and home care service users	• Clinical managers • Clinical health workers • Health system support staff	PHC and other services	FI: horizontal
Blasi 2018	Qualitative	HIC	USA	PHC patients with behavioural health needs, includ-	• Clinical health workers	Mental and behavioural health	FI: service expansion and linkage

Table 4. Key characteristics of included studies and key indicators *(Continued)*

				ing support for managing of chronic disease			
Bradley 2008	Qualitative	HIC	UK	All PHC patients – for medication review	• Clinical health workers • Allied health workers	PHC, allied and specialised services	FI: service expansion and linkage
Brooks 2020	Qualitative	HIC	USA	People with substance use disorder seeking care in outpatient PHC settings	• Clinical health workers	Mental and behavioural health	PI: service expansion and linkage
Burgess 2016	Qualitative	MIC	South Africa	People with mental health needs	• Clinical health workers	Mental and behavioural health	PI: service expansion and linkage
Busch 2013	Qualitative	HIC	Netherlands	New parents and their children	• Clinical managers • Clinical health workers	PHC and other services	FI: service expansion and linkage
Busetto 2015	Qualitative	HIC	Netherlands	People with diabetes and geriatric chronic care patients	• Clinical managers • Clinical health workers	NCDs	FI: service expansion + linkage
Butler 2018	Qualitative	HIC	USA	People with mental health needs receiving care at PHC level	• Clinical managers • Clinical health worker	Mental and behavioural health	FI: service expansion and linkage
Carman 2019	Qualitative	HIC	USA	All PHC patients	• Clinical health workers • Health system support staff	PHC and other services	FI: service expansion and linkage
Church 2015	Mixed methods	MIC	Eswatini	People with HIV	• Clinical health workers	HIV, TB, and SRH	Mixed: FI + PI
Cifuentes 2015	Mixed methods	HIC	USA	People with behavioural health	• Clinical health workers	Mental and behavioural health	PI: service expansion and linkage
Clark 2017; Davis 2015; Gunn 2015	Mixed methods	HIC	USA	Health users in PHC with behavioural and mental health needs	• District managers • Clinical managers • Clinical health workers • Health system support staff	Mental and behavioural health	FI: service expansion and linkage

Table 4. Key characteristics of included studies and key indicators *(Continued)*

Cole 2015	Qualitative	HIC	USA	Uninsured patients in PHC services	• Clinical managers • Clinical health workers • Health system support staff	PHC, allied and specialised services	FI: service expansion and linkage
Cooper 2020	Mixed methods	LIC	Malawi	Mother bringing in their children for immunisation Mothers who were seeking family planning	• Clinical health workers • Lay health workers • Civil society	MCWH	FI: service expansion and linkage
Dayton 2019	Mixed methods	MIC	Dominican Republic	People using HIV services especially those vulnerable to gender-based violence, e.g. men who had sex with men, commercial sex workers, transgender people	• Clinical health workers • Lay health workers	HIV, TB, and SRH	PI: service expansion and linkage
De Lusignan 2020	Mixed methods	HIC	UK	People suspected to have influenza	• Clinical health workers	PHC, allied and specialised services	PI: service expansion
De Nóbrega 2014	Qualitative	MIC	Brazil	Men	• Provincial managers and Policymakers • Clinical health workers	PHC and other services	FI: service expansion and linkage
Derrett 2014	Qualitative	HIC	USA	Rural patients accessing PHC services	• District managers • Clinical managers • Clinical health workers • Lay health workers • Health system support staff	PHC and other services	FI: service expansion and linkage
Donnelly 2013	Qualitative	HIC	Canada	PHC patients	• District managers • Clinical managers • Clinical health workers • Lay health workers • Health system support staff	PHC, allied and specialised services	FI: service expansion and linkage
Douglas 2017	Qualitative	HIC	Australia	People using geriatric care at PHC level	• Clinical managers • Clinical health workers • Health system support staff	PHC and other services	FI: service expansion and linkage

Table 4. Key characteristics of included studies and key indicators *(Continued)*

Duma 2019	Qualitative	LIC	Malawi	Women in need of HIV or SRH (or both) services	• Clinical health workers	HIV, TB, and SRH	FI: service expansion and linkage
Dunbar 2018	Qualitative	HIC	USA	People using mental health services at PHC and community-based centre level	• Health system advisors • Civil society members	Mental and behavioural health	FI: service expansion and linkage
Edelman 2016	Qualitative	HIC	USA	People in need of mental health services	• Clinical health workers • Allied health workers	Mental and behavioural health	FI: service expansion and linkage
Fitzpatrick 2017; Fitzpatrick 2018	Qualitative	HIC	Australia	People with mental health problems in rural areas	• Clinical health workers	Mental and behavioural health	FI: service expansion
Fleury 2016	Mixed methods	HIC	Canada	People with mental health problems in primary care	• District managers • Clinical managers • Clinical health workers • Allied health workers	Mental and behavioural health	FI: service expansion
Fong 2019	Qualitative	HIC	USA	General paediatric population in need of behavioural health services	• Clinical health workers • Lay health workers • Health system support staff	Mental and behavioural health	FI: service expansion
Foster 2009	Mixed methods	HIC	Australia	People receiving chronic care treatment by general practitioners	• Allied health workers	PHC, allied and specialised services	PI: service expansion
Foster 2016	Qualitative	HIC	Australia	People with complex diabetes	• Clinical managers • Clinical health workers	NCDs	FI: service expansion
Gadomski 2014	Qualitative	HIC	USA	Children and adolescents	• Health system support staff	Mental and behavioural health	PI: service expansion
Gavin 2008	Qualitative	HIC	Ireland	PHC patients with mental health needs – for detecting people with serious mental health disease (psychosis)	• Clinical health workers	Mental and behavioural health	PI: service expansion
Gear 2016	Qualitative	HIC	New Zealand	People in need of family violence services at PHC level	• Clinical managers • Clinical health workers	Mental and behavioural health	PI: service expansion

Table 4. Key characteristics of included studies and key indicators *(Continued)*

					• Allied health workers • Lay workers • Health system support staff • Health system advisors		
Geelhoed 2013	Mixed methods	LIC	Mozambique	Mothers who accessing maternal and child healthcare services	• Clinical health workers	MCWH	FI: horizontal
Gerber 2018	Mixed methods	MIC	South Africa	People in need of mental healthcare care services in PHC	• Clinical health workers	Mental and behavioural health	FI: service expansion and linkage
Gerrish 1999	Qualitative	HIC	UK	General PHC patients	• Clinical manager • Clinical health workers • Health system support staff	PHC and other services	FI: service expansion and linkage
Ghorbani 2018	Qualitative	MIC	Iran	Mothers and children needing access to oral health care at PHC level	• Provincial managers and policymakers • Clinical managers • Clinical health workers • Allied health workers	PHC, allied and specialised services	PI: service expansion
Glasgow 2012	Mixed methods	HIC	USA	People with diabetes in PHC	• Clinical health workers	NCDs	PI: service expansion
Greene 2016	Mixed methods	HIC	USA	Children in paediatric care services who need access to mental health services	• Clinical health workers	Mental and behavioural health	PI: service linkage
Gucciardi 2016	Qualitative	HIC	Canada	People with diabetes at PHC	• Clinical health workers • Lay health workers	NCDs	PI: service expansion and linkage
Haddow 2007	Qualitative	HIC	UK	PHC patients requiring assistance with accessing unscheduled health care at PHC and hospital levels	• Provincial managers and policymakers • Clinical health workers • Health system support staff	PHC and other services	FI: service linkage
Harnagea 2018	Qualitative	HIC	Canada	Children in need of oral care	• Clinical health workers • Lay health workers	PHC, allied and specialised services	PI: service expansion and linkage

Table 4. Key characteristics of included studies and key indicators *(Continued)*

Hepworth 2015	Qualitative	HIC	Australia	Aboriginal and Torres Strait Islander people in need of mental health and chronic disease services	• Clinical health workers • Allied health workers • Lay health workers	Mental and behavioural health	FI: service expansion and linkage
Hlongwa 2019	Qualitative	MIC	South Africa	People in need of mental health services	• Clinical managers • Clinical health workers • Health system advisors	Mental and behavioural health	FI: service expansion and linkage
Hunter 2018	Mixed methods	HIC	USA	People in need of substance use disorder services in PHC	• Provincial managers and Policymakers • District managers • Clinical Managers • Clinical health workers • Health system advisors	Mental and behavioural health	FI: service expansion
Ion 2017	Mixed methods	HIC	Canada	People in need of mental health care at PHC	• Clinical health workers • Allied health workers • Health system support staff	Mental and behavioural health	PI: service expansion and linkage
Jacobs 2012	Qualitative	MIC	Lao	Mothers and children accessing immunisation and mother and child health services	• Provincial managers and Policymakers • District managers • Clinical managers • Clinical health workers • Civil society members	MCWH	PI: service expansion and linkage
Jauregui 2016	Mixed methods	HIC	Spain	People in chronic care with multimorbidity	• Clinical health workers	NCDs	PI: service Linkage
Jewett 2013	Qualitative	HIC	USA	People in need of hepatitis C virus services	• Clinical health workers • Health system support staff	HIV, TB, and SRH	PI: service expansion
Johnson 2020	Qualitative	MIC	India	People with diabetes in need of mental health services for depression	• Clinical health workers • Lay health workers	Mental and behavioural health	PI: service expansion and linkage
Jorgenson 2014	Qualitative	HIC	Canada	People in need of medication review	• Clinical managers • Lay health workers	PHC, allied and specialised services	FI: service expansion and linkage

Table 4. Key characteristics of included studies and key indicators *(Continued)*

Kawonga 2016	Qualitative	MIC	South Africa	People with HIV	• Clinical managers • Clinical health workers	HIV, TB, and SRH	FI: horizontal
Khan 2018	Mixed methods	MIC	Pakistan	PHC patients using hypertension care services	• Clinical health workers • Allied health workers	NCDs	PI: service expansion and linkage
Kirchner 2004	Qualitative	HIC	USA	People in need of mental health and substance use services	• Clinical health workers • Allied health workers • Health system support staff	Mental and behavioural health	PI: service expansion
Lane 2017	Qualitative	HIC	Australia	PHC patients in need of comprehensive clinical and allied medicine care	• Clinical health workers	PHC, allied and specialised services	PI: service expansion and linkage
Langer 2014	Qualitative	HIC	UK	People with chronic obstructive pulmonary disease in PHC in need of psychosocial and mental health services	• Clinical health workers • Allied health workers • Lay health workers	Mental and behavioural health	PI: service expansion and linkage
Lawn 2014	Qualitative	HIC	Australia	All PHC patients	• Clinical health workers	PHC and other services	FI: service expansion and linkage
Limbani 2019	Mixed methods	MIC	South Africa	People with chronic illnesses in rural PHC	• Clinical managers • Clinical health workers • Lay health workers	NCDs	PI: service expansion and linkage
Lombard 2009	Qualitative	HIC	USA	People diagnosed with HIV, sexual abuse, and mental illness	• Clinical managers • Clinical health workers • Allied health workers	Mental and behavioural health	PI: service expansion and linkage
Lovero 2019	Mixed methods	MIC	South Africa	People with TB and people in need of mental health services	• District managers • Clinical health workers	Mental and behavioural health	PI: service expansion
Lucas 2016	Qualitative	HIC	Australia	People with chronic disease at PHC facilities and community-based services	• Clinical health workers • Allied health workers	NCDs	PI: service linkage
Ma 2018	Qualitative	HIC	USA	Asian-American immigrants attending PHC	• Clinical health workers	Mental and behavioural health	FI: service expansion and linkage

Table 4. Key characteristics of included studies and key indicators *(Continued)*

Main 2007	Qualitative	HIC	UK	People visiting general PHC and general practitioners	• Clinical health workers	PHC and other services	FI: service expansion
Malachowski 2019	Qualitative	HIC	Canada	People with mental health care needs	• Clinical health workers	PHC and other services	FI: service expansion and linkage
Marais 2015	Qualitative	MIC	South Africa	People with mental health care needs in PHC	• Provincial managers and Policymakers • District managers • Clinical managers • Clinical health workers	Mental and behavioural health	FI: service expansion
Martin 2018	Qualitative	MIC	Kenya	Pregnant women receiving antenatal care	• Clinical health workers	MCWH	PI: service expansion
Mathibe 2015	Qualitative	MIC	South Africa	People with HIV receiving antiretroviral treatment	• Clinical health workers	HIV, TB, and SRH	Mixed: FI + PI
Mayer 2016	Qualitative	HIC	USA	People with diabetes and other chronic disease receiving care in PHC and community centres	• Clinical managers • Clinical health workers	NCDs	PI: service expansion
McGeehan 2007	Qualitative	HIC	USA	General PHC patients	• Clinical health workers • Allied health workers • Health systems support staff	NCDs	PI: service linkage
McNamara 2020	Mixed methods	HIC	Australia	Adults in the community not diagnosed with cardiovascular disease, and not being treated for hypertension or lipid disorders	• Allied health workers	NCDs	PI: service expansion and linkage
Meyer-Kalos 2017	Qualitative	HIC	USA	People with severe mental illness	• Clinical health workers • Allied health workers	Mental and behavioural health	PI: service expansion and linkage
Miguel-Esponda 2020	Mixed methods	MIC	Mexico	People in need of mental health services	• Clinical health workers	Mental and behavioural health	FI: horizontal

Table 4. Key characteristics of included studies and key indicators *(Continued)*

Mishra 2014	Qualitative	MIC	India	Rural poor, women, and children	• Clinical managers • Clinical health workers	MCWH	PI: service expansion and linkage
Mugisha 2016	Qualitative	LIC	Uganda	People with mental health problems in PHC	• Provincial managers and Policymakers • District managers • Clinical managers • Clinical health workers • Health system support staff	Mental and behavioural health	FI: service expansion and Linkage
Mulenga 2019	Qualitative	MIC	Democratic Republic of the Congo	People attending basic care services who might need Human African trypanosomiasis services	• Clinical health workers	PHC, allied or and specialised services	Mixed: FI and PI
Murphy 2018	Mixed methods	MIC	Vietnam	People in need of mental health services	• Clinical health workers	Mental and behavioural health	PI: service expansion and linkage
Mutabazi 2020	Qualitative	MIC	South Africa	Maternal health service users in PHC	• Provincial managers and Policymakers • Clinical managers • Clinical health workers • Health system advisors • Civil society members	HIV, TB, and SRH	FI: service expansion and linkage
Mutemwa 2013	Qualitative	MIC	Kenya	People coming for family planning and postnatal care	• Clinical health workers	HIV, TB, and SRH	PI: service expansion
Mykhalovskiy 2009	Qualitative	HIC	Canada	People with HIV (for HIV prevention)	• District managers • Clinical managers • Clinical health workers	HIV, TB, and SRH	PI: service expansion and linkage
Ndwiga 2014	Qualitative	MIC	Kenya	People with HIV and reproductive health	• Clinical health workers	HIV, TB, and SRH	FI: horizontal
Nelson 2019	Qualitative	LIC	Liberia	Mothers using child vaccination services	• Clinical managers • Clinical health workers	MCWH	PI: service expansion and linkage
Newell 2018	Qualitative	HIC	Ireland	People with diabetes in PHC	• Clinical health workers	NCDs	PI: service expansion and linkage

Table 4. Key characteristics of included studies and key indicators *(Continued)*

Newmann 2013	Mixed methods	MIC	Kenya	HIV positive men and women accessing family planning services	• Clinical health workers • Lay health workers	HIV, TB, and SRH	PI: service expansion
Newmann 2016	Mixed methods	MIC	Kenya	People in need of family planning and HIV services	• Clinical health workers • Lay healthcare workers	HIV, TB, and SRH	PI: service expansion
Nooteboom 2020	Qualitative	HIC	Netherlands	Highly vulnerable families	• Clinical health workers	Mental and behavioural health	FI: service linkage
Norfleet 2016	Mixed methods	HIC	USA	People in need of mental health services	• Clinical health workers	Mental and behavioural health	PI: service expansion and linkage
Nxumalo 2013	Qualitative	MIC	South Africa	General PHC patients	• Lay health workers	PHC and other services	PI: service expansion and linkage
Oishi 2003	Qualitative	HIC	USA	People in need of mental health services	• Clinical health workers	Mental and behavioural health	FI: service expansion and linkage
Ojikutu 2014	Qualitative	HIC	USA	People with HIV	• Clinical health workers	HIV, TB, and SRH	PI: service linkage
Okot-Chono 2009	Qualitative	LIC	Uganda	People with HIV or TB	• Clinical health workers	HIV, TB, and SRH	FI: horizontal
Oliff 2003	Qualitative	MIC	Tanzania	People in need of maternal and reproductive care	• Clinical health workers	MCWH	FI: horizontal
Patwa 2019	Qualitative	MIC	South Africa	People with HIV and the general population using the PHC services	• Clinical health workers • Health system advisors	HIV, TB, and SRH	FI: service expansion
Payne 2017	Qualitative	HIC	USA	General PHC patients	• Lay health workers	PHC and other services	FI: service expansion
Peer 2020	Mixed methods	MIC	South Africa	People with both HIV and hypertension	• Clinical health workers	HIV, TB, and SRH	PI: service expansion and linkage

Table 4. Key characteristics of included studies and key indicators *(Continued)*

Pereira 2011	Qualitative	MIC	India	People in need of common mental health disorder treatment	• Clinical health workers • Lay health workers	Mental and behavioural health	FI: service expansion and linkage
Petersen 2009	Mixed methods	MIC	South Africa	People in need of mental health services	• Clinical health workers • Allied health workers • Health system advisors	Mental and behavioural health	FI: service expansion and linkage
Petersen 2011	Qualitative	LMIC	Uganda, South Africa	People in need of mental health services Uganda – people in need of severe mental health services South Africa – people in need of depression services	• Clinical health workers	Mental and behavioural health	FI: service expansion and linkage
Petersen 2019	Qualitative	LMIC	Ethiopia, India, Nepal, Nigeria, South Africa, Uganda	People in need of mental health services	• Clinical health workers	Mental and behavioural health	Mixed: FI + PI
Pfitzer 2019	Mixed methods	LMIC	Kenya and India	Pregnant women and postpartum women	• Clinical health workers	MCWH	PI: service expansion
Peer 2020; Pidano 2011	Qualitative	HIC	USA	Children in need of mental health services	• Clinical health workers	Mental and behavioural health	PI: service linkage
Piper 2018	Qualitative	HIC	USA	PHC and community-based health users	• District managers • Clinical managers • Clinical health workers	PHC and Other services	PI: service expansion and linkage
Piper 2020	Mixed methods	HIC	USA	People with HIV	• Clinical health workers • Allied health workers • Lay health workers	Mental and behavioural health	PI: service expansion and linkage
Porter 2002	Qualitative	MIC	India	People in need of TB services and leprosy services	• Clinical health workers	HIV, TB, and SRH	FI: horizontal

Table 4. Key characteristics of included studies and key indicators *(Continued)*

Ramanuj 2018	Qualitative	HIC	USA	People in need of mental health services	• Clinical health workers	Mental and behavioural health	FI: service expansion and linkage
Reinschmidt 2017	Qualitative	HIC	USA	People with both mental health and chronic care needs	• Clinical health workers	NCDs	PI: service expansion
Rissi 2015	Qualitative	HIC	USA	Community	• Clinical health workers	PHC and other services	FI: service expansion and linkage
Robertson 2018	Qualitative	LIC	Malawi	Children aged under 5 years in need of medical care	• Clinical health workers • Lay health workers	MCWH	PI: service expansion
Rodriguez 2006	Qualitative	HIC	Canada	Diabetes patients	• Clinical health workers • Allied health workers • Lay health workers • Civil society	NCDs	PI: service linkage
Rodriguez 2019	Qualitative	HIC	USA	Latin children in need of mental healthcare	• Clinical health workers • Allied health worker	Mental and behavioural health	FI: service Linkage
Rojas 2015	Qualitative	HIC	USA	Latino and African American adults with poorly controlled type 2 diabetes	• Clinical health workers • Allied health workers • Lay health workers	NCDs	PI: service linkage
Ross 2000	Mixed methods	HIC	UK	General PHC patients	• Clinical health workers • Health system advisors	PHC and other services	FI: service expansion and linkage
Ryman 2012b	Qualitative	LMIC	Kenya, Mali, Cameroon, and Ethiopia	Mothers taking their children for vaccination in PHC	• Clinical health workers	MCWH	PI: service expansion
Ryman 2012c	Mixed methods	MIC	Kenya	Children receiving immunisation at the clinic	• Clinical health workers • Lay health workers • Health system advisors	MCWH	PI: service expansion
Sakeah 2014	Qualitative	MIC	Ghana	Woman in labour	• Clinical health workers • Lay health workers	MCWH	PI: service expansion

Table 4. Key characteristics of included studies and key indicators *(Continued)*

					• Civil society members		
Sheth 2020	Mixed methods	HIC	USA	Adolescent and adult women	• Clinical health workers • Health system support staff	HIV, TB, and SRH	PI: service expansion
Savickas 2020	Qualitative	HIC	UK	People with long-term illnesses	• Clinical health workers • Allied health workers	PHC, allied and specialised services	FI: service expansion and linkage
Shattell 2011	Qualitative	HIC	USA	People with severe mental illness	• Clinical health workers	Mental and behavioural health	PI: service expansion
Shelley 2019	Qualitative	MIC	Tanzania	Mothers with HIV	• Clinical health workers • Lay health workers	HIV, TB, and SRH	PI: service expansion
Shin 2018	Qualitative	HIC	South Korea	People with disabilities	• Clinical health workers • Allied health workers	PHC, allied and specialised services	FI: service expansion and linkage
Shrivastava 2020a; Shrivastava 2020b	Qualitative	HIC	Canada	People in need of oral care	• Clinical health workers • Allied health workers • Health systems support staff	PHC, allied and specialised services	FI: service expansion and linkage
Siantz 2018	Qualitative	HIC	USA	People with mental health problems	• Clinical health workers • Lay health workers	Mental and behavioural health	PI: service expansion and linkage
Sieverding 2016	Qualitative	MIC	Nigeria	General PHC patients	• Clinical health workers • Lay health workers	PHC and other services	PI: service expansion
Sinai 2018	Qualitative	MIC	South Africa	People with HIV with suspected latent TB	• Clinical health workers	HIV, TB, and SRH	FI: horizontal
Smit 2012	Qualitative	MIC	South Africa	People with HIV	• Provincial managers and policymakers • Clinical health workers • Health system advisors	HIV, TB, and SRH	FI: horizontal
Sobo 2008	Qualitative	HIC	USA	People at risk of HIV	• Clinical health workers	HIV, TB, and SRH	PI: service expansion

Table 4. Key characteristics of included studies and key indicators *(Continued)*

Souza 2019	Qualitative	MIC	Brazil	People with mental health problems in PHC	• Clinical managers • Clinical health workers	Mental and behavioural health	FI: service expansion and linkage
Souza Gleriano 2019	Qualitative	MIC	Brazil	General PHC patients	• Clinical health workers	PHC and other services	FI: service expansion and linkage
Ssebunnya 2010	Qualitative	LIC	Uganda	People in need of PHC services	• Clinical health workers	Mental and behavioural health	FI: service expansion and linkage
Stadnick 2020	Mixed methods	HIC	USA	Children with autism	• Clinical health workers	Mental and behavioural health	PI: service expansion and linkage
Surjaningrum 2018	Qualitative	MIC	Indonesia	Pregnant women and women who recently gave birth	• Clinical health workers • Lay health workers • Health system advisors	Mental and behavioural health	PI: service expansion
Terry 2018	Qualitative	HIC	USA	People needing services for mental health, cognitive impairment, and substance abuse	• Clinical health workers • Allied health workers • Lay health workers	Mental and behavioural health	FI: service expansion and linkage
Topp 2010	Mixed methods	MIC	Zambia	People with HIV and people attending outpatients	• Clinical health workers • Lay health workers	HIV, TB, and SRH	PI: service expansion
Topp 2013	Mixed methods	MIC	Zambia	People with HIV and general patients attending outpatient	• Clinical health workers • Lay health workers	HIV, TB, and SRH	FI: horizontal
Treloar 2014	Qualitative	HIC	New Zealand	People with hepatitis C	• Clinical health workers • Allied health workers • Health systems support staff	PHC and other services	PI: service linkage
Tsasis 2012	Qualitative	HIC	Canada	General PHC patients	• Clinical managers • Clinical health workers • Allied health workers	PHC and other services	FI: service expansion and linkage
Tshililo 2019	Qualitative	MIC	South Africa	People needing HIV/AIDS services	• Clinical managers • Clinical health workers	HIV, TB, and SRH	FI: service linkage

Table 4. Key characteristics of included studies and key indicators *(Continued)*

Tsui 2018	Mixed methods	HIC	USA	Long-term cancer survivors	• Clinical mangers • Clinical health workers • Allied health workers	PHC, allied and specialised services	PI: service linkage
Uebel 2013	Qualitative	MIC	South Africa	People with HIV	• Provincial managers and policymakers • Clinical managers • Clinical health workers • Health system support staff	HIV, TB, and SRH	PI: service expansion
Urada 2014	Mixed methods	HIC	USA	People in need of mental health and substance use disorder services	• Clinical health workers	Mental and behavioural health	PI: service expansion
Uwimana 2013	Mixed methods	MIC	South Africa	Pregnant woman attending prevention of mother-to-child transmission/antenatal services	• Clinical managers • Clinical health workers • Health system advisors	HIV, TB, and SRH	PI: service expansion
Venables 2016	Qualitative	MIC	Kenya	People stable on HIV and NCD medication	• Clinical health workers • Lay health workers	HIV, TB, and SRH	FI: service expansion
Venancio 2016	Mixed methods	MIC	Brazil	People with diabetes and hypertension	• Clinical manager • Clinical health workers	NCDs	Unclear
Vestjens 2018	Mixed methods	HIC	Netherlands	Frail elderly people	• Clinical health workers	NCDs	FI: service linkage
Vickers 2013	Qualitative	HIC	USA	People in need of mental health service	• Clinical health workers	Mental and behavioural health	PI: service expansion and linkage
Wakida 2018; Wakida 2019	Qualitative	LIC	Uganda	People in need of mental health services	• Clinical health workers	Mental and behavioural health	FI: service expansion and linkage
Wallace 2013	Mixed methods	HIC	Canada	Clients who needed dental care, but could not afford it	• Allied health workers	PHC, allied and specialised services	FI: service expansion and linkage
Wallace 2014	Qualitative	MIC	Tanzania	Parents of children coming receiving immunisation	• Clinical health workers	HIV, TB, and SRH	PI: service expansion

Table 4. Key characteristics of included studies and key indicators *(Continued)*

Waterworth 2015	Qualitative	HIC	UK	PHC, community and home-based care patients	• Clinical health workers • Allied health workers	PHC and other services	FI: service expansion and linkage
Wener 2016	Qualitative	HIC	Canada	People in need of mental health services in PHC	• Clinical health workers	Mental and behavioural health	FI: service linkage
Wiese 2011	Qualitative	HIC	Australia	Women and others who received care in community health centre	• Clinical health workers • Allied health workers • Lay health workers	PHC and other services	FI: service linkage
Wilunda 2017	Qualitative	LIC	South Sudan	Pregnant women and women in labour	• Clinical health workers • Lay health workers	MCWH	PI: service expansion
Yessimov 2019	Mixed methods	MIC	Republic of Kazakhstan	General PHC patients	• Clinical health workers	PHC and other services	Unclear
Young 2019	Qualitative	MIC	Kenya	Women receiving antenatal services	• Clinical health workers	MCWH	PI: service expansion
Zimbudzi 2019	Qualitative	HIC	Australia	People with both diabetes and chronic kidney disease	• Clinical health workers	NCDs	PI: service linkage
Zotti 2010	Qualitative	HIC	USA	Women receiving reproductive health services	• Clinical health workers • Lay health workers • Health system advisors	HIV, TB, and SRH	PI: service expansion
Zulu 2015	Qualitative	MIC	Zambia	General PHC patients	• Clinical health workers • Lay health workers	PHC and other services	PI: service expansion
Zulu 2019	Qualitative	MIC	Zambia	Young adults in need of SRH services	• Clinical health workers • Lay health workers	MCWH	PI: service expansion and Linkage

FI: full integration; HIC: high-income country; LMIC: low- to middle-income country; MCWH: maternal, child, and women's health; MIC: middle-income country; NCD: non-communicable disease; PHC: primary health care; PI: partial integration; TB: tuberculosis: SRH: sexual and reproductive health.

APPENDICES

Appendix 1. Search strategies

PDQ-Evidence, Epistemonikos Foundation (searched 28 July 2020)

Advanced search - Title/Abstract - Filter: Publication type Systematic review

"integrated care" OR "integrated primary care" OR "integrated primary-care" OR "integrated community care" OR "integrated primary health care" OR "integrated community health care" OR "integrated primary healthcare" OR "integrated community healthcare" OR "integrated primary health-care" OR "integrated community health-care" OR "integrated health" OR "integrated healthcare" OR "integrated health care" OR "integrated health-care" OR "integrated medical care" OR "integrated delivery" OR "integrated system" OR "integrated systems" OR "integrated service" OR "integrated services"

MEDLINE and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Daily and Versions 1946 to 24 July 2020, Ovid (searched 28 July 2020)

#	Searches	Results
1	"Delivery of Health Care, Integrated"/	12687
2	((integrat* or coordinat* or co ordinat*) and (care or healthcare or primary health or service*)).ti.	14867
3	((integrat* or coordinat* or co ordinat*) adj1 (care or healthcare or primary health)).ab,kf.	12039
4	((integrat* or coordinat* or co ordinat*) adj3 service*).ab,kf.	8349
5	or/1-4	38070
6	Qualitative Research/	55570
7	Interviews as Topic/	62345
8	(qualitative or interview* or themes or mixed method?).ti,ab,kf.	543496
9	or/6-8	562534
10	5 and 9	6236

Cinahl 1981 – present, EBSCOhost (searched 28 July 2020)

S10	S10 Limiters - Exclude MEDLINE records	4,048
S9	S10 AND S10	6,920
S8	S10 OR S10 OR S10	340,200

(Continued)

S7	TI (qualitative or interview* or "thematic analysis" or themes or mixed W0 method*) OR AB (qualitative or interview* or "thematic analysis" or themes or mixed W0 method*)	301,553
S6	(MH "Thematic Analysis")	63,603
S5	(MH "Qualitative Studies")	113,715
S4	S1 OR S10 OR S10	37,263
S3	AB (integrat* or coordinat* or co W0 ordinat*) N2 (care or healthcare or "primary health" or service*))	21,579
S2	TI (integrat* or coordinat* or co W0 cordinat*) and TI (care or healthcare or "primary health" or service*)	12,995
S1	(MH "Health Care Delivery, Integrated")	11,680

Scopus, Elsevier (searched 28 July 2020)
Advanced search
(INDEXTERMS ("integrated health care system") OR TITLE-ABS ("integrated care" OR "integrated primary care" OR "integrated community care" OR "integrated primary health care" OR "integrated community health care" OR "integrated primary healthcare" OR "integrated community healthcare" OR "integrated health" OR "integrated healthcare" OR "integrated health care" OR "integrated medical care") AND TITLE-ABS-KEY ("qualitative research" OR "qualitative study" OR "qualitative analysis" OR "thematic analysis" OR interview* OR themes OR "mixed method" OR "mixed methods")) AND NOT INDEX(medline))

Global Index Medicus, WHO (searched 28 July 2020)
Advanced search - in title, abstract, subject descriptor

"Delivery of Health Care, Integrated" OR "integrated care" OR "integrated primary care" OR "integrated community care" OR "integrated primary health care" OR "integrated community health care" OR "integrated primary healthcare" OR "integrated community healthcare" OR "integrated health" OR "integrated healthcare" OR "integrated health care" OR "integrated medical care" OR "integrated delivery" OR "integrated system" OR "integrated systems" OR "integrated service" OR "integrated services" AND "qualitative research" OR "qualitative study" OR "qualitative analysis" OR "thematic analysis" OR interview* OR themes OR "mixed method" OR "mixed methods"

Appendix 2. Qualitative design studies: data sources

References	Data source	# IIs	# FGDs
Acri 2018	Interviews	3	0
Aerts 2020		26	0
Aitken 2014		13	0
Ameh 2017		7	0
Amo-Adjei 2014		31	0
Anand 2018		4	0
Anku 2020		31	0
Baker 2018		16	0

(Continued)

Banfield 2017	10	0
Beckingsale 2016	12	0
Berkel 2019	13	0
Bradley 2008	39	0
Brooks 2020	0	0
Busch 2013	91	0
Busetto 2015	26	0
Butler 2018	8	0
Carman 2019	21	0
Cole 2015	13	—
De Nóbrega 2014	11	0
Duma 2019	10	0
Dunbar 2018	35	0
Fitzpatrick 2017	16	0
Fong 2019	38	0
Gadomski 2014	40	0
Gavin 2008	16	0
Jacobs 2012	58	0
Johnson 2020	3	0
Jorgenson 2014	25	0
Kawonga 2016	52	0
Kirchner 2004	20	0
Langer 2014	13	0
Lucas 2016	44	0
Main 2007	21	0
Marais 2015	17	0
Mayer 2016	18	0
McGeehan 2007	32	0

(Continued)

Mugisha 2016	18	0
Mulenga 2019	32	0
Mutabazi 2020	20	0
Mutemwa 2013	32	0
Ndwiga 2014	34	0
Newell 2018	17	0
Nooteboom 2020	24	0
Ojikutu 2014	0	0
Patwa 2019	20	0
Pereira 2011	119	0
Petersen 2019	121	0
Pidano 2011	32	0
Ramanuj 2018	16	0
Robertson 2018	11	0
Rodriguez 2006	25	0
Rodriguez 2019	14	0
Ryman 2012b	36	0
Shelley 2019	67	0
Siantz 2018	19	0
Sieverding 2016	0	—
Sinai 2018	21	0
Smit 2012	21	0
Sobo 2008	20	0
Souza Gleriano 2019	11	0
Surjaningrum 2018	12	0
Terry 2018	27	0
Treloar 2014	24	0
Tshililo 2019	12	0

(Continued)

Vickers 2013		13	0
Wakida 2019		20	0
Wallace 2013		16	0
Waterworth 2015		2	0
Wener 2016		40	0
Wiese 2011		18	0
Young 2019		18	0
Zimbudzi 2019		5	0
Zotti 2010		16	0
Zulu 2019		9	0
Edelman 2016	Focus groups	0	3
Gear 2016		11	1
Lombard 2009		0	3
Mathibe 2015		35	0
Meyer-Kalos 2017		0	3
Savickas 2020		0	4
Shattell 2011		5	0
Tsasis 2012		0	6
Akatukwasa 2019	Focus groups and interviews	74	0
Allen 2007		7	7
Foster 2016		4	2
Gerrish 1999		24	6
Ghorbani 2018		10	5
Haddow 2007		26	0
Harnagea 2018		70	5
Hepworth 2015		1	4
Hlongwa 2019		42	4
Jewett 2013		0	2

(Continued)

Ma 2018		5	0
Malachowski 2019		7	3
Martin 2018		7	0
Mykhalovskiy 2009		13	1
Nxumalo 2013		23	3
Oishi 2003		11	2
Okot-Chono 2009		62	12
Petersen 2011		33	4
Porter 2002		60	0
Rojas 2015		1	1
Savickas 2020		3	3
Shin 2018		36	6
Ssebunnya 2010		9	4
Souza 2019		28	0
Wilunda 2017		19	11
Blasi 2018	Interviews and document reviews	0	0
Gucciardi 2016		34	0
Piper 2018		15	0
Rissi 2015		0	0
Sakeah 2014		41	0
Zulu 2015		12	0
Douglas 2017	Interviews and field observations	17	0
Lane 2017		31	0
Payne 2017		0	0
Mishra 2014		30	0
Lawn 2014	Focus group and ethnographic exercises	0	3
Reinschmidt 2017	Focus groups and field observations	0	3

(Continued)

Derrett 2014	Interviews, document reviews, and field observations	36	0
Burgess 2016	Interviews, filed observation, and ethnographic exercises	0	0
Donnelly 2013	Mixed	24	0
Uebel 2013	Interviews, focus groups, and field observations	60	10
Venables 2016		9	1
Oliff 2003	Interviews, focus groups, and document reviews	52	0
Aleluia 2017	Interviews, document review, field observations, and field research diary	0	0

FGD: focus group discussion; II: individual interview.

Appendix 3. Mixed-methods design studies: data sources

References	Data source	# IIs	# FGDs
Aantjes 2014	Interviews	17	0
Allen 1997		12	0
Allen 2015		23	0
An 2015a		57	0
Athié 2016		42	0
Ayon 2019		30	0
Beehler 2017		12	0
Beere 2019		20	0
Benson 2018		5	0
Bentham 2015		87	0
Church 2015		16	0
Cooper 2020		68	0

(Continued)

Dayton 2019	16	0
De Lusignan 2020	0	0
Foster 2009	15	0
Geelhoed 2013	0	0
Gerber 2018	12	0
Glasgow 2012	10	0
Greene 2016	22	0
Ion 2017	13	0
Khan 2018	8	0
Limbani 2019	24	0
Lovero 2019	9	0
McNamara 2020	10	0
Murphy 2018	30	0
Newmann 2013	31	0
Newmann 2016	31	0
Norfleet 2016	52	0
Peer 2020	33	0
Pfitzer 2019	43	0
Piper 2020	19	0
Ross 2000	0	0
Ryman 2012c	18	0
Topp 2010	60	0
Topp 2013	15	0
Urada 2014	18	0
Uwimana 2013	26	0
Venancio 2016	38	0
Venancio 2016	15	0
Wallace 2013	8	0

(Continued)

Baker 2007	Focus groups	0	1
Hunter 2018		0	0
Jauregui 2016		0	4
Fleury 2016	Focus groups and interviews	63	15
Miguel-Esponda 2020		24	2
Petersen 2009		34	14
Sheth 2020		45	20
Stadnick 2020		1	8
Benjumea-Bedoya 2019	Interviews and document reviews	5	0
Yessimov 2019		5	0
Bentley 2015	Interviews and field observations	2	0
Cifuentes 2015		45	0
Clark 2017		190	0
Tsui 2018		0	0
Bernard 2016	Interviews, document reviews, and field observation	0	0

FGD: focus group discussion; II: individual interview.

Appendix 4. High-income country studies: setting

References	Country	Urban/rural
Aitken 2014	Australia	Not stated
Allen 2007		Urban
Banfield 2017		Urban
Beere 2019		Urban and rural
Benson 2018		Urban and rural
Douglas 2017		Not stated
Foster 2009		Not stated
Foster 2016		Not stated

(Continued)

Fitzpatrick 2017		Rural
Lane 2017		Urban
Lawn 2014		Not stated
Lucas 2016		Urban and rural
Hepworth 2015		Urban
McNamara 2020		Not stated
Wiese 2011		Urban
Zimbudzi 2019		Urban
Aerts 2020	Belgium	Urban and rural
Benjumea-Bedoya 2019	Canada	Urban
Donnelly 2013		Urban and rural
Fleury 2016		Urban and rural
Gucciardi 2016		Urban
Harnagea 2018		Urban and rural
Ion 2017		Urban and rural
Jorgenson 2014		Urban
Malachowski 2019		Urban
Mykhalovskiy 2009		Not stated
Shrivastava 2020a		Not stated
Tsasis 2012		Not stated
Wallace 2013		Not stated
Wener 2016		Urban
Gavin 2008	Ireland	Not stated
Newell 2018		Urban and rural
Busch 2013	Netherlands	Urban
Busetto 2015		Not stated
Nooteboom 2020		Not stated
Vestjens 2018		Not stated

(Continued)

Allen 1997	New Zealand	Not stated
Beckingsale 2016		Not stated
Gear 2016		Urban
Treloar 2014		Urban
Shin 2018	South Korea	Not stated
Jauregui 2016	Spain	Not stated
Bradley 2008	UK	Urban and rural
Billings 2019		Not stated
De Lusignan 2020		Not stated
Gerrish 1999		Urban
Haddow 2007		Not stated
Langer 2014		Not stated
Main 2007		Not stated
Ross 2000		Urban and rural
Savickas 2020		Not stated
Waterworth 2015		Urban
Acri 2018	USA	Urban
Allen 2015		Not stated
Beehler 2017		Not stated
Bentham 2015		Urban and rural
Bentley 2015		Not stated
Berkel 2019		Not stated
Bernard 2016		Not stated
Blasi 2018		Urban and rural
Brooks 2020		Not stated
Butler 2018		Urban
Carman 2019		Rural
Cifuentes 2015		Urban

(Continued)

Clark 2017	Not stated
Cole 2015	Not stated
Derrett 2014	Rural
Edelman 2016	Not stated
Fong 2019	Urban
Gadomski 2014	Urban and rural
Glasgow 2012	Not stated
Greene 2016	Not stated
Hunter 2018	Not stated
Jewett 2013	Not stated
Kirchner 2004	Rural
Lombard 2009	Urban and rural
Ma 2018	Urban
Main 2007	Urban
Mayer 2016	Not stated
McGeehan 2007	Not clear
Meyer-Kalos 2017	Not stated
Norfleet 2016	Not stated
Oishi 2003	Urban
Ojikutu 2014	Urban
Payne 2017	Not stated
Pidano 2011	Not stated
Piper 2018	Urban
Piper 2020	Urban
Ramanuj 2018	Urban
Reinschmidt 2017	Not stated
Rissi 2015	Not stated
Rodriguez 2019	Not stated

(Continued)

Rojas 2015	Urban
Shattell 2011	Urban and rural
Sheth 2020	Urban
Siantz 2018	Urban
Sobo 2008	Urban
Stadnick 2020	Urban
Terry 2018	Urban
Tsui 2018	Not stated
Urada 2014	Not stated
Vickers 2013	Urban
Zotti 2010	Not stated

Appendix 5. Middle-income country studies: setting

References	Country	Urban/rural
Aleluia 2017	Brazil	Not stated
Athié 2016		Urban
De Nóbrega 2014		Not stated
Souza Gleriano 2019		Not stated
Venancio 2016		Not clear
Baker 2007	Dominican Republic	Not stated
Dayton 2019		Not clear
Church 2015	Eswatini	Urban
Amo-Adjei 2014	Ghana	Not stated
Anku 2020		Not stated
Sakeah 2014		Not stated
Anand 2018	India	Not stated
Johnson 2020		Urban

(Continued)

Mishra 2014		Rural
Pereira 2011		Not stated
Porter 2002		Not stated
Surjaningrum 2018	Indonesia	Not stated
Ghorbani 2018	Iran	Urban and rural
Ayon 2019	Kenya	Urban
Martin 2018		Not stated
Mutemwa 2013		Urban and rural
Ndwiga 2014		Not stated
Newmann 2013		Rural
Newmann 2016		Not clear
Ryman 2012c		Urban and rural
Venables 2016		Urban
Young 2019		Not stated
Jacobs 2012	Lao	Rural
Miguel-Esponda 2020	Mexico	Rural
Sieverding 2016	Nigeria	Rural
Khan 2018	Pakistan	Urban
Yessimov 2019	Republic of Kazakhstan	Not clear
Ameh 2017	South Africa	Rural
Burgess 2016		Rural
Gerber 2018		Urban
Hlongwa 2019		Urban and rural
Kawonga 2016		Urban and rural
Limbani 2019		Rural
Lovero 2019		Urban and rural
Marais 2015		Not Clear
Mathibe 2015		Urban and rural

(Continued)

Mutabazi 2020		Not stated
Nxumalo 2013		Urban and rural
Patwa 2019		Urban
Peer 2020		Urban and rural
Petersen 2009		Rural
Sinai 2018		Rural
Smit 2012		Not stated
Tshililo 2019		Rural
Uebel 2013		Not stated
Uwimana 2013		Rural
An 2015a	Tanzania	Urban and rural
Baker 2018		Rural
Oliff 2003		Not stated
Shelley 2019		Urban and rural
Wallace 2014		Urban and rural
Murphy 2018	Vietnam	Urban and rural
Topp 2010	Zambia	Urban
Topp 2013		Not stated
Zulu 2015		Not stated
Zulu 2019		Not stated

Appendix 6. Low-income country studies: setting

References	Country	Urban/rural
Mulenga 2019	Democratic Republic of the Congo	Not stated
Nelson 2019	Liberia	Rural
Cooper 2020	Malawi	Rural
Duma 2019		Not stated

(Continued)

Robertson 2018		Urban
Geelhoed 2013	Mozambique	Rural
Wilunda 2017	South Sudan	Not stated
Akatukwasa 2019	Uganda	Rural and urban
Mugisha 2016		Not stated
Okot-Chono 2009		Rural and urban
Ssebunnya 2010		Rural
Wakida 2019		Rural

Appendix 7. Low- and middle-income country studies: setting

References	Country	Urban/rural
Aantjes 2014	Ethiopia, Malawi, South Africa, and Zambia	Urban and rural
Petersen 2011	South Africa and Uganda	Rural
Petersen 2019	Ethiopia, India, Nepal, Nigeria, South Africa, and Uganda	Not stated
Pfitzer 2019	Indian and Kenya	Urban and rural
Ryman 2012b	Cameroon, Ethiopia, Kenya, and Mali	Urban and rural

Appendix 8. Mental and behavioural health-related integration per country income level

References	Country income level
Acri 2018; Allen 1997; Beere 2019; Bentham 2015; Berkel 2019; Blasi 2018; Brooks 2020; Butler 2018; Clark 2017; Dunbar 2018; Edelman 2016; Fitzpatrick 2017; Fleury 2016; Fong 2019; Gadomski 2014; Gavin 2008; Gear 2016; Greene 2016; Hepworth 2015; Hunter 2018; Ion 2017; Kirchner 2004; Langer 2014; Lombard 2009; Ma 2018; Meyer-Kalos 2017; Nooteboom 2020; Norfleet 2016; Oishi 2003; Pidano 2011; Piper 2020; Ramanuj 2018; Rodriguez 2019; Shattell 2011; Siantz 2018; Stadnick 2020; Terry 2018; Urada 2014; Vickers 2013; Wener 2016	HIC
Athié 2016; Ayon 2019; Burgess 2016; Gerber 2018; Hlongwa 2019; Johnson 2020; Lovero 2019; Marais 2015; Miguel-Esponda 2020; Murphy 2018; Pereira 2011; Petersen 2009; Souza 2019; Surjaningrum 2018	MIC
Mugisha 2016; Ssebunnya 2010	LIC
Petersen 2011; Petersen 2019	LMIC

HIC: high-income country; LIC: low-income country; LMIC: low- to middle-income country; MIC: middle-income country.

Appendix 9. HIV, tuberculosis, sexual and reproductive health-related integration per country income level

References	Country income level
Benjumea-Bedoya 2019; Bernard 2016; Jewett 2013; Mykhalovskiy 2009; Ojikutu 2014; Sheth 2020; Sobo 2008; Zotti 2010	HIC
An 2015a; Amo-Adjei 2014; Anku 2020; Church 2015; Dayton 2019; Kawonga 2016; Mathibe 2015; Mutemwa 2013; Mutabazi 2020; Ndwiga 2014; Newmann 2013; Newmann 2016; Patwa 2019; Peer 2020; Porter 2002; Sinai 2018; Smit 2012; Tshililo 2019; Topp 2010; Topp 2013; Uebel 2013; Uwimana 2013; Venables 2016; Vestjens 2018; Wallace 2013	MIC
Akatukwasa 2019; Duma 2019; Okot-Chono 2009	LIC
Aantjes 2014	LMIC

HIC: high-income country; LIC: low-income country; LMIC: low- to middle-income country; MIC: middle-income country.

Appendix 10. Maternal, child, and women's health-related integration per country income level

References	Country income level
Baker 2018; Jacobs 2012; Ma 2018; Martin 2018; Mishra 2014; Oliff 2003; Ryman 2012c; Sakeah 2014; Young 2019; Zulu 2019	MIC
Cooper 2020; Geelhoed 2013; Nelson 2019; Robertson 2018; Wilunda 2017	LIC
Pfitzer 2019; Ryman 2012b	LMIC

LIC: low-income country; LMIC: low- to middle-income country; MIC: middle-income country.

Appendix 11. Non-communicable diseases-related integration per country income level

References	Country income level
Aerts 2020; Allen 2015; Banfield 2017; Busetto 2015; Foster 2016; Glasgow 2012; Gucciardi 2016; Jauregui 2016; Lucas 2016; Mayer 2016; McGeehan 2007; McNamara 2020; Newell 2018; Reinschmidt 2017; Rodriguez 2006; Rojas 2015; Vestjens 2018; Zimbudzi 2019	HIC
Aleluia 2017; Ameh 2017; Anand 2018; Khan 2018; Limbani 2019; Venancio 2016	MIC

HIC: high-income country; MIC: middle-income country.

Appendix 12. General primary healthcare services-related integration per country-income level

References	Country income level
Aitken 2014; Allen 2007; Bentley 2015; Billings 2019; Busch 2013; Carman 2019; Derrett 2014; Douglas 2017; Gerrish 1999; Haddow 2007; Lawn 2014; Main 2007; Malachowski 2019; Payne 2017; Piper 2018; Rissi 2015; Ross 2000; Tai-Seale 2010; Treloar 2014; Waterworth 2015; Wiese 2011	HIC
De Nóbrega 2014; Nxumalo 2013; Sieverding 2016; Souza Gleriano 2019; Yessimov 2019; Zulu 2015	MIC

HIC: high-income country; MIC: middle-income country.

Appendix 13. Allied and specialised-related integration per country income-level

References	Country income level
Beckingsale 2016; Benson 2018; Bradley 2008; Cole 2015; De Lusignan 2020; Donnelly 2013; Foster 2009; Harnagea 2018; Jorgenson 2014; Lane 2017; Savickas 2020; Shin 2018; Shrivastava 2020a; Tsui 2018; Wallace 2013	HIC
Baker 2007; Ghorbani 2018; Mulenga 2019	MIC

HIC: high-income country; MIC: middle-income country.

Appendix 14. Integration strategies within full and partial integration

References	Integration scope and strategies
Akatukwasa 2019; Amo-Adjei 2014; Anku 2020; Billings 2019; Geelhoed 2013; Kawonga 2016; Miguel-Esponda 2020; Ndwiga 2014; Okot-Chono 2009; Oliff 2003; Porter 2002; Sinai 2018; Smit 2012; Topp 2013	Full integration: horizontal
Baker 2007; Fitzpatrick 2017; Fleury 2016; Fong 2019; Foster 2016; Hunter 2018; Main 2007; Marais 2015; Patwa 2019; Payne 2017; Venables 2016	Full integration: service expansion
Aleluia 2017; Allen 2007; Haddow 2007; Nooteboom 2020; Rodriguez 2019; Tshililo 2019; Vestjens 2018; Wener 2016; Wiese 2011	Full integration: service linkage
Aantjes 2014; Aerts 2020; Aitken 2014; Allen 1997; Ameh 2017; Athié 2016; Banfield 2017; Beehler 2017; Beere 2019; Benson 2018; Bentham 2015; Berkel 2019; Bernard 2016; Blasi 2018; Bradley 2008; Busch 2013; Busetto 2015; Butler 2018; Carman 2019; Clark 2017; Cole 2015; Cooper 2020; De Nóbrega 2014; Derrett 2014; Donnelly 2013; Douglas 2017; Duma 2019; Dunbar 2018; Edelman 2016; Gerber 2018; Gerrish 1999; Hepworth 2015; Hlongwa 2019; Jorgenson 2014; Lawn 2014; Ma 2018; Malachowski 2019; Mugisha 2016; Mutabazi 2020; Oishi 2003; Pereira 2011; Petersen 2009; Petersen 2019; Ramanuj 2018; Rissi 2015; Ross 2000; Savickas 2020; Souza Gleriano 2019; Souza 2019; Ssebunnya 2010; Terry 2018; Tsasis 2012; Wakida 2019; Wallace 2013; Waterworth 2015	Full integration: service expansion and linkage
Acri 2018; Allen 2015; Anand 2018; De Lusignan 2020; Foster 2009; Gadomski 2014; Gavin 2008; Gear 2016; Ghorbani 2018; Glasgow 2012; Jewett 2013; Kirchner 2004; Lovero 2019; Martin 2018; Mayer 2016; Mayhew 2017; Newmann 2013; Newmann 2016; Pfitzer 2019; Reinschmidt 2017; Robertson 2018; Ryman 2012b; Ryman 2012c; Sakeah 2014; Shattell 2011; Shelley 2019; Sheth 2020; Sieverd-	Partial integration: service expansion

(Continued)

ing 2016; Sobo 2008; Surjaningrum 2018; Topp 2010; Uebel 2013; Urada 2014; Uwimana 2013; Wallace 2014	
Baker 2018; Bentley 2015; Greene 2016; Jauregui 2016; Lucas 2016; McGeehan 2007; Ojikutu 2014; Pidano 2011; Rojas 2015; Treloar 2014; Tsui 2018	Partial integration: service linkage
Ayon 2019; Beckingsale 2016; Benjumea-Bedoya 2019; Brooks 2020; Burgess 2016; Cifuentes 2015; Dayton 2019; Gucciardi 2016; Harnagea 2018; Ion 2017; Jacobs 2012; Johnson 2020; Khan 2018; Lane 2017; Limbani 2019; Lombard 2009; McNamara 2020; Meyer-Kalos 2017; Mishra 2014; Murphy 2018; Mykhalovskiy 2009; Nelson 2019; Newell 2018; Norfleet 2016; Nxumalo 2013; Peer 2020; Piper 2018; Piper 2020; Siantz 2018; Stadnick 2020; Vickers 2013	Partial integration: service expansion and linkage
An 2015a; Church 2015; Mathibe 2015; Mulenga 2019; Petersen 2019	Mixed: full integration and partial integration
Venancio 2016; Yessimov 2019	Unclear

Appendix 15. Full integration strategies across health service streams

Reference	Health service stream
Allen 1997; Athié 2016; Beehler 2017; Beere 2019; Bentham 2015; Berkel 2019; Blasi 2018; Butler 2018; Clark 2017; Dunbar 2018; Edelman 2016; Fitzpatrick 2017; Fleury 2016; Fong 2019; Gerber 2018; Hepworth 2015; Hlongwa 2019; Hunter 2018; Ma 2018; Marais 2015; Miguel-Esponda 2020; Mugisha 2016; Nooteboom 2020; Oishi 2003; Pereira 2011; Petersen 2009; Petersen 2011; Petersen 2019; Ramanuj 2018; Rodriguez 2019; Ssebunnya 2010; Terry 2018; Wakida 2019; Wener 2016	Mental and behavioural health
Aantjes 2014; Akatukwasa 2019; Amo-Adjei 2014; Anku 2020; Bernard 2016; Duma 2019; Kawonga 2016; Mutabazi 2020; Ndwiga 2014; Okot-Chono 2009; Patwa 2019; Porter 2002; Sinai 2018; Smit 2012; Topp 2013; Tshililo 2019; Venables 2016	HIV, TB, and SRH
Aerts 2020; Aleluia 2017; Ameh 2017; Banfield 2017; Busetto 2015; Foster 2009; Vestjens 2018	NCDs
Cooper 2020; Geelhoed 2013; Oliff 2003	MCWH
Baker 2007; Benson 2018; Bradley 2008; Cole 2015; Donnelly 2013; Jorgenson 2014; Savickas 2020; Shin 2018; Shrivastava 2020a; Wallace 2013	Allied and specialised services
Aitken 2014; Allen 2007; Billings 2019; Busch 2013; Carman 2019; De Nóbrega 2014; Derrett 2014; Douglas 2017; Gerrish 1999; Haddow 2007; Lawn 2014; Main 2007; Malachowski 2019; Payne 2017; Rissi 2015; Ross 2000; Souza Gleriano 2019; Tsasis 2012; Waterworth 2015; Wiese 2011	General PHC services

MCWH: maternal, child, and women's health; NCD: non-communicable disease; PHC: primary health care; SRH: sexual and reproductive health; TB: tuberculosis.

Appendix 16. Partial integration strategies across health service streams

References	Health service streams
Acri 2018; Ayon 2019; Brooks 2020; Burgess 2016; Cifuentes 2015; Gadomski 2014; Gavin 2008; Gear 2016; Greene 2016; Ion 2017; Johnson 2020; Kirchner 2004; Langer 2014; Lombard 2009; Lovero	Mental and behavioural health

(Continued)

2019; Meyer-Kalos 2017; Murphy 2018; Norfleet 2016; Pidano 2011; Piper 2020; Shattell 2011; Siantz 2018; Stadnick 2020; Surjaningrum 2018; Urada 2014; Vickers 2013	
Benjumea-Bedoya 2019; Dayton 2019; Jewett 2013; Mykhalovskiy 2009; Newmann 2013; Newmann 2016; Ojikutu 2014; Peer 2020; Sheth 2020; Sobo 2008; Topp 2010; Topp 2013; Uwimana 2013; Wallace 2014; Zotti 2010	HIV, TB, and SRH
Allen 2015; Anand 2018; Glasgow 2012; Gucciardi 2016; Jauregui 2016; Khan 2018; Limbani 2019; Lucas 2016; Mayer 2016; McGeehan 2007; McNamara 2020; Newell 2018; Reinschmidt 2017; Rodriguez 2006; Rojas 2015; Zimbudzi 2019	NCDs
Baker 2018; Jacobs 2012; Martin 2018; Mishra 2014; Nelson 2019; Pfitzer 2019; Robertson 2018; Ryman 2012b; Ryman 2012c; Sakeah 2014; Wilunda 2017; Young 2019; Zulu 2019	MCWH
Beckingsale 2016; De Lusignan 2020; Foster 2009; Ghorbani 2018; Harnagea 2018; Lane 2017; Tsui 2018	Allied and specialised services
Bentley 2015; Nxumalo 2013; Piper 2018; Sieverding 2016; Treloar 2014; Zulu 2015	General PHC services

MCWH: maternal, child, and women's health; NCD: non-communicable disease; PHC: primary health care; SRH: sexual and reproductive health; TB: tuberculosis.

Appendix 17. Conceptual models used in the studies

References	Conceptual models used
Acri 2018; Aerts 2020; Aitken 2014; Akatukwasa 2019; Allen 1997; Allen 2007; Allen 2015; An 2015a; Anand 2018; Athié 2016; Baker 2007; Beckingsale 2016; Bentley 2015; Berkel 2019; Blasi 2018; Bradley 2008; Brooks 2020; Burgess 2016; Busch 2013; Church 2015; Cooper 2020; De Lusignan 2020; Fong 2019; Gear 2016; Geelhoed 2013; Gerber 2018; Ghorbani 2018; Hepworth 2015; Hlongwa 2019; Hunter 2018; Jacobs 2012; Jewett 2013; Jorgenson 2014; Main 2007; Martin 2018; Mishra 2014; Mulenga 2019; Newmann 2013; Newmann 2016; Nooteboom 2020; Norfleet 2016; Nxumalo 2013; Oishi 2003; Oliff 2003; Payne 2017; Petersen 2009; Petersen 2011; Pidano 2011; Porter 2002; Ramanuj 2018; Reinschmidt 2017; Robertson 2018; Rojas 2015; Ross 2000; Ryman 2012b; Ryman 2012c; Sakeah 2014; Savickas 2020; Shrivastava 2020a; Shrivastava 2020b; Siantz 2018; Sieverding 2016; Sinai 2018; Sobo 2008; Ssebunnya 2010; Terry 2018; Topp 2010; Topp 2010; Tshililo 2019; Uwimana 2013; Venables 2016; Wakida 2019; Wallace 2013; Wallace 2014; Wener 2016; Wilunda 2017; Young 2019; Zulu 2019	None stated
Aantjes 2014; Ayon 2019; Beehler 2017; Bentham 2015; Billings 2019; Clark 2017; Cifuentes 2015; Dayton 2019; De Nóbrega 2014; Donnelly 2013; Dunbar 2018; Gavin 2008; Glasgow 2012; Greene 2016; Gucciardi 2016; Jauregui 2016; Kirchner 2004; Lane 2017; Langer 2014; Lawn 2014; Lovero 2019; Lucas 2016; Malachowski 2019; Mathibe 2015; Mayer 2016; McGeehan 2007; Meyer-Kalos 2017; Miguel-Esponda 2020; Mykhalovskiy 2009; Ndwiga 2014; Nelson 2019; Newell 2018; Ojikutu 2014; Pereira 2011; Petersen 2019; Pfitzer 2019; Rodriguez 2019; Shattell 2011; Shelley 2019; Topp 2013; Treloar 2014; Tsui 2018; Vestjens 2018; Vickers 2013; Waterworth 2015; Yessimov 2019; Zimbudzi 2019	Service model only
Amo-Adjei 2014; Anku 2020; Baker 2018; Benson 2018; Benjumea-Bedoya 2019; Busetto 2015; Butler 2018; Cole 2015; Derrett 2014; Duma 2019; Edelman 2016; Fleury 2016; Foster 2009; Gadomski 2014; Gerrish 1999; Haddow 2007; Ion 2017; Kawonga 2016; Limbani 2019; Ma 2018; Marais 2015; Murphy 2018; Mayhew 2017; Mutabazi 2020; Payne 2017; Pfitzer 2019; Piper 2018; Rissi 2015; Rodriguez 2006; Stadnick 2020; Surjaningrum 2018; Tsasis 2012; Uebel 2013; Zotti 2010; Zulu 2015	Analytical model only

(Continued)

Aleluia 2017; Ameh 2017; Banfield 2017; Beere 2019; Carman 2019; Harnagea 2018; Johnson 2020; Khan 2018; Lombard 2009; Mugisha 2016; Peer 2020; Piper 2018; Shin 2018	Service and analytical models

HISTORY

Protocol first published: Issue 5, 2020

CONTRIBUTIONS OF AUTHORS

HM, NL, and KD conceptualised the review and developed the study protocol with input from review authors.

HM is the guarantor of the review.

HM and NL co-ordinated the study process.

All review authors conducted title and abstract screening, as well as full-text screening for the selection of studies.

HM and NL extracted and synthesised the data, and wrote the draft of the report.

KD provided methodological and analytical advice.

All review authors read, critically revised, and approved the manuscript.

DECLARATIONS OF INTEREST

HM: no financial conflict

KD: no financial conflict

CB-S: no financial conflict

SC: no financial conflict

MT: no financial conflict

WO: no financial conflict

EA: no financial conflict

NL: no financial conflict

Several non-financial issues, including personal, political, and academic factors, could have influenced the review authors' input when conducting this review. The review authors have discussed this further in the sections on reflexivity in the Methods section.

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Internal sources

- The South African Medical Research Council of South Africa, South Africa

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- The Kenya Medical Research Institute, Kenya

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External sources

- The Swedish International Development Cooperation Agency, Sweden

  Provided financial support to NL to write the protocol.
- The Alliance for Health Policy and Systems Research, Switzerland

  Provided financial support to HM and KD to write the review.

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

We started out with a protocol aimed at conducting a qualitative evidence synthesis (QES) of health work perceptions and experiences (Moloi 2020). However, due to the large and heterogeneous database of eligible studies, we changed to a scoping review to map the evidence base. Two of the authors on the original QES protocol (CG and TN) declined to be authors on the scoping review protocol (which is not published) and review report, for reasons of feasibility of time.

We wrote a scoping review protocol by adapting our published QES. The scoping review protocol was not published but is available as an additional file in Zenodo. We initially identified a larger number of items for extraction in our scoping review protocol, that we judged as potentially useful for understanding intervention complexity. However, for feasibility reasons, we were unable to extract all of those. The database was too large and we also we found inconsistent and limited reporting on the items. The items of interest included: timing and duration of the intervention, timing and duration of the evaluation, who were the drivers of the intervention (was it a researcher-led or health service-led intervention), what the clinical, professional, and organisational domains of the integration interventions were, and what the scale of the interventions was. Future reviews should consider including these items to deepen our understanding of intervention scale, scope, and complexity, and the scope of the evaluations.

We wanted to focus on use of analytical models for guiding interpretation of study findings, but for feasibility reasons, it was difficult to identify only analytical models. As mentioned in the Methods section, we consider that our method for identifying models resulted in an underestimate of studies that used 'service models' to guide their integration intervention. We became aware of this towards the end of the extraction process and decided not to redo the data extraction, but to report this as a limitation.

Some key terms were changed from those used in the scoping review protocol to allow for more useful labelling and categorising. For example, we change "healthcare worker" to "health worker" as the latter was thought to reflect the broader, non-clinical stakeholders who participated in the studies. Other examples were changing "intervention type" to "intervention scope", and "intervention mechanisms" to "intervention strategies".