Disruption of diabetes and hypertension care during the COVID-19 pandemic and recovery approaches in the Latin America and Caribbean region: a scoping review protocol

Samira Barbara Jabakhanji,1,2 Oluwabunmi Ogungbe,3 Sonia Y Angell,4,5 Lawrence Appel,6,7 David Byrne,1 Roopa Mehta,7 John McCaffrey,1 Lori Rosman,8 Edward W Gregg,9 Kunihiro Matsushita4,6

ABSTRACT

INTRODUCTION The COVID-19 pandemic significantly disrupted primary healthcare globally, with particular impacts on diabetes and hypertension care. This review will examine the impact of pandemic disruptions of diabetes and hypertension care services and the evidence for interventions to mitigate or reverse pandemic disruptions in the Latin America and Caribbean (LAC) region.

Methods and analyses This scoping review will examine care delivery disruption and approaches for recovery of primary healthcare in the LAC region during the COVID-19 pandemic, focusing on diabetes and hypertension awareness, detection, treatment and control. Guided by Arksey and O’Malley’s scoping review methodology, this protocol adheres to the Joanna Briggs Institute guidelines for scoping review protocols and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidance for protocol development and scoping reviews. We searched MEDLINE, CINAHL, Global Health, Embase, Cochrane, Scopus, Web of Science and LILACS for peer-reviewed literature published from 2020 to 12 December 2022 in English, Spanish or Portuguese. Studies will be considered eligible if reporting data on pandemic disruptions to primary care services within LAC, or interventions implemented to mitigate or reverse pandemic disruptions globally. Studies on COVID-19 or acute care will be excluded. Two reviewers will independently screen each title/abstract for eligibility, screen full texts of titles/abstracts deemed relevant and extract data from eligible full-text publications. Conflicts will be resolved through discussion and with the help of a third reviewer. Appropriate analytical techniques will be employed to synthesise the data, for example, frequency counts and descriptive statistics. Quality will be assessed using the Newcastle Ottawa Quality Assessment Scale.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ Using a broad set of search terms informed by expert discussion and pilot reviews, this scoping review will provide an extensive overview of the impact of the COVID-19 pandemic on disruption of primary care services in the Latin America and Caribbean (LAC) region, and interventions to mitigate or reverse disruptions and recovery care, focusing on diabetes and hypertension.

⇒ The comprehensive search strategy was developed with the help of an information specialist and includes searching international and LAC-specific databases, grey literature and cross-referenced citations published in English, Portuguese and Spanish.

⇒ The scoping review follows widely acknowledged scoping review guidelines and is guided by an established and tailored primary healthcare model and regional expert consultations.

⇒ Independent review by two reviewers and conflict resolution by a third reviewer is used to minimise bias during title/abstract screening, full-text review and data extraction.

⇒ For logistical reasons and due to the scope of our eligibility criteria, we restricted our systematic search of the literature to eight major databases and only search grey literature non-systematically; thus, we may miss some relevant publications only stored in other databases or grey literature.

INTRODUCTION

The global pandemic of COVID-19 strained healthcare delivery systems worldwide, compromising both acute and chronic care services starting in early 2020. Under the weight of the virus’ spread, intensive care and respiratory units were quickly overwhelmed. Medical supply chains were disrupted, and the exposed healthcare workforce itself was compromised with acute COVID-19 infection
and subsequent complications. Non-acute healthcare staff was often redeployed to fulfil emergency needs, resulting in cancellations and delays of non-acute services such as primary care and elective procedures. Even where non-urgent healthcare services were available, patients were often hesitant to use them due to concerns about increased risk of COVID-19 exposure in healthcare environments.

While pandemic disruptions affected care delivery systems worldwide, low- and middle-income countries were particularly vulnerable due to pre-existing gaps in healthcare availability and access, including those in the Latin America and Caribbean (LAC) region. According to a recent survey by the Pan American Health Organization (PAHO), nearly half of the essential services in the Americas were disrupted in 2020 and 2021, much more frequent and severe in the LAC region than in North America. Within LAC, the highest disruptions were experienced in lower-middle-income and low-income countries and to primary care services (Five essential services were assessed in this survey, namely prescription renewals for chronic medications; visits for undifferentiated symptoms; referrals for specialised care; scheduled appointments with first level of care providers; health promotion and prevention services). For example, approximately half of countries reported mild, moderate or even severe disruptions to diabetes and hypertension management. Prescription refills for chronic medications were disrupted in 48% of the health services in 26 countries that responded to this survey.

Concomitant with the adverse effects of the pandemic on primary care delivery, systems adaptations and innovations introduced during the pandemic could lead to sustainable improvements in care delivery. For example, mitigation strategies such as telehealth were used in many LAC countries to support service delivery. While the addition of telehealth is often considered a health systems enhancement, a PAHO report found no improvement in service delivery from 2020 to 2021 in the LAC region, particularly at the primary care level. These ambiguities underscore the need for a comprehensive overview of potential interventions for the LAC region for consideration to mitigate and reverse the impact of the pandemic on primary care services.

Diabetes and hypertension are two prevalent conditions responsible for substantial morbidity and mortality in the LAC region. In 2018, an estimated 1 in 10 adults in Mexico had diabetes, and nearly 1 in 5 had hypertension. Both conditions are largely managed in the primary care setting and optimisation of their care often serves as a model for improving the management of other non-communicable diseases. As such, understanding the impact of the pandemic disruption on diabetes and hypertension care, and identifying effective interventions that aided in the mitigation and recovery of services during and postpandemic can provide unique insight to guide best health systems decision-making related to these conditions and beyond in LAC.

Evidence from previous literature reviews

Evidence to date indicates a research gap surrounding the impact of the COVID-19 pandemic on diabetes and hypertension care in the LAC region. A preliminary search for existing scoping and systematic reviews on diabetes or hypertension during the COVID-19 pandemic (see online supplemental appendix 1) found that a majority investigated these conditions as potential risk factors for COVID-19 severity or mortality, or in relation to specific treatment needs due to comorbidity, with few studies investigating diabetes or hypertension care provision.

Related data from specific LAC countries were particularly limited. Of seven separate scoping review studies identified on PubMed (date of search: 9 December 2022), three reviewed diabetes management and one reviewed hypertension care. Within these reviews, one study from Brazil and two from Columbia investigated telehealth interventions for patients with diabetes, and two trials investigated the Nurse Case Manager role in diabetes care in Brazil. For hypertension care, one review on telehealth identified two studies from LAC, one from Brazil and the other including data from Argentina, Guatemala and Peru.

Of 175 international systematic reviews identified in PubMed (date of search: 9 December 2022), 10 potentially relevant reviews described impact on glycaemic control, diabetic ketoacidosis and interventions to recover or sustain diabetes or hypertension care. Overall, improvements in glycaemic control were seen in high-income countries during the pandemic, likely reflecting a high motivation for diabetes self-management due to associations with COVID-19 outcomes, supportive care through teleconsultations, and easier meal-planning, improved sleep habits and reduced access to fast food when staying at home during movement restrictions.

However, its worsening was observed in a small study from India (52 patients with type 1 diabetes) and in an early pandemic (April/May 2020) cross-sectional study in Brazil (1701 people with type 1 or 2 diabetes). In India, disruptions to healthcare access (non-availability of insulin or glucose strips and financial difficulties) were named as underlying reason for deteriorations. In Brazil, where the majority of the 1701 survey respondents reported a deterioration of blood glucose monitoring, 38% had postponed medical appointments or routine examinations, for instance, because their appointments got cancelled due to understaffed healthcare facilities. The finding of a higher worldwide incidence of diabetic ketoacidosis during compared with before the pandemic further implies elevated needs for effective diabetes management.

Four systematic reviews reported on interventions to sustain diabetes or hypertension care during the COVID-19 pandemic internationally, and one review protocol was identified. Telehealth and home visits were mentioned as modalities to manage diabetic foot conditions. Therapies enabling longer durations
between consecutive treatments and better triaging of high-risk patients were mentioned as strategies to mitigate healthcare disruptions in a study on diabetes-related retinal deterioration. Two reviews indicated self-monitoring of blood pressure as a suitable alternative approach to support hypertension management. Moreover, a systematic review protocol was identified of a study investigating the impact of telehealth on the quality of life among pediatric diabetes patients. None of the intervention reviews included studies from LAC.

**Study objectives**

To address the identified research gap in LAC, the World Bank and PAHO commissioned research teams at the Royal College of Surgeons in Ireland University of Medicine and Health Sciences and Johns Hopkins University to conduct a scoping review with two aims: (1) to characterise disruptions to diabetes and hypertension care in LAC during the COVID-19 pandemic and (2) to identify interventions to mitigate or reverse disruptions and recover care for diabetes and hypertension, during and as we emerge from the pandemic. As a wide range of potential disruptions and interventions across the heterogeneous LAC region will be explored, a scoping review is preferential over a systematic review.

**METHODS AND ANALYSIS**

**Protocol and registration**

A scoping review will be performed, following the approaches of Arksey and O'Malley and Levac *et al.*, including a systematic literature search, screening and analysis of retrieved literature. This protocol provides details of the search strategy and analysis, a summary of which has been registered online with Open Science Framework (https://doi.org/10.17605/OSF.IO/J2N9P) prior to accessing the literature. The Joanna Briggs Institute (JBI) guidelines for scoping review protocols and Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidance for protocol development and scoping reviews guidance for protocol development and scoping reviews. Specifically, we report the six stages of a scoping review: (1) identifying/formulating the research questions (September–November 2022; (2) identifying the relevant studies (October–December 2022); (3) selecting the eligible studies (January 2023–ongoing); (4) charting the data (April 2023–ongoing); (5) collating, summarising and reporting the findings (anticipated start date: November 2023) and (6) consulting with stakeholders (May 2023; December 2023) (online supplemental appendix 2).

**Conceptual framework**

We adopted and adapted the Primary Health Care Performance Initiative (PHCPI) framework to guide this study due to the framework’s comprehensiveness and focus on system-level domains of primary healthcare services (figure 1). The framework will guide the identification of primary healthcare services susceptible to disruptions during the COVID-19 pandemic and of targets for interventions during or after the pandemic. The PHCPI framework was initially developed to describe components of strong primary healthcare, and guide outcome measurement and evaluation of programmes and efforts to improve primary healthcare. Framework features include system-level characteristics, inputs, service delivery process, outputs and outcomes to address issues relating to primary healthcare such as financing, capacity/workforce and performance. In addition, the framework addresses these issues through a health equity lens, service management, team-based care approach and community engagement. Our team adapted and modified the framework to align with the objectives of this study, through literature review and consultations with team members with subject expertise in primary healthcare services delivery, diabetes and hypertension care services. We included care delivery components specific to diabetes and hypertension, such as screening, laboratory testing and patient-reported outcomes such as patient care-seeking perception in the section of service delivery. Similarly, the output domain was contextually

**Figure 1** Modified Primary Health Care Performance Initiative framework used to guide this scoping review.
modified to include key process measures for screening, awareness, detection, treatment, and control of diabetes and hypertension (figure 1).

**Stage 1: identifying the research questions**

This scoping review seeks to answer the following research questions:

1. To what extent have diabetes and hypertension care in the LAC region been disrupted during the COVID-19 pandemic?
2. What interventions are shown to mitigate, reverse or recover care from pandemic disruptions to diabetes and hypertension care?

**Stage 2: identifying relevant studies**

**Eligibility criteria**

To specify inclusion criteria, population, concept and context (PCC) were defined (see table 1). The population of interest is all adults for whom guidelines recommend screening or access to diabetes or hypertension care, irrespective of sex or socioeconomic characteristics. Children with diabetes or hypertension were also included. The concept of interest is disruption to the delivery of primary care services, focusing primarily on diabetes and hypertension-related primary care services and management, and mitigation, reversal or recovery of those services where interruptions occurred. The context is the LAC region during the COVID-19 pandemic, including the years 2020–2022. The list of countries in the LAC region was defined according to the United Nations. Individual LAC countries are listed in the search terms (online supplemental appendix 3).

Eligible studies will fall within the PCC defined above. However, we intend to consider inclusion of literature outside the defined population and context if findings are insufficient to achieve our objectives. Specifically, literature that relates to the first research question will be restricted to the defined context of LAC, whereas literature to answer the second research question may include studies outside LAC. For both research questions, literature related to diabetes or hypertension care will be prioritised; however, literature on disruptions or recovery of services typically provided in primary care more broadly (eg, cancer screening) will be included during title/abstract screening and full-text review. Once the full-text review is complete, the number of studies relating to (1) disruption to diabetes care, (2) disruption to hypertension care, (3) recovery of diabetes care and (4) recovery of hypertension care will be assessed. If we do not find enough papers (eg, <50 articles) in each of these four categories for data extraction, we will explore relevant articles more broadly (ie, outside the LAC context or scoping out to other primary care services which may indicate disruptions to diabetes and hypertension care).

Original studies (eg, retrospective or prospective observational studies; clinical trials), reports and reviews with systematic search strategies (eg, systematic reviews, scoping reviews) will be included, whereas narrative literature reviews not using systematic searches will be excluded. Literature will be considered if published in English, Spanish or Portuguese. Studies will be excluded if they do not contain research data on levels of service delivery or effectiveness of interventions. Hence, editorials, commentaries, perspectives/viewpoints, theoretical reflective studies and letters to the editor for other original articles will not be included. Conference abstracts will be excluded.

Of note, studies were not restricted to the primary care setting, but may include any disease prevention or management services typically considered part of primary care; accordingly, studies on community health services or hospital outpatient services may be included, whereas specialist treatment will generally be excluded. Furthermore, when investigating ‘primary care’, this is defined to include all levels of the treatment cascade (awareness, detection, treatment and control); hence studies on prevention, screening and diagnosis will be included. This includes screening for diabetic complications (eg, eye, kidney, foot and heart disease); hence studies reporting referral to specialist care for screening of complications will be included. We will exclude studies with only COVID-19 cases or studies on the efficacy of COVID-19 prevention (eg, vaccination), surveillance, treatment or testing modalities, as this is not the focus of this review. Studies on the association of diabetes, hypertension or any other condition with COVID-19 infection or outcomes will also be excluded. Furthermore, we will exclude studies that primarily present data on dental care, established cancer treatment (not: cancer screening

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**Table 1** Population, concept and context (PCC) of this scoping review

<table>
<thead>
<tr>
<th>PCC item</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population</strong></td>
<td>Individuals for whom guidelines recommend screening or access to diabetes or hypertension care</td>
<td>Patients with type 2 diabetes</td>
</tr>
<tr>
<td><strong>Concept</strong></td>
<td>Disruption to the delivery of primary care services, with a particular focus on diabetes and hypertension care (awareness, detection, treatment and control), and recovery of those services where interruptions took place</td>
<td>Disruption: Cancellation of diabetes appointments due to perceived risk of contracting SARS-CoV-2 infection Recovery or mitigation: Offering virtual hypertension consultations to continue routine care</td>
</tr>
<tr>
<td><strong>Context</strong></td>
<td>Latin America and Caribbean region during the COVID-19 pandemic (2020–2022)</td>
<td>Colombia; Mexico City; Venezuelan border region</td>
</tr>
</tbody>
</table>
and treatment initiation), long-term and residential care (eg, in nursing homes), palliative care, psychiatry care, psychotherapy and mental health counselling, surgery (except in relation to diabetes/hypertension, as detailed in the next paragraph), acute hospital and emergency care and follow-up of acute conditions (except diabetes/hypertension related), management of substance use disorders and rehabilitation care, as these are not typically provided in primary care.

We will include studies reporting results from tertiary care services for diabetes and hypertension (eg, acute hospitalisation for diabetes-related/hypertension-related complications), as the occurrence of complications may indicate how effectively primary care services managed diabetes and hypertension care. These studies will be included if reporting referral or access to tertiary care or frequency (ie, prevalence and incidence) of complication occurrence, but excluded if reporting on delivery of specialist treatment. For example, findings on adverse cardiovascular event (eg, myocardial infarction, stroke) prevalence may be included if a link to diabetes or hypertension has been made in the study, or a link to primary care provision more generally is mentioned, whereas we will exclude cardiovascular events related to COVID-19 infection, health outcomes of specialist or tertiary care treatment and all other studies on cardiovascular events outside the above definition.

Due to the interest in COVID-19-specific disruptions to care, the review will be limited to literature indexed from 1 January 2020.

Search strategy and information sources
The authors developed the search strategy through an iterative approach, in consultation with an information specialist (LR), and guided by the PCC framework described above. A preliminary list of search terms was collated and further potential search terms were added through discussion within the team. To identify literature in relation to the second research question (mitigation/reversal/recovery interventions), a preliminary PubMed and Google search was conducted; titles, abstracts, index terms and a small number of full texts of retrieved scientific papers and reports were analysed for text words relevant to the search. These potential search terms were entered into PubMed to investigate their relevance to the research questions and approved terms were added to the list of potential search terms. Moreover, various terms from the preliminary list were entered in the MeSH database to identify additional search terms. The collated list of potential search terms was then discussed with the information specialist, who added further search terms in relation to COVID-19 and the LAC region (concept and context) and refined the search strategy.

Second, the preliminary search strategy was piloted to gauge the yield of relevant publications and to test the clarity of inclusion/exclusion criteria for reviewers. Following an initial search via PubMed, 700 articles were randomly chosen and pilot-reviewed by the researchers, and by research assistants who had not participated in the search strategy development, using double review. Based on the pilot review, the preliminary search strategy was discussed and further refined by the research team prior to performing the final search.

The final search strategy includes database-specific terms (MeSH terms) and keywords (see online supplemental appendix 3). For the final search, we will explore the following eight electronic databases: MEDLINE via PubMed, CINAHL, Global Health, Embase, Cochrane, Scopus, Web of Science and a Latin America specific database, LILACS.

Additionally, we will search grey literature and citation lists to identify relevant studies which may have been missed in the database search. For identifying grey literature, we will seek input from the World Bank, PAHO and regional subject experts recommended by PAHO. Cross-referencing will be done during full-text review to identify studies from the citation lists of identified literature reviews and reports.

Stage 3: study selection
Search results will be uploaded to EndNote reference manager and Covidence systematic review software. Duplicate papers will be removed first using EndNote, and any left-over duplicates will be queried and removed in Covidence. Covidence will be used to organise the review process of title and abstract screening, full-text review and data extraction.

During the title and abstract screening, as well as full-text review, the described inclusion/exclusion criteria will be applied, and the following tags will be used to classify literature for later review:
- Disruption of diabetes/hypertension care in LAC.
- Disruption of other primary healthcare services in LAC.
- Intervention to recover diabetes or hypertension care in LAC.
- Intervention to recover diabetes or hypertension care outside of LAC.
- Intervention to recover other primary healthcare services in LAC.
- Intervention to recover other primary healthcare services outside of LAC.
- (National) health policy implementation.
- Qualitative study.
- Review study.

Two reviewers will independently screen each title/abstract for eligibility, and if deemed potentially relevant, it will be included for full-text review. Similarly, two reviewers will independently review each full text and only include those for data extraction that meet the study eligibility criteria. Publications that do not meet the eligibility criteria will be excluded. Any conflicts between two reviewers will be resolved and adjudicated by a third reviewer.

Stage 4: data extraction
A data extraction template will be used to record study information, including details in response to our research...
Open access

Table 2  Items for data extraction

<table>
<thead>
<tr>
<th>Item for data extraction</th>
<th>Description/examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study findings</td>
<td>Levels of diabetes care (ie, diabetes awareness, detection, treatment and control or management of complications) offered or provided in LAC during the pandemic. Examples include no of routine consultations, access to insulin, rate of blood glucose measurements, funding of diabetes services, etc.</td>
</tr>
<tr>
<td>Continuity or disruption of hypertension care</td>
<td>Levels of hypertension care (ie, hypertension awareness, detection, treatment and control or management of complications) offered or provided in LAC during the pandemic. Examples include fractions of individuals receiving blood pressure (BP) control or hypertension treatment, mean systolic BP/diastolic BP levels, no of antihypertensive medications dispensed, affordability of medication, etc.</td>
</tr>
<tr>
<td>Continuity or disruption of other primary care</td>
<td>Changes in provision of other primary care services in LAC during the pandemic</td>
</tr>
<tr>
<td>Diabetes/hypertension interventions</td>
<td>Interventions to recover potential disruptions in diabetes or hypertension care in LAC (or other regions) during or after the pandemic</td>
</tr>
<tr>
<td>Other primary care interventions</td>
<td>Interventions to recover potential disruptions in non-communicable disease care more generally in LAC during or after the pandemic</td>
</tr>
<tr>
<td>Domains of services that were disrupted</td>
<td>Drug and supplies; facility infrastructure; information systems; workforces; funds; community engagement; patients’ perceptions (eg, fear of visiting clinics)</td>
</tr>
<tr>
<td>Care utilisation or patient-related indicators (ie, outcomes)</td>
<td>Frequency of clinic visits; adherence to treatment; diabetes and hypertension management cascade (frequency or rate of screening, detection/diagnosis, treatment and control); mean BP levels; hypertension control; glycaemic control</td>
</tr>
<tr>
<td>Type of interventions</td>
<td>Implementing/expanding telemedicine; promoting task-sharing; introducing longer prescription periods; funding</td>
</tr>
</tbody>
</table>

General study information

| Title                                         | Study title               |
| Author(s)                                    | Study author(s)           |
| Country/countries                            | Country or countries where study’s data were collected |
| Region(s)                                    | Detail whether study is nationally representative, or otherwise detail region(s) of data collection |
| City                                         | City or cities of data collection, if not nationally or regionally representative |
| Study objective                              | Briefly mention study objective, for example, ‘to describe use of hypertension care services during the pandemic’ |

Methodological details

| Study design                                  | Briefly mention study design and details of data collection methods, for example, pre–post data collection for intervention studies |
| Setting and sector of healthcare system       | (Public/private/both/other) |
| Population                                   | (Urban/rural/both/other) |
| Clinical conditions                           | Diabetes; hypertension; other—mental health; other—chronic respiratory conditions (excluding COVID-19); other—other cardiometabolic conditions (eg, obesity); other—liver disease; other—cancer screening (excluding established cancer care); other—maternal health |
| Data collection dates                         | Dates when study collected data |
| Participant description (if applicable)       | Healthcare workers; patients |

LAC, Latin America and Caribbean.

questions and guided by the PHCPI framework, general study information, methodological details of the studies and quality assessment (table 2). Initially, five reviewers will independently pilot the data extraction template for a mix of studies corresponding to each research question. Additional categories or outcomes will be added iteratively during this pilot phase, or later if needed. Free-text fields will be available also for categorical outcomes, and
notes added in these fields may be used for retrospective categorisation where suitable. Two reviewers will independently extract data using the piloted extraction form, and a third adjudicator will review the extracted data to form consensus.

**Quality assessment**

Retrieved articles will be assessed for quality using the Newcastle Ottawa Quality Assessment Scale (NOS), which assesses design quality of non-randomised, cohort and case-control studies. A maximum score of 9 will be aggregated across three domains of the NOS scale: selection of study groups (4 possible points), comparability of groups (2 possible points) and ascertainment of outcomes (3 possible points). The overall risk of bias will be classified as either ‘high’, ‘some concern’ or ‘low’ based on the cumulative NOS scores. Due to the heterogeneity of study design for eligible articles, the NOS scale may not be appropriate for all studies. In this case, eligible articles will be assessed using the JBI critical appraisal tools; for instance, qualitative studies will be evaluated using the JBI Checklist for Qualitative Research. Each critical appraisal question will receive a ‘yes’, ‘no’ or ‘unclear’ response. Quality appraisal will be conducted by two reviewers independently, with discrepancies discussed and resolved with the help of a third reviewer.

**Stage 5: data synthesis**

Review reporting will be guided by the JBI’s ‘PRISMA’ extension for Scoping Reviews checklist. The number of documents identified in the literature search will be documented for each database searched. Additionally, we will create a PRISMA flow chart summarising the number of publications included or excluded at each stage of title/abstract screening and full-text review, with reasons for exclusion.

Where possible, reported levels of care provision or recovery will be analysed using descriptive statistics. For categorical data (eg, study design, clinical condition), categories will be iteratively added to those variables as emerging in the literature, and frequency counts/percentages of studies falling into each category will be provided.

Beyond this, an exploratory approach to data analysis will be used, and exact analysis techniques will be chosen based on data structures available from the identified literature. The modified PHCPI conceptual framework will guide the synthesis of findings. A systematic narrative synthesis will be used to summarise and explain findings from the literature review. If the identified literature allows us to pool the data (eg, similar study designs and outcomes), we may quantitatively summarise the data using meta-analytical approaches.

Results will be presented in a narrative format and supported by tables and figures. For example, tables will indicate the distribution of included literature by country and/or region, and details of the methodology (eg, study design) used in the included literature. Tables or figures will additionally quantify levels of care provision, to indicate whether disruptions of care were observed. Interventions to recover care will also be listed in a table, with details (eg, evidence of effectiveness) provided for each study. Risk-of-bias assessment summary tables and plots will be created using the robvis application.

**Stage 6: stakeholder consultation**

After data extraction and initial synthesis of the data, we will consult regional experts in diabetes, hypertension and/or primary healthcare delivery from the LAC region for interpretation of results and to mutually develop recommendations based on the findings. This will include experts from the World Bank, PAHO and regional subject experts recommended by PAHO.

**Patient and public involvement**

There is no patient and public involvement in this study.

**ETHICS AND DISSEMINATION**

No ethics approval was needed for this study as only secondary analysis of published literature will be conducted.

The results of this study will be published in an independent report commissioned by the World Bank and the PAHO. Additionally, findings will be published in peer-reviewed scientific journals and at international conferences.

**Progress to date**

On 12 December 2022, we have systematically searched the 8 scientific databases and identified 33510 unique publications. Titles and abstracts have been fully screened and full-text review has started. Following data extraction and synthesis, we are planning to consult regional experts for interpretation and the provision of (grey) literature potentially missed in our search. This will be integrated with the findings from our systematic search, together with literature from a non-systematic search of grey literature and citation lists. We anticipate publication of jointly developed recommendations in a report, peer-reviewed scientific journal publications and at national and international conferences.

**DISCUSSION**

This scoping review will provide an extensive overview of the impact of the COVID-19 pandemic on disruption of primary care services in the LAC region, with a specific focus on awareness, detection, treatment and control of diabetes and hypertension. Moreover, this review will identify strategies that can help primary care services in LAC to mitigate or reverse pandemic disruptions and recover care.

A major strength of this study is the use of a comprehensive search strategy, including an LAC-specific database and literature published in English, Spanish and Portuguese. The search strategy has been iteratively developed...
with the help of an information specialist and team discussions, and guided by the defined PCC and PHCPI frameworks. Search terms were augmented with keywords identified during our pilot search of scientific and grey literature. Moreover, we tried to minimise the potential for bias using independent review by at least two reviewers during title/abstract screening, full-text review and data extraction, with conflict resolution by a third reviewer or in the team. Both title/abstract screening and full-text review were piloted and quality checks performed during the review stages. Similarly, the data extraction template drafted by the team will be iteratively piloted and refined. Acknowledged scoping review guidelines are used to guide the conduct and reporting of this review. Another strength is the consultation of regional experts to aid the interpretation of results.

Despite the comprehensive search strategy, we should acknowledge a few limitations of this scoping review. First, due to the time required from conducting research to publishing the results, some original studies will have been underway, and thus not be captured in our search. Second, some studies may have been only circulated within local or institutional bulletins or newspapers. Since their quality and rigour are uncertain, we did not include such studies. Third, we have restricted the systematic search to eight major databases and a non-systematic search of grey literature. Nonetheless, our approach has identified more than 33,000 unique publications.

Finally, we need to acknowledge the heterogeneity of countries in the LAC region and differences between individuals and population groups within each country. Among many contextual factors, this includes differences in the healthcare systems, research capacity and policies (eg, regulations of telemedicine). To consider such differences in our results, a narrative synthesis will be used to contextualise findings from individual studies. Additionally, the regional expert consultations will help contextualise our findings.

While findings from this scoping review may not be fully generalisable to countries outside the LAC region (the disruption of care in particular), we expect that learnings from interventions to mitigate or reverse pandemic disruptions can have important implications independent of geography. This is why we are extending the eligibility criteria of our second research objective to include intervention studies from outside the LAC region. Furthermore, as we move out of the COVID-19 pandemic, important learnings from the observed disruptions can indicate areas of primary healthcare that are more or less resilient to crises and may require reform. Similarly, interventions can be identified that may be feasible and effective to prevent or mitigate future health crises, and increase the sustainability of healthcare delivery in and beyond the LAC region.

Author affiliations
1 School of Population Health, RCSI University of Medicine and Health Sciences, Dublin, Ireland
2 Center for Preventive Medicine and Digital Health, Heidelberg University Medical Faculty, Mannheim, Germany
3 School of Nursing, Johns Hopkins University, Baltimore, Maryland, USA
4 Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA
5 Department of Medicine, Columbia University Medical Center, New York City, New York, USA
6 Welch Center for Prevention, Epidemiology and Clinical Research, Johns Hopkins Medical Institutions, Baltimore, Maryland, USA
7 Departamento de Endocrinología y Metabolismo, Unidad de Investigación en Enfermedades Metabólicas, Instituto Nacional de Ciencias Médicas y Nutrición, Salvador Zubirán, Ciudad de Mexico, Mexico
8 Welch Medical Library, Johns Hopkins University School of Medicine, Baltimore, Maryland, USA

Twitter Samira Barbara Jabakhanji @samirajabakhanji, Oluwabunmi Ogungbe @bunmiogungbe09 and Sonia Y Angell @SoniaAngell

Contributors SBJ and OO drafted the outline for this manuscript. SBJ and EWG conducted background research for the introduction. OO and KM drafted the literature review protocol, and other authors provided critical comments. OO and LR provided methodological guidance. All authors revised the applied framework. SBJ wrote the first draft of this manuscript. SYA, LA, DB, EWG, JM, KM, RM, LR and OO revised and commented on drafts.

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Patient consent for publication Not applicable.

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ORCID iDs
Samira Barbara Jabakhanji http://orcid.org/0000-0002-4870-9110
Lawrence Appel http://orcid.org/0000-0002-0673-6623
John McCaffrey http://orcid.org/0000-0003-0304-153X
Edward W Gregg http://orcid.org/0000-0003-2381-6622

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