

# INPLASY

## Pandemic Preparedness and Response Financing: A Critical Systematic review

INPLASY202380111

doi: 10.37766/inplasy2023.8.0111

Received: 26 August 2023

Published: 26 August 2023

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### ADMINISTRATIVE INFORMATION

**Support** - None.

**Review Stage at time of this submission** - Completed but not published.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202380111

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 26 August 2023 and was last updated on 26 August 2023.

### INTRODUCTION

**Review question / Objective** Our research question is: How does the scientific literature address the multifaceted aspects of pandemic preparedness and response financing, and what insights can be gleaned from examining peer-reviewed literature in this field? With the following specific objectives: (i) Landscape of Peer-Reviewed Studies (ii) Profiling Focus Areas and Research Objectives (iii) Cataloging Proposals and Financing Instruments.

**Rationale** The COVID-19 pandemic stands as one of the deadliest emergencies in modern history, with a global death toll exceeding 14.9 million people. Beyond the tragic loss of life, the pandemic wreaks staggering economic damage, with some studies estimating the impact at US\$16 trillion in the United States alone. The World Bank and WHO identify an annual investment need of US\$31.1 billion for a future PPR system. Despite the evidence, the international community does not yet establish a comprehensive PPR financing framework capable of managing future outbreaks.

Understanding PPR financing at a global level is more urgent than ever. Recognizing this need, we conduct a systematic review to collate and summarize evidence from recent global experiences. Our review explores the strategies, success cases, challenges, and opportunities that emerge in recent years. The objective of this review is to identify approaches that aim to close existing gaps in PPR financing and reduce the risk of another pandemic with social and economic costs comparable to those of COVID-19. Through this, we aim to provide insights that contribute to a more resilient and responsive global framework for PPR financing based on evidence and theory from a multidisciplinary approach.

**Condition being studied** This review studies the financing, funding, and investment strategies related to Pandemic Prevention, Preparedness, and Response at a global or international level.

### METHODS

**Search strategy** We conduct a three-stage search for relevant publications across ScienceDirect,

PubMed, and EconLit, focusing on the keywords: "pandemic," "preparedness," "response," "financing," "finance," and "funding." In ScienceDirect, we target research articles, review articles, and discussions with the following search strategy:

#1 "pandemic preparedness and response" AND ("financing" OR "finance" OR "funding")

#2 "pandemic prevention preparedness and response" AND ("financing" OR "finance" OR "funding")

In PubMed, we include all papers found, without applying finance-related filters. EconLit requires a more flexible search strategy, wherein keywords are sought in any order of appearance. This approach accommodates the unfamiliarity of economic literature with terms commonly used in medical literature.

**Participant or population** All articles that assess features of financing, funding, or investment on Pandemic Prevention, Preparedness, and Response are included, focusing on a global or international level. We do not include single country experiences or cases, nor subnational research. The systematic review is not limited to the COVID-19 experience. Nevertheless, we plan to include a broad range of participants/populations, regardless of their age, settings, and location. No restrictions are placed on the population of study. Searches apply to studies affecting the general population and no specific demographic or epidemiologic group. However, there is a geographical restriction; individual country studies and single-case analyses are excluded.

**Intervention** This review differs slightly from traditional systematic reviews of interventions. The research team does not directly evaluate the use of any intervention on a specific health-related topic. Nevertheless, we aim to verify the potential applicability, impact, challenges, and opportunities of several concepts related to Pandemic Prevention, Preparedness, and Response.

**Comparator** We accept any kind of comparators or control groups, including the comparison with appropriate groups. Furthermore, we focus on studies that address any funding or investment topic related to Pandemic Prevention, Preparedness, and Response. Studies are compared to non-pandemic health responses, including but not limited to primary care funding and universal health care funding.

**Study designs to be included** For this systematic review, we include peer-reviewed research articles,

reviews, and discussions that focus on PPR financing at the global and regional levels. Thus, we limit our scope to papers published in peer-reviewed journals and exclude grey literature such as reports, policy documents, working papers, newsletters, government documents, speeches, and white papers.

**Eligibility criteria** We do not include studies focused solely on single countries or single-case analyses, nor studies that focus on financing for epidemic preparedness and response. Furthermore, we exclude papers where PPR financing is not the central topic or that have no direct impact on this topic. Our search restricts to articles published after 1900, and only articles with keywords in English or those with at least an abstract in English are retrieved.

**Information sources** We conduct a three-stage search for relevant publications across ScienceDirect, PubMed, and EconLit. We target research articles, review articles, and discussions in peer-reviewed journals. No gray literature is included.

**Main outcome(s)** We evaluate what the main topics and scope of academic literature are regarding Pandemic, Preparedness, and Response, with a special focus on specific financial and investment proposals to close existing gaps. Our systematic review aims to identify papers that propose or discuss specific PPR financing instruments, including public policy tools, public-private partnerships, and common good investment funding to address pandemics and their effects on the population. We anticipate discussions about the role of the leading global funding mechanisms: the World Bank Pandemic Fund, ACT-A, and the IMF Resilience and Stability Trust. We also look for any relation between SDG 3.8 Universal Health Coverage (UHC), global health security, and PPR. Moreover, the study seeks to understand if literature identifies in-depth, objective assessments on the impact of PPR financing on key health outcomes during the pandemic, such as mortality rates. This requires a meticulous evaluation of in-depth, objective assessments within the current literature that offer a holistic understanding of how PPR financing mechanisms influence health outcomes during pandemic scenarios.

The WHO's Economic Council for 'Health for All' asserts that the link between economics, finance, and health is crucial to delivering health for all. This research holds relevance for human health, as understanding current PPE financing knowledge and gaps is the first step to proposing and

designing public health interventions to prevent the unnecessary deaths of millions, as we witnessed during the COVID-19 pandemic.

**Additional outcome(s)** None.

**Data management** We gather the general characteristics of each study and compile this information into a database. This database encompasses essential details such as authors, title, keywords, and abstract. Data from papers summarize the primary findings of each paper, drawing from both the abstract and, in cases where conclusions are absent, the discussion section of the full-text paper. We create summary tables to enhance comprehension and underscore the current state of research. The database is independently reviewed, and so are the summary tables.

**Quality assessment / Risk of bias analysis** We assess the quality of the journals where the articles in our review are published using the Scimago Journal & Country Rank.

The database, inclusion evaluations, summarized results, and classifications are all independently assessed by at least two authors to ensure objectivity and precision. If disagreements persist, a third author is consulted to resolve them.

Both “Pandemic Preparedness and Response” (PPR) and “Pandemic Prevention, Preparedness, and Response” are terms widely used by international organizations and policymakers in the COVID-19 response. However, they aren't academically consented terms, and the term evokes different meanings based on contexts or specific definitions. Authors might refer to PPR financing using different nomenclature, especially in non-medical literature and works published prior to 2020, potentially introducing biases.

**Strategy of data synthesis** To synthesize the primary findings, we use the framework proposed by the WHO Economic Council Health for All for building an economy for health. The framework recognizes that Health for All results from a wide range of interrelated factors, including financial and economic levers, and develops new approaches across all sectors. It encompasses four pillars: i) “Root/structural causes”; ii) “Social position/foundations”; iii) “Infrastructure and systems”; and iv) “Communities, Households, Individuals”. Each paper is classified under one or more of these four pillars based on its content.

The synthesis method is based on a structured narrative of the features of the selected reviews. We gather the general characteristics of each study and compile this information into a

database. This database encompasses essential details such as authors, title, keywords, and abstract. An author summarizes the primary findings of each paper, drawing from both the abstract and, in cases where conclusions are absent, the discussion section of the full-text paper. We create summary tables to enhance comprehension and underscore the current state of research. Another author independently reviews the summary tables and the database. Yet another author oversees the results and provides feedback. We use GPT-4 to synthesize summaries of individual papers, taking the review notes from authors as input.

**Subgroup analysis** None planned.

**Sensitivity analysis** None planned.

**Language restriction** Our search is restricted to articles with keywords in English or those with at least an abstract in English.

**Country(ies) involved** Roberto Duran-Fernandez: Tec de Monterrey, Mexico Daniel Bernal-Serrano: Tec de Monterrey, Mexico Alberto Garcia-Huitron: Independent Researcher, USA Raymond Hutubessy: World Health Organization, Switzerland.

**Keywords** pandemic; prevention; preparedness; response; finance; funding; financing.

**Dissemination plans** The review is intended to be published in a peer-reviewed journal.

#### **Contributions of each author**

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