NHS National Institute for Health Research

UNIVERSITY of York
Centre for Reviews and Dissemination

Systematic review

A list of fields that can be edited in an update can be found here

1. * Review title.

Give the title of the review in English

COVID-19 and Cholera Co-infection and Co-morbidity in Africa and Asia: A Systematic Review and Meta-Analysis

2. Original language title.

For reviews in languages other than English, give the title in the original language. This will be displayed with the English language title.

3. * Anticipated or actual start date.

Give the date the systematic review started or is expected to start.

02/09/2023

4. * Anticipated completion date.

[1* change]

Give the date by which the review is expected to be completed.

16/01/2024

5. * Stage of review at time of this submission.

This field uses answers to initial screening questions. It cannot be edited until after registration.

Tick the boxes to show which review tasks have been started and which have been completed.

Update this field each time any amendments are made to a published record.

The review has not yet started: No

Review stage	Started	Completed
Preliminary searches	Yes	No
Piloting of the study selection process	Yes	No
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

Provide any other relevant information about the stage of the review here.

6. [1*change] Named contact.

The named contact is the guarantor for the accuracy of the information in the register record. This may be any member of the review team.

Dr Akinsulie Chris Olalekan

Email salutation (e.g. "Dr Smith" or "Joanne") for correspondence:

Dr Akinsulie

7. [1*change] Named contact email.

Give the electronic email address of the named contact.

olasuile@gmail.com

8. Named contact address

Give the full institutional/organisational postal address for the named contact.

University of Ibadan

9. Named contact phone number.

Give the telephone number for the named contact, including international dialling code.

+15095959942

10. * Organisational affiliation of the review.

Full title of the organisational affiliations for this review and website address if available. This field may be completed as 'None' if the review is not affiliated to any organisation.

University of Ibadan

Organisation web address:

11. * Review team members and their organisational affiliations.

Give the personal details and the organisational affiliations of each member of the review team. Affiliation refers to groups or organisations to which review team members belong. **NOTE: email and country now MUST be entered for each person, unless you are amending a published record.**

Miss Oluwagbemisola Olukogbe. University of Ibadan
Dr Ibrahim Idris. Usmanu Danfodiyo University, Sokoto
Miss Melina Joshi. Erasmus Mundus Scholar
Dr Rhonda Williams. East Tennessee State University

12. * Funding sources/sponsors.

Details of the individuals, organizations, groups, companies or other legal entities who have funded or sponsored the review.

None

Grant number(s)

State the funder, grant or award number and the date of award

13. * Conflicts of interest.

List actual or perceived conflicts of interest (financial or academic).

None

14. Collaborators.

Give the name and affiliation of any individuals or organisations who are working on the review but who are not listed as review team members. **NOTE: email and country must be completed for each person, unless you are amending a published record.**

15. * Review question.
[1 change]

State the review question(s) clearly and precisely. It may be appropriate to break very broad questions down into a series of related more specific questions. Questions may be framed or refined using PI(E)COS or similar where relevant.

How has the COVID-19 pandemic potentiated the impact of cholera in endemic regions (Africa and Asia as a case study)? In this study, the PICO criteria will be used in framing the research question.

Population: Adults and children in Africa and Asia Intervention: The Covid-19 pandemic Comparison:

Cholera management during the pre-pandemic periodOutcome: The prevalence rate of cholera during the

post-COVID era.

16. * Searches.

State the sources that will be searched (e.g. Medline). Give the search dates, and any restrictions (e.g. language or publication date). Do NOT enter the full search strategy (it may be provided as a link or attachment below.)

Cochrane Library, Scopus, PubMed/MEDLINE, Global Index Medicus, EMBASE. Only studies published in English are of great importance. Studies published within the last ten years will be relevant.

17. URL to search strategy.

Upload a file with your search strategy, or an example of a search strategy for a specific database, (including the keywords) in pdf or word format. In doing so you are consenting to the file being made publicly accessible. Or provide a URL or link to the strategy. Do NOT provide links to your search **results**.

https://www.crd.york.ac.uk/PROSPEROFILES/485040_STRATEGY_20231122.pdf

Alternatively, upload your search strategy to CRD in pdf format. Please note that by doing so you are consenting to the file being made publicly accessible.

Do not make this file publicly available until the review is complete

18. * Condition or domain being studied.

Give a short description of the disease, condition or healthcare domain being studied in your systematic review.

The diseases of interest in this systematic review is cholera and COVID 19 as these diseases posed a threat on the healthcare and lead to the loss of lives of many individuals especially residents in low and middle income countries. It is of public health importance to understand the effect of COVID 19 on the increase rate in cholera diseases among Africans and Asia to help make better pre informed choices and help the healthcare sector.

19. * Participants/population.

Specify the participants or populations being studied in the review. The preferred format includes details of both inclusion and exclusion criteria.

Participants Inclusion Criteria: Participants who are affected with Cholera/COVID 19 between the age of 3 months to 75 years

Exclusion Criteria: Participants who do not have any record case of COVID 19/cholera

20. * Intervention(s), exposure(s).

Give full and clear descriptions or definitions of the interventions or the exposures to be reviewed. The preferred format includes details of both inclusion and exclusion criteria.

Inclusion Criteria:

• Studies will be conducted in cholera-endemic regions of Africa and Asia.

• Research will investigate the impact of COVID-19 on healthcare systems and cholera management.

• Comparative studies will explore cholera management during the COVID-19 pandemic.

• Studies will measure the prevalence and incidence of cholera during and beyond the COVID-19 pandemic.

Exclusion Criteria:

• Studies will be excluded if conducted outside the specified endemic regions.

• Research not addressing the impact of COVID-19 on cholera management will be excluded.

• Studies not measuring cholera prevalence and incidence within the defined time frame (2013 to 2023) will be excluded.

These criteria are designed to guide the selection of studies that will align with the specific focus and objectives of the review.

21. * Comparator(s)/control.

Where relevant, give details of the alternatives against which the intervention/exposure will be compared (e.g. another intervention or a non-exposed control group). The preferred format includes details of both inclusion and exclusion criteria.

Inclusion Criteria:

Comparative Cholera Management Studies will be included, focusing on studies that explicitly compare different strategies, interventions, or adaptations in cholera management during the COVID-19 pandemic. This will encompass research assessing the effectiveness of various approaches in response to the unique challenges posed by the concurrent presence of cholera and COVID-19.

Adaptation Studies will be included, involving research that explores adaptations in cholera response and management strategies specifically in the context of the COVID-19 pandemic. This will include investigations into how existing cholera management practices have been modified to address the challenges arising from the pandemic.

Exclusion Criteria:

Non-Comparative Studies will be excluded, particularly those that do not involve a direct comparison of different cholera management strategies or adaptations during the COVID-19 pandemic.

Non-Relevant Comparisons will be excluded, specifically research that does not address the impact of COVID-19 on cholera management or does not specifically compare different strategies in response to the pandemic.

These criteria are designed to ensure that the review will include studies offering comparative insights into cholera management strategies during the COVID-19 pandemic, contributing to a nuanced understanding of how responses have been adapted in the face of concurrent challenges.

22. * Types of study to be included.

Give details of the study designs (e.g. RCT) that are eligible for inclusion in the review. The preferred format includes both inclusion and exclusion criteria. If there are no restrictions on the types of study, this should be stated.

The review will include cohort studies, case-control studies, cross-sectional studies, randomized controlled trials (RCTs), and mixed-method research on the comorbidity of cholera and SARS-CoV-2 in Africa and Asia. The inclusion criteria will involve studies conducted in endemic regions within the past 10 years, concentrating on assessing the impact of COVID-19 on healthcare systems and cholera management. Special emphasis will be placed on studies that measure the prevalence and incidence of cholera during and beyond the COVID-19 pandemic. Only peer-reviewed articles published in English will be considered to ensure a stringent evidence base, and there will be no geographical restrictions beyond the specified endemic regions. Exclusion criteria will be applied to non-original research, animal studies, conference abstracts, and studies published before 2013.

23. Context.

Give summary details of the setting or other relevant characteristics, which help define the inclusion or exclusion criteria.

The inclusion criteria for this review will concentrate on studies conducted in regions endemic to cholera, specifically in Africa and Asia, ensuring a direct and pertinent focus on areas where cholera is prevalent. This geographical specification is pivotal as it aims to facilitate an understanding of the distinctive challenges and interactions between cholera and COVID-19 in these particular regions. The emphasis on endemic settings seeks to capture the dynamics and complexities associated with cholera in areas where the disease is more widespread. Additionally, the inclusion criteria will revolve around the impact of COVID-19 on healthcare systems and cholera management, reflecting a concern for the additional challenges posed by the pandemic in regions already grappling with endemic diseases. The defined time frame of the last 10 years (2013 to

2023) has been chosen to allow for a comprehensive view of the dynamics between cholera and COVID-19, covering both pre-COVID and post-COVID periods. This time frame aims to facilitate an up-to-date understanding of the comorbidity. These context-specific criteria are meticulously designed to ensure a detailed and relevant analysis of the interplay between cholera and SARS-CoV-2 within the specified regions and time frame.

24. * Main outcome(s).

Give the pre-specified main (most important) outcomes of the review, including details of how the outcome is defined and measured and when these measurement are made, if these are part of the review inclusion criteria.

The predetermined primary outcomes for this review will be centered around the prevalence and incidence of cholera, both during and beyond the COVID-19 pandemic. These outcomes are deemed crucial for the comprehensive assessment of the pandemic's impact on the dynamics of cholera cases. The measurement of prevalence will involve the quantification of the total number of cholera cases within a defined population during a specific period. Incidence, on the other hand, will be measured by determining the number of new cholera cases occurring within a given time frame, thereby providing valuable insights into the rate of occurrence. These outcomes will be scrutinized at various points, covering studies that measure prevalence and incidence during the COVID-19 pandemic and extending beyond it. The emphasis on these specific outcomes is integral to gaining a profound understanding of the trends and dynamics of cholera cases, ultimately informing targeted public health interventions. The inclusion criteria have been strategically designed to prioritize studies that explicitly address these outcomes, ensuring that the selected research contributes valuable and pertinent data to the overarching objective of thoroughly evaluating the impact of COVID-19 on the prevalence and incidence of cholera in endemic regions.

Measures of effect

Please specify the effect measure(s) for you main outcome(s) e.g. relative risks, odds ratios, risk difference, and/or 'number needed to treat.

The forest plot was the confidence interval which will be derived from the effect sizes. The effect size will be derived using statistical methods such as Standard deviation, Cohen, and mean. The parameters that will be fetched include states, region covered, age groups, gender and total count of cases from text.

25. * Additional outcome(s).

List the pre-specified additional outcomes of the review, with a similar level of detail to that required for main outcomes. Where there are no additional outcomes please state ‘None’ or ‘Not applicable’ as appropriate to the review

Not applicable

Measures of effect

Please specify the effect measure(s) for you additional outcome(s) e.g. relative risks, odds ratios, risk difference, and/or 'number needed to treat.

26. * Data extraction (selection and coding).

Describe how studies will be selected for inclusion. State what data will be extracted or obtained. State how this will be done and recorded.

Date of data extraction, Authors, Title, Publication Date, Publication Type, Source, Study design, Population description, Sample size, Setting/Context, Intervention, Method of Analysis, Outcomes assessed, Results, Limitation, Other relevant Factors. Above are the suggested key information that will extracted from the included studies.

All data extraction is performed by two independent reviewers to ensure accuracy. Any discrepancies between reviewers are resolved through discussion or, if necessary, consultation with a third reviewer. If relevant data are missing or unclear, the authors of the studies will be contacted to request the information. The extracted data is entered into systematic review software or a spreadsheet for analysis.

27. * Risk of bias (quality) assessment.

State which characteristics of the studies will be assessed and/or any formal risk of bias/quality assessment tools that will be used.

The CASP tool will be used. The question has been adapted to ensure that there's reduction of bias in the study. Each included publication will be screened and a score will be given out of 10.

Quality Assessment Questions

1. Was a specific issue covered by the review? (The population under investigation, the intervention administered, and the evaluated result)

2. Sociodemographic characteristics

3. Did the study address the review’s question and have an appropriate study design?

4. Do you you think all the essential, relevant studies were included?

5. Did the authors of the review do enough to evaluate the calibre of the studies that were included?

6. Are results from all the included studies displayed?

7. What conclusions did the review draw overall? (How the findings were presented)

8. How precise are the results? (Is confidence interval given)

9. Adequate description of statistical analysis procedures

10. Questionnaires reviewed by experts.

28. * Strategy for data synthesis.

Describe the methods you plan to use to synthesise data. This **must not be generic text** but should be **specific to your review** and describe how the proposed approach will be applied to your data. If meta-analysis is planned, describe the models to be used, methods to explore statistical heterogeneity, and software package to be used.

The quality and type of data that were taken out of the included studies will determine how the collected data is combined. Narrative Synthesis: A narrative synthesis is carried out when there is an excessive degree of variation between the included studies' interventions, comparators, outcomes, or study designs. This comprises a discussion of the trends and findings from every study, as well as a descriptive summary of the studies categorized by pertinent features like the kind of bioactive compound or cancer. Meta-analysis: To aggregate the quantitative results, a meta-analysis is carried out when there are sufficient studies reporting the same outcome and employing comparable techniques. Cochran's Q test and the I^2 statistic are two popular statistical tests used in meta-analyses to evaluate study heterogeneity. These tests assist in identifying whether the variation in research findings exceeds the expected random variation. Depending on how much statistical heterogeneity exists between studies, either a fixed-effects or random-effects model should be used. When heterogeneity is minimal, a fixed-effects model is employed, indicating that all the studies have the same actual effect size and are functionally identical. A random effects model is applied in cases of moderate or high heterogeneity, which indicates that the studies differ from one another and that the true effect size varies.

29. * Analysis of subgroups or subsets.

State any planned investigation of ‘subgroups’. Be clear and specific about which type of study or

participant will be included in each group or covariate investigated. State the planned analytic approach.
COVID-19 and Cholera patients and those at risk of these diseases would be the population to be used. Therefore, research utilizing samples from this population will be utilised. Based on the worldwide COVID-19 epidemiology, subgroup analysis would be performed for the most prevalent states or regions in Africa and Asia. A combination of qualitative and quantitative data analysis techniques will be used in the proposed analysis. The data from the systematic review studies will be described by the qualitative analysis. Authors using a qualitative or non-quantitative approach will examine the unique features and patterns found in the data gleaned from studies. We'll use a methodical tabulation of all the data. Studies using numerical data would be included in the quantitative analysis. Subgroup, sensitivity, and cumulative analyses will be carried out in the quantitative approach. The impact of different confounding factors on the findings will be examined, and the consistency of the results will be verified.

30. * Type and method of review.

Select the type of review, review method and health area from the lists below.

Type of review

Cost effectiveness
No

Diagnostic
No

Epidemiologic
No

Individual patient data (IPD) meta-analysis
No

Intervention
No

Living systematic review
No

Meta-analysis
Yes

Methodology
No

Narrative synthesis
No

Network meta-analysis
No

Pre-clinical

No

Prevention
No

Prognostic
No

Prospective meta-analysis (PMA)
No

Review of reviews
No

Service delivery
No

Synthesis of qualitative studies
No

Systematic review
Yes

Other
No

Health area of the review

Alcohol/substance misuse/abuse
No

Blood and immune system
No

Cancer
No

Cardiovascular
No

Care of the elderly
No

Child health
No

Complementary therapies
No

COVID-19
Yes

For COVID-19 registrations please tick all categories that apply. Doing so will enable your record to appear in area-specific searches

Chinese medicine
Diagnosis
Epidemiological
Genetics
Health impacts
Immunity
Long COVID
Mental health
PPE
Prognosis
Public health intervention
Rehabilitation
Service delivery
Transmission
Treatments
Vaccines
Other

Crime and justice

No

Dental

No

Digestive system

No

Ear, nose and throat

No

Education

No

Endocrine and metabolic disorders

No

Eye disorders

No

General interest

No

Genetics

No

Health inequalities/health equity

No

Infections and infestations

Yes

International development
No

Mental health and behavioural conditions
No

Musculoskeletal
No

Neurological
No

Nursing
No

Obstetrics and gynaecology
No

Oral health
No

Palliative care
No

Perioperative care
No

Physiotherapy
No

Pregnancy and childbirth
No

Public health (including social determinants of health)
No

Rehabilitation
No

Respiratory disorders
No

Service delivery
No

Skin disorders
No

Social care
No

Surgery
No

Tropical Medicine

No

Urological

No

Wounds, injuries and accidents

No

Violence and abuse

No

31. Language.

Select each language individually to add it to the list below, use the bin icon to remove any added in error.

English

There is not an English language summary

32. * Country.

Select the country in which the review is being carried out. For multi-national collaborations select all the countries involved.

Nepal

Nigeria

United States of America

33. Other registration details.

Name any other organisation where the systematic review title or protocol is registered (e.g. Campbell, or The Joanna Briggs Institute) together with any unique identification number assigned by them. If extracted data will be stored and made available through a repository such as the Systematic Review Data Repository (SRDR), details and a link should be included here. If none, leave blank.

34. Reference and/or URL for published protocol.

If the protocol for this review is published provide details (authors, title and journal details, preferably in Vancouver format)

Add web link to the published protocol.

Or, upload your published protocol here in pdf format. Note that the upload will be publicly accessible.

No I do not make this file publicly available until the review is complete

Please note that the information required in the PROSPERO registration form must be completed in full even if access to a protocol is given.

35. Dissemination plans.

Do you intend to publish the review on completion?

No

Give brief details of plans for communicating review findings.?

36. Keywords.

Give words or phrases that best describe the review. Separate keywords with a semicolon or new line. Keywords help PROSPERO users find your review (keywords do not appear in the public record but are included in searches). Be as specific and precise as possible. Avoid acronyms and abbreviations unless these are in wide use.

Covid-19

Pandemic

Africa

Asia

Endemic

37. Details of any existing review of the same topic by the same authors.

If you are registering an update of an existing review give details of the earlier versions and include a full bibliographic reference, if available.

38. * Current review status.

Update review status when the review is completed and when it is published.New registrations must be ongoing so this field is not editable for initial submission.

Please provide anticipated publication date

Review_Ongoing

39. Any additional information.

[1. changed]

Provide any other information relevant to the registration of this review.

Upon submission of the protocol, the suggested correction was effected by adding the research question to field #15 by two authors in the team. A total of 4 authors prepared the research proposal needed for the

registration of the protocol.

40. Details of final report/publication(s) or preprints if available.

Leave empty until publication details are available OR you have a link to a preprint (NOTE: this field is not editable for initial submission). List authors, title and journal details preferably in Vancouver format.

Give the link to the published review or preprint.