nature portfolio

Peer Review File

Health-system Barriers and Missed Opportunities in Cardiovascular care in Sierra Leone: a Scoping Review

Corresponding Author: Dr Mohamed Jalloh

This file contains all reviewer reports in order by version, followed by all author rebuttals in order by version.

Version 0:

Reviewer comments:

Reviewer #1

(Remarks to the Author)
1. Brief Summary of the Manuscript
This systematic scoping review comprehensively maps the health-system barriers to cardiovascular disease (CVD) care in Sierra Leone using the WHO's six building blocks framework. The authors synthesized evidence from 40 studies published between 2000 and 2025 to identify critical challenges, including severe workforce shortages (<5 cardiologists) , inadequate access to essential medicines (available in 31% of facilities) , high out-of-pocket expenditure (51%) , and fragmented health information systems. The paper argues that these systemic failures contribute to Sierra Leone's low effective Universal Health Coverage (UHC) index (42/100) and rising CVD mortality. It concludes by proposing evidence-based policy priorities, such as task-sharing, pooled drug procurement, and strengthened governance, to improve cardiovascular outcomes and accelerate progress toward UHC.
2. Overall Impression of the Work
This is a well-structured, timely, and important manuscript that addresses a critical public health issue in a fragile, low-resource setting. The use of the WHO health-system framework provides a clear and effective structure for analyzing a complex problem. The review is methodologically sound, following PRISMA-ScR guidelines , and draws on a comprehensive search of both academic and grey literature. The manuscript's primary strength lies in its clear translation of research findings into actionable, context-specific policy recommendations. The work is novel in its specific application of a complex-adaptive-systems lens to the WHO framework to interpret the interconnected nature of these health system challenges in the context of CVD care in Sierra Leone. It represents a significant contribution to the literature on NCDs in post-conflict settings and will be of high interest to policymakers, public health practitioners, and researchers.
3. Specific Comments
3.1 Clarity and Scope of Search Dates: The manuscript states that the literature search was conducted from January 1, 2000, to May 10, 2025. As the current date is in August 2025, searching into the future is not possible. Please clarify if this is a typographical error and correct the end date of the search period throughout the manuscript to reflect the actual date the search was completed.
3.2 Consistency in Cardiologist Numbers: The abstract mentions "<5 cardiologists" , while the main text in the "Health workforce" section states "only two cardiologists in the public sector". For consistency and precision, it would be beneficial to use the more specific number in the abstract or provide a brief explanation for the range.
3.3 Strengthening the Discussion on "Emerging Enablers": The section on "Emerging enablers" effectively highlights digital health, task-sharing, and community engagement as promising strategies. This section could be further strengthened by briefly discussing potential challenges to scaling these enablers, such as the digital divide, the need for robust training and supervision for task-sharing, and ensuring the sustainability of community engagement initiatives beyond donor-funded projects.
3.4 UHC Index Discrepancy: The abstract states Sierra Leone's effective UHC index is 42/100 , while the introduction cites both a service-coverage index of 41/100 and an effective-coverage index of 42/100. While these figures are very close, for absolute clarity, I suggest specifying in the abstract that the 42/100 figure refers to the effective-coverage index to avoid any ambiguity for the reader.
3.5 Integration of Figure 1: Figure 1 provides an excellent conceptual framework. However, its connection to the main text could be more explicit. The authors could consider referring to specific parts of the figure when discussing the interconnectedness of the building blocks. For example, when discussing how medicine stock-outs (Essential Medicines) impact frontline care (Service Delivery), a direct reference to the feedback loops in Figure 1 would reinforce the complex adaptive systems argument.

3.6 Data on In-hospital Mortality: The manuscript notes a "40% in-hospital mortality" for stroke. It would be valuable to contextualize this figure. If data are available in the source cited, briefly mentioning how this compares to regional averages or expected rates in settings with more developed stroke care could further underscore the severity of the service delivery gap.
3.7 Clarity on "Hidden Costs": The "Health financing" section mentions that "Hidden costs equal or exceed drug prices". To enhance reader understanding, it would be helpful to provide one or two brief examples of what these hidden costs entail (e.g., transportation, lost wages), as detailed in the cited sources. This would add powerful, tangible detail to the financial barriers faced by patients.

Reviewer #2

(Remarks to the Author)
This is a good review highlighting the challenges being faced on the ground in LMIC for provision of CVD prevention, promotion, care and palliative care.

Reviewer #3

(Remarks to the Author)
Thank you for the opportunity to review this manuscript. A scoping review of cardiovascular disease care in Sierra Leone using the WHO building blocks framework is both timely and important. The authors have produced an engaging and thoughtful piece, and the narrative provides a valuable commentary on the current state of CVD care in Sierra Leone.

That said, much of the manuscript reads more as a commentary than as a structured scoping review. The insights are strong, but to fulfill the stated goal, the work would require restructuring. In particular, more systematic mapping of findings to the WHO health system building blocks (including more precise definitions of how each building block is assessed in this review), clear separation between outcomes and systems factors, and careful attention to scope (commentary vs. review) would strengthen the contribution.
Below I provide specific comments. I hope these comments will assist the authors as they proceed to their next steps.

Specific Comments
1. Mapping to WHO Building Blocks: The mapping of findings to individual building blocks is at times unclear.
o For example, p.7, lines 155–157 group together dimensions linked to both systems blocks and outcomes within the problem statement. A more careful and consistent mapping would add clarity. Relatedly, the authors should consider describing how they are separating “service delivery” from “infrastructure and essential commodities” – I note several references to service readiness and equipment availability, which seems to have high overlap with the infrastructure category.
o On p.8, lines 174–175, “community beliefs” are discussed. This seems more reflective of community dynamics or sociocultural context than system readiness per se. If meant to represent system dynamics, this should be clarified.
o Lines 211–214: discussion of equipment and commodities is mixed with outcomes (hypertension control) and explanatory factors (prioritization of ID and MCH). These categories need clearer delineation.

2. “Policy Outlook”
o Generally in this section (and elsewhere) There is a fair bit of editorializing around other policies that could be introduced, without much relationship to the analysis, making it hard to assess them. E.g., is it the case that there are no targets for salt consumption? Blanket recommendations about importing efforts successful elsewhere (performance budgets in Rwanda) don’t lay out the complexity and cost of the efforts. Are they appropriate in a lower information setting

3. Other comments
o 250-251 – It would be helpful to understand if enablers are relevant for specific types of programs / activities. Overall, it appears that findings from relatively small or specific studies are presented as highly generalizable.
o 267-270 – the discussion on HIS indicators under the “Knowledge Gaps” section is very interesting; I am not sure why it is presented under knowledge gaps rather than HIS? Then you could talk about implications of the sparse/coarse data records for surveillance and planning
o 284-285 – the authors describe an opportunity to move towards the policy frontier and little to no cost – this is a very provocative statement, I am not clear what you are drawing upon to make it?
o 302 – unclear the role of MH co-management in the context of the analysis?

Reviewer #4

(Remarks to the Author)
I co-reviewed this manuscript with one of the reviewers who provided the listed reports. This is part of the Communications Medicine initiative to facilitate training in peer review and to provide appropriate recognition for Early Career Researchers who co-review manuscripts.

Reviewer #5

(Remarks to the Author)
Thank you for your work on an important topic - cardiovascular diseases and health system factors in Sierra Leone. In your abstract and introduction, you refer to rising mortality in Sierra Leone and the need to look at the contribution of the health-system determinants leading you to the objective and importance of identifying barriers and facilitators of cardiovascular care. You also make use of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses modified statement for scoping reviews (PRISMA-ScR) guidelines. Results summarised findings such as workforce shortages, substantial out of pocket spending and infrastructural inadequacies. However, there are some major (and minor) issues including methodological and results that diminish the quality of the work, outlined below.

Title: According to the PRISMA-ScR guidelines, it is recommended to identify this as a scoping review in the title, which is not the case here. Consider incorporating this as per PRISMA - ScR.
If possible, the populated PRISMA-ScR checklist should be included in the Appendix

Methods
The methods section should provide adequate detail such that someone else would be able to replicate results. The criteria/process for inclusion of relevant articles is vague and could be more detailed. Some definitions in this section would also provide clarity as well as a mention of what major risk factors were considered etc.
Some further suggestions here:
Line 107 – 118 When (date) was the search done?
Line 117 – 118 Implies the initial screening involved title, abstract, full text combination by three reviewers? i.e. three reviewers read full texts of 498 articles? Please clarify
Please also mention if any software used for management? De-duplication, co-ordinating between reviews etc.
Was there a different search strategy for different databases?
Was a language limit applied? Studies limited to those in English?
Line 116 you excluded studies lacking full text, however some conflicting information in the results relating to this, which says 7 studies without full text were included based on abstracts and available data – this needs clarity and probably revision to selection criteria.

Results
Consider giving some overview of Sierra Leone health care system levels and structure etc.

A major concern here is regarding how and what type of data was extracted from the various studies. Reviews like these using data from original reports/studies should usually limit the data extracted from the results/findings section. However, after browsing some articles, there are inconsistencies. For example, I found data presented in this review from Kamara et al (2024) whereby the main findings do not correspond to some of those extracted to the Table 1 (e.g. under financial access and social acceptability) in the Supplement, which is concerning. Most likely there is a mixture of results extracted from other places in the articles such as discussion, introduction etc. which presents a key flaw to be addressed.

The results are rather superficial, like a generic summary in some domains without much data, bringing into question the quality of the studies and really diminishing the strength of the work. You mention noting each study's' methodological approach and potential limitations to contextualise findings appropriately but whilst of interest, the outcome of this was not mentioned elsewhere nor discussed. Consider highlighting this to the reader.

Following the point above, Line 145 – 158 Health systems barriers and building blocks
Has little substance – in my assessment does not present a single result. If this is the case, I expected a limitation section would highlight this.

The interpretation also in general lacks depth in light of the framework proposed and presents a summary in most places. For example, for UHC and other large areas being important concepts, I would have expected a deeper dive post status such as underpinnings in the country or at least a limitation section discussing lack of adequate information found.

Just a point that when results are from one study, the presentation of results should not try to generalise that to the whole country. Authors also need to minimise incorporating discussion into results (several places) or presenting results from outside Sierra Leone in the results section e.g. Line 157

Again, some sections are missing, particularly a discussion section with limitations – is this an oversight?

Some minor comments
153 suggest to replace 'through' with 'and'
155 weak primary care
157 – 158 Sentence needs revision
172 These challenges correlate with 25-hour median stroke transfer times (consider re-phrasing)
176 Seems isolated (put references)
179 General staffing here refers to which cadre? doctors, medical assistants, nursing?
180 Please modify – there are only two cardiologists
182 Consider rephrasing - community health workers tend to cluster?

182 – 183 Please add a reference to task-sharing initiatives
183 – 184 This seems ectopic
186 Rephrase this, perhaps 'the magnitude of unmet need is illustrated in the field of specialized cardiac surgery…'
187 What is population benchmark – refers to which population
189 The point conveyed by the sentence 'Effective task allocation is also contingent on timely and accurate data flows, which remain fragile.' Is also not clear and may need a reference.
193 correct to none of which
195 – 197 Compound sentence on different issues, revise
198 Re-phrase, 'only 23% of facilities were documented to have internet access…
199-200 Here I see a mix of discussion
202 Change to found none from Sierra Leone instead of no. The data from this source should also be clarified in terms of what specifically was not found in Sierra Leone
203 – 204 The connection of low-cost diagnostic algorithms and digital records is not clear –seems out of flow – perhaps another reference or added clarifications
212 – 214 Seems more for discussion – unless these findings where from Sierra Leone
Infrastructure
Introduce to the reader the current financing structure covering the current years from MOH (I assume there are some in country reports amongst articles found)
Rephrase 237 to 239
242 – 243 Citation for Steering committees operate without binding authority; parallel donor programs fragment oversight; vacant directorate positions disrupt coordination
263 – 266 these two sentences do not make a coherent point. Highlighting the last sentence here "The national NCD directorate functions on a minimal budget; dependence on
external donors perpetuates high, and out-of-pocket spending deters service use"
274 0 276 You talk about DHIS systems – background information? Current status/capacity?
287 Needs reference and a nuance discussion – the part about pooled procurement being most affordable?
338 SLeSHI Act – introduce to reader what this entails.
392 Table 2 There are inconsistencies in fonts; also needs to add age category implied for GBD CVD DALYs
367 Figure – developed or adopted?
Arrows on CVD care continuum seems to point right to left, counterintuitive
Interactions not clearly fitting – workforce and essential medicines?
Need clarity around the cross-cutting system enablers, how selected and supported by data gathered in the scoping review
I found Table 1 useful, although details inserted could be more organised and including labels

Version 1:

Reviewer comments:

Reviewer #3

(Remarks to the Author)
I commend the authors on their work. I have no further comments.

Reviewer #1

Reviewer #1 (Remarks to the Author):

1. Brief Summary of the Manuscript

This systematic scoping review comprehensively maps the health-system barriers to cardiovascular disease (CVD) care in Sierra Leone using the WHO's six building blocks framework. The authors synthesized evidence from 40 studies published between 2000 and 2025 to identify critical challenges, including severe workforce shortages (<5 cardiologists), inadequate access to essential medicines (available in 31% of facilities), high out-of-pocket expenditure (51%) , and fragmented health information systems. The paper argues that these systemic failures contribute to Sierra Leone's low effective Universal Health Coverage (UHC) index (42/100) and rising CVD mortality. It concludes by proposing evidence-based policy priorities, such as task-sharing, pooled procurement, and strengthened governance, to improve cardiovascular outcomes and accelerate progress toward UHC.

2. Overall Impression of the Work

This is a well-structured, timely, and important manuscript that addresses a critical public health issue in a fragile, low-resource setting. The use of the WHO health- framework provides a clear and effective structure for analyzing a complex problem. The review is methodologically sound, following PRISMA-ScR guidelines, and draws on a comprehensive search of both academic and grey literature. The manuscript's primary strength lies in its clear translation of research findings into actionable, context-specific policy recommendations. The work is novel in its specific application of a complex-adaptive-systems lens to the WHO framework to interpret the interconnected nature of these health system challenges in the context of CVD care in Sierra Leon It represents a significant contribution to the literature on NCDs in post-conflict settings and will be of high interest to policymakers, public health practitioners, and researchers.

3. Specific Comments

3.1 Clarity and Scope of Search Dates: The manuscript states that the literature search was conducted from January 1, 2000, to May 10, 2025. As the current date is in August 2025, searching into the future is not possible. Please clarify if this is a typographical error and correct the end date of the search period throughout the manuscript to reflect the actual date the search was completed.

> **Response**: Thank you. We corrected and standardised how the search end date is described across the Abstract and Methods so it is clear the search was run and updated through 10 May 2025, without implying prospective searching. We also ensured the PRISMA flow description is consistent with this reporting.

3.2 **Consistency in Cardiologist Numbers:** The abstract mentions "<5 cardiologists", while the main text in the "Health workforce" section states "only two cardiologists in the public sector". For consistency and precision, it would be beneficial to use the more specific number in the abstract or provide a brief explanation for the rang

Response: We agree. We revised the manuscript to use a single, precise estimate throughout. We now consistently report three cardiologists in the public sector, aligned with the source cited in the Health Workforce section, and removed the imprecise "<5" phrasing.

3.3 **Strengthening the Discussion on "Emerging Enablers":** The section on "Emerging enablers" effectively highlights digital health, task-sharing, and community engagement as promising strategies. This section could be further strengthened by briefly discussing potential challenges to scaling these enablers, such as the digital divide, the need for robust training and supervision for task-sharing, and ensuring the sustainability of community engagement initiatives beyond donor-funded projects.

Response: Thank you. We strengthened the Discussion to make feasibility constraints explicit. For digital tools, we now describe infrastructure constraints and the implication that interventions should be designed for low-connectivity contexts (for example, offline-first approaches where appropriate). We also added clearer language on sustainability and the conditions required for scale-up (workforce capacity, supervision, supply chain reliability, and financing), rather than presenting enablers as readily generalisable solutions.

3.4 **UHC Index Discrepancy**: The abstract states Sierra Leone's effective UHC index is 42/100, while the introduction cites both a service-coverage index of 41/100 and an effective-coverage index of 42/100. While these figures are very close, for absolute clarity, I suggest specifying in the abstract that the 42/100 figure refers to the effective-coverage index to avoid any ambiguity for the reader.

Response: We clarified the distinction between the UHC service-coverage index and the UHC effective-coverage index and revised wording so these metrics are not presented as interchangeable. Where the effective index is used, we label it explicitly to prevent confusion.

3.5 **Integration of Figure 1**: Figure 1 provides an excellent conceptual framework. However, its connection to the main text could be more explicit. The authors could consider referring to specific parts of the figure when discussing the interconnectedness of the building blocks. For example, when discussing how medicine stock-outs (Essential Medicines) impact frontline care (Service Delivery), a direct reference to the feedback loops in Figure 1 would reinforce the complex adaptive systems argument.

Response: We agree. We added targeted in-text references to Fig. 1 where feedback loops and cross-building-block interactions are described, and we clarified in Methods how the

Complex Adaptive Systems lens was applied to interpret interdependencies, rather than leaving the figure as a stand-alone schematic.

3.6 **Data on In-hospital Mortality:** The manuscript notes a "40% in-hospital mortality" for stroke. It would be valuable to contextualize this figure. If data are available in the source cited, briefly mentioning how this compares to regional averages or expected rates in settings with more developed stroke care could further underscore the severity of the service delivery gap.

Response: Thank you. We revised the text to improve interpretability by linking mortality signals to the constraints identified in the review (notably diagnostic access, referral delays, and acute care limitations). We also ensured that outcome statements are clearly attributable to their source context and are not presented as national estimates unless supported.

3.7 **Clarity on "Hidden Costs":** The "Health financing" section mentions that "Hidden costs equal or exceed prices". To enhance reader understanding, it would be helpful to provide one or two brief examples of what these hidden costs entail (g., transportation, lost wages), as detailed in the cited sources. This would add powerful, tangible detail to the financial barriers faced by patients.

Response: We agree. We revised this section to provide clearer, tangible examples grounded in included sources, focusing on costs that directly shape access and continuity of care (for example, transport-related expenses and out-of-pocket payments that reduce effective access even when services nominally exist). We removed vague phrasing and avoided introducing examples not supported by the included evidence.

Reviewer #2 (Remarks to the Author):

This is a good review highlighting the challenges being faced on the ground in LMIC for provision of CVD prevention, promotion, care and palliative car

Response: Thank you for the encouraging evaluation. In response, we further tightened the Results to focus on extractable Sierra Leone specific findings, and we strengthened the Discussion to more clearly translate mapped barriers into actionable, feasibility-aware implications for prevention, acute care, chronic management, and palliative care.

Reviewer #3 (Remarks to the Author):

Thank you for the opportunity to review this manuscript. A scoping review of cardiovascular disease care in Sierra Leone using the WHO building blocks framework is both timely and important. The authors have produced an engaging and thoughtful piece, and the narrative provides a valuable commentary on the current state of CVD care in Sierra Leone.

That said, much of the manuscript reads more as a commentary than as a structured scoping revie The insights are strong, but to fulfill the stated goal, the work would require restructuring. In particular, more systematic mapping of findings to the WHO health system building blocks (including more precise definitions of how each building block is assessed in this review), clear separation between outcomes and systems factors, and careful attention to scope (commentary vs. review) would strengthen the contribution.

> **Response**: We appreciate this key critique and used it to guide revision. We restructured the manuscript to align more explicitly with PRISMA-ScR, expanded methodological detail, reduced interpretive language in the Results, and consolidated interpretation and policy implications within a dedicated Discussion section.

Below I provide specific comments. I hope these comments will assist the authors as they proceed to their next steps.

Specific Comments

1. **Mapping to WHO Building Blocks**: The mapping of findings to individual building blocks is at times unclear.

For example, p.7, lines 155–157 group together dimensions linked to both systems blocks and outcomes within the problem statement. A more careful and consistent mapping would add clarity. Relatedly, the authors should consider describing how they are separating "service delivery" from "infrastructure and essential commodities" – I note several references to service readiness and equipment availability, which seems to have high overlap with the infrastructure category.

> **Response**: We agree and clarified operational definitions in the Methods, then re-mapped findings accordingly. Infrastructure now captures physical assets and essential commodities (for example, electricity, diagnostic equipment, and medicine availability), while Service Delivery captures care processes and pathways (guideline use, referral function, continuity, and provider-patient interactions). We also reallocated selected indicators (for example, equipment availability) to reduce overlap and improve internal consistency.

On p.8, lines 174–175, "community beliefs" are discussed. This seems more reflective of community dynamics or sociocultural context than system readiness per s If meant to represent dynamics, this should be clarified.

> **Response**: Thank you. We revised the framing to present these findings as demand-side determinants of utilisation, trust, and continuity of care that interact with service delivery functions, rather than as isolated sociocultural observations. We also linked this explicitly to the Complex Adaptive Systems interpretation.

Lines 211–214: discussion of equipment and commodities is mixed with outcomes (hypertension control) and explanatory factors (prioritization of ID and MCH). These categories need clearer delineation.

> **Response**: We agree and revised the relevant subsection(s) to maintain a cleaner separation between (1) system inputs and constraints (for example, equipment and commodities) and (2) downstream care performance and outcomes. Where outcomes are discussed, we attribute them clearly and interpret them primarily in the Discussion.

2. "Policy Outlook"

Generally in this section (and elsewhere) There is a fair bit of editorializing around other policies that could be introduced, without much relationship to the analysis, making it hard to assess them. g., is it the case that there are no targets for salt consumption? Blanket recommendations about importing efforts successful elsewhere (performance budgets in Rwanda) don't lay out the complexity and cost of the efforts. Are they appropriate in a lower information setting.

> **Response**: We agree and revised the Policy Outlook to reduce prescriptive tone and strengthen feasibility logic. Recommendations are now more explicitly tied to barriers identified in the Results, and examples from other contexts are framed as illustrative approaches that require local adaptation and evaluation, not as ready-to-transfer solutions. We also removed or softened statements that could not be directly supported by included sources.

3. Other comments

250-251 – It would be helpful to understand if enablers are relevant for specific types of programs / activities. Overall, it appears that findings from relatively small or specific studies are presented as highly generalizable

> **Response**: Thank you. We revised wording to avoid national generalisation from single-site or small studies. We now present these as context-specific signals and add caveats regarding representativeness and the need for implementation evaluation before scale-up.

267-270 – the discussion on HIS indicators under the "Knowledge Gaps" section is very interesting; I am not sure why it is presented under knowledge gaps rather than HIS? Then you could talk about implications of the sparse/coarse data records for surveillance and planning

> **Response**: We agree and moved surveillance and HIS indicators into the Health Information Systems Results subsection, keeping "Knowledge gaps and research priorities" focused on forward-looking priorities rather than primary reporting.

284-285 – the authors describe an opportunity to move towards the policy frontier and little to no cost – this is a very provocative statement; I am not clear what you are drawing upon to make it?

Response: We agree and revised this language. We removed any suggestion that these strategies are cost-free and instead framed them as potentially high-value investments that still require implementation capacity, sustained financing, and governance support.

302 – unclear the role of MH co-management in the context of the analysis?

Response: Thank you. We clarified the rationale for including mental health as an integrated chronic care consideration, linked to adherence, continuity, and patient support functions that cut across workforce and service delivery constraints. We also ensured this is framed as an integration opportunity rather than a stand-alone recommendation.

Reviewer #4 (Remarks to the Author):

I co-reviewed this manuscript with one of the reviewers who provided the listed reports. This is part of the Communications Medicine initiative to facilitate training in peer review and to provide appropriate recognition for Early Career Researchers who co-review manuscripts.

Response: Thank you for the co-review contribution. We are grateful for the collaborative feedback, and we have addressed substantive points raised across the reviewer reports in the revisions described above.

Reviewer #5 (Remarks to the Author):

Thank you for your work on an important topic - cardiovascular diseases and health factors in Sierra Leone. In your abstract and introduction, you refer to rising mortality in Sierra Leone and the need to look at the contribution of the health- determinants leading you to the objective and importance of identifying barriers and facilitators of cardiovascular car You also make use of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses modified statement for scoping reviews (PRISMA-ScR) guidelines. Results summarised findings such as workforce shortages, substantial out of pocket spending and infrastructural inadequacies. However, there are some major (and minor) issues including methodological and results that diminish the quality of the work, outlined below.

Title: According to the PRISMA-ScR guidelines, it is recommended to identify this as a scoping review in the title, which is not the case her Consider incorporating this as per PRISMA - ScR. If possible, the populated PRISMA-ScR checklist should be included in the Appendix

Response: We agree. We revised the title to explicitly indicate the scoping review design and included the completed PRISMA-ScR checklist in the Supplementary Appendix.

Methods

The methods section should provide adequate detail such that someone else would be able to replicate results. The criteria/process for inclusion of relevant articles is vague and could be more detailed. Some definitions in this section would also provide clarity as well as a mention of what major risk factors were considered etc.

Some further suggestions here:

Line 107 – 118 When (date) was the search done?

Line 117 – 118 Implies the initial involved title, abstract, full text combination by three reviewers? i. three reviewers read full texts of 498 articles? Please clarify

Please also mention if any software used for management? De-duplication, co-ordinating between reviews etc.

Was there a different search strategy for different databases?

Was a language limit applied? Studies limited to those in English?

Response: Thank you. We expanded the Methods to improve replicability:

- We state that the search was run and updated through 10 May 2025.
- We clarified the screening workflow as a staged process (title/abstract screening followed by full-text assessment for potentially eligible records), rather than implying full-text review of all unique records.
- We added clearer description of how records were managed and how screening was coordinated, including explicit mention of de-duplication prior to screening (without over-specifying tools not used).
- We clarified that core search concepts were consistent across databases, with database-specific syntax adaptations documented in the search strategy description.
- We stated any language approach and handling of non-English records (where applicable).
- We clarified the major risk-factor domains considered within the cardiovascular scope and how these were mapped to building blocks.

Line 116 you excluded studies lacking full text, however some conflicting information in the results relating to this, which says 7 studies without full text were included based on abstracts and available data – this needs clarity and probably revision to selection criteria.

Response: We agree this needed correction. We revised the eligibility criteria to remove internal inconsistency and to transparently describe our approach: full texts were prioritised, but abstract-only records were eligible when they contained specific, extractable Sierra Leone relevant data necessary for mapping (with appropriate caution in interpretation). We also reflected this as a limitation.

Results

Consider giving some overview of Sierra Leone health care levels and structure etc. A major concern here is regarding how and what type of data was extracted from the various studies. Reviews like these using data from original reports/studies should usually limit the data extracted from the results/findings section. However, after browsing some articles, there are inconsistencies. For example, I found data presented in this review from Kamara et al (2024) whereby the main findings do not correspond to some of those extracted to the Table 1 (g. under financial access and social acceptability) in the Supplement, which is concerning. Most likely there is a mixture of results extracted from other places in the articles such as discussion, introduction etc. which presents a key flaw to be addressed.

> **Response**: Thank you for the close audit. We re-checked Kamara et al. and conducted a consistency review across included studies. We clarified in Methods that extraction was restricted to the Results/Findings of included sources to avoid importing interpretive statements. Where any extracted entries did not accurately reflect Results text, we corrected them and ensured attribution and wording are consistent with the underlying source. We have also revised Table 1 (now **supplementary Table S1)** to present studies more comprehensively.

The results are rather superficial, like a generic summary in some domains without much data, bringing into question the quality of the studies and really diminishing the strength of the work. You mention noting each study's' methodological approach and potential limitations to contextualise findings appropriately but whilst of interest, the outcome of this was not mentioned elsewhere nor discussed. Consider highlighting this to the reader.

> Response: We agree. We strengthened the Results by prioritising extractable indicators where available and by tightening attribution so readers can see what is supported by primary findings versus where evidence is sparse. We also added clearer limitations language to directly acknowledge where the evidence base is thin, heterogeneous, or limited to few studies, and we avoided presenting sparsity as certainty.

Following the point above, Line 145–158 Health systems barriers and building blocks Has little substance – in my assessment does not present a single result. If this is the case, I expected a limitation section would highlight this.

> Response: Thank you. We revised this section to include available quantitative or clearly specified indicators where possible and adjusted narrative statements that were too general. Where evidence remains limited, we explicitly flag this as a limitation rather than implying completeness.

The interpretation also in general lacks depth in light of the framework proposed and presents a summary in most places. For example, for UHC and other large areas being important concepts, I would have expected a deeper dive post status such as underpinnings in the country or at least a limitation section discussing lack of adequate information found.

Just a point that when results are from one study, the presentation of results should not try to generalise that to the whole country. Authors also need to minimise incorporating discussion into results (several places) or presenting results from outside Sierra Leone in the results section g. Line 157

> **Response**: We agree. We revised the Results to keep them Sierra Leone specific and study-attributed, removed contextual comparisons from the Results, and reserved cross-country interpretation for the Discussion only, clearly labelled as contextual rather than evidentiary.

Again, some sections are missing, particularly a discussion section with limitations – is this an oversight?

> **Response**: Thank you. We added a full Discussion with a dedicated Limitations subsection addressing evidence sparsity, heterogeneity of designs, sampling limitations, and the implications of including abstract-only records where necessary.

Some minor comments

153 suggest to replace 'through' with 'and'
155 weak primary care
157 – 158 Sentence needs revision
172 These challenges correlate with 25-hour median stroke transfer times (consider re-phrasing)
176 Seems isolated (put references)
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212 – 214 Seems more for discussion – unless these findings where from Sierra Leone Infrastructure

Introduce to the reader the current financing structure covering the current years from MOH (I assume there are some in country reports amongst articles found)
Rephrase 237 to 239
242 – 243 Citation for Steering committees operate without binding authority; parallel donor programs fragment oversight; vacant directorate positions disrupt coordination
263 – 266 these two sentences do not make a coherent point. Highlighting the last sentence here "The national NCD directorate functions on a minimal budget; dependence on external donors perpetuates high, and out-of-pocket spending deters service use"
274 0 276 You talk about DHIS systems – background information? Current status/capacity?
287 Needs reference and a nuance discussion – the part about pooled procurement being most affordable?
338 SLeSHI Act – introduce to reader what this entails.
392 Table 2 There are inconsistencies in fonts; also needs to add age category implied for GBD CVD DALYs
367 Figure – developed or adopted?
Arrows on CVD care continuum seems to point right to left, counterintuitive
Interactions not clearly fitting – workforce and essential medicines?
Need clarity around the cross-cutting system enablers, how selected and supported by data gathered in the scoping review
I found Table 1 useful, although details inserted could be more organised and including labels.

> **Response**: We implemented the requested wording edits and strengthened clarity where sentences were not coherent. We added references where claims required support, clarified background and current capacity statements (including DHIS2-related wording), introduced brief context where laws or acts are mentioned, and improved table presentation (font consistency, clearer labels). We have retained the current figure. We also clarified how cross-cutting enablers were selected and the extent to which they were supported by the mapped evidence.

Editorial request (with source in revision pack)	What I changed	Where this now appears in revised manuscript
Title ≤15 words; remove punctuation/idioms (Title guidance, p.3)	Revised to: "Cardiovascular care in Sierra Leone: a systematic scoping review of health-system barriers and missed opportunities." (15 words)	Title page
Structured Abstract (≤250 words) with Background/Methods/Results/Conclusions; present tense (Abstract guidance, p.3)	Rewrote abstract in four required subheadings; results written in present tense; no references/acronyms	"Abstract"
Plain Language Summary (~120 words) (p.4)	Added 120-word plain-language summary directly after abstract	"Plain language summary"
Put Methods immediately after Introduction; remove separate 'Conceptual framework' section (p.4–5)	Moved all methods up; the conceptual-framework content is condensed into a short "Study design and analytic framework" paragraph in Methods; Fig. 1 retained as a main figure	Methods §"Study design and analytic framework"; Fig. 1 caption
Include "Statistics and reproducibility" (p.5)	Added a dedicated subsection clarifying counts, no meta-analysis, no inferential stats, reproducibility of study selection/charting	Methods §"Statistics and reproducibility"
Results first; then Discussion (extended analysis, not just summary); no more than two subheading levels (p.5)	Split and streamlined: Results now contain study characteristics and barriers by WHO building blocks; Discussion synthesises findings (interpretation, policy, limitations) with an optional Conclusions subheading	Results; Discussion; Conclusions
PRISMA-ScR compliance and checklist (p.6)	Added explicit PRISMA-ScR statement in Methods; provided a brief checklist here and referenced a completed checklist for SI	Methods §"Protocol and reporting"; SI plan (below)

Editorial request (with source in revision pack)	What I changed	Where this now appears in revised manuscript
Figures/Tables: numerical source data must be provided; move overly long tables to SI (p.2)	Moved Table 1 ("Examples of studies...") to Supplementary Table S1 (spans multiple pages). Kept Table 2 in main text. Created Source Data notes for Fig. 1 and PRISMA flow.	Results (Table refs updated); "Data availability"
Figure/table captions define all panels; cite in numerical order (pp.9–10)	Checked and tightened captions; there are no multi-panel figures. Updated in-text citations so Fig. 1 precedes Supplementary Fig. 1; Table order: Table 2 in main; Suppl. Table 1 in SI.	Figure/Table captions; Results
Data availability & Code availability as separate sections (pp.17–19)	Added both sections. Data: available upon reasonable request from corresponding author; Code: "not applicable"	"Data availability"; "Code availability"
Human/animal ethics (pp.19–20)	Clarified that ethics approval was not required for a scoping review of published/grey literature; no human identifiable data included	Methods §"Ethics"
Competing interests (p.22)	Added explicit statement for all authors	"Competing interests"
Acknowledgements (p.22–23)	Added concise acknowledgements and any funding note per journal style (no separate "Funding" section)	"Acknowledgements"
Author contributions (p.1)	Added CRediT-style contributions; replaced the footnote "#shared senior authorship" with "jointly supervised" per policy (only one such statement)	"Author contributions"
Editorial two-sentence summary (p.6–7)	Provided (see Section D below)	"Editorial summary" (for submission form)

Editorial request (with source in revision pack)	What I changed	Where this now appears in revised manuscript
Third-party rights (p.11)	Confirmed Fig. 1 and PRISMA diagram are original (authors)	Figure captions; point-by-point