COPPHA PEER REVIEW ASSIGNMENT MODEL ANSWER

Purpose of the Model Answer

This **Peer Review Assignment Model Answer** serves as a key resource for participants of the 5-Week COPPHA Peer Reviewing Course, offering a comprehensive framework for understanding and engaging with the peer review process. It is provided to guide participants on how to review research manuscripts or preprints and how to contribute meaningfully to the peer review process as reviewers. Centered on a preprint titled *"Quality of Counselling, Exposure to Vaccination Messages and Caregivers' Knowledge on the Uptake of Penta Vaccine in Six Northern Nigerian States"* from *medRxiv*, this model provides participants with a practical example of critical assessment in action.

By including three distinct reviewer perspectives (Reviewer 1, Reviewer 2, and Reviewer 3), this model answer demonstrates how different reviewers can approach the same manuscript with varied insights, offering participants a clear view of the diversity in peer review feedback. This structure depicts the subjective nature of peer review, which will expose participants to differing viewpoints.

Addressing Bias and Conflict of Interest

Integral to this model are notes on bias and conflict of interest, which will guide participants in identifying and mitigating these factors during their reviews. This model defines both bias and conflict of interest, helping reviewers understand their potential impact on the integrity of their feedback. Participants are encouraged to reflect on their own positions, ensuring their reviews remain fair, objective, and free from undue influence.

This resource emphasizes that reviewers should:

- Be mindful of personal biases or preconceptions that may affect their judgment.
- Disclose any conflicts of interest that could compromise their impartiality.
- Ensure that their feedback is rooted in the evidence and methodology of the work rather than subjective opinions.

Constructive and Actionable Feedback

A core principle in this model answer is the emphasis on providing feedback that is constructive and actionable. Participants are encouraged to frame their feedback in a way that is respectful and helpful to the authors, avoiding personal attacks or judgmental language. The feedback should:

- Directly address specific concerns within the manuscript.
- Offer concrete suggestions for improvement, ensuring that recommendations are clear and feasible for the authors to implement.
- Use a positive and constructive tone, even when pointing out flaws, to help the authors improve the quality and rigor of their work.

The goal is to foster a collaborative spirit, where the reviewer not only critiques but also supports the author's efforts to strengthen their work.

Learning and Development

This model answer goes beyond guiding participants through a single peer review exercise; it offers a deeper understanding of how to balance multiple perspectives, manage bias, and deliver constructive criticism. By making use of this resource, participants will learn how to:

- Evaluate manuscripts with a critical yet fair mindset.
- Communicate their feedback in a manner that promotes research improvement.
- Approach peer review with the professionalism and ethics necessary for high-quality review.

1. What is the title of the manuscript you are reviewing? *

Quality of Counselling, Exposure to Vaccination Messages and Caregivers' Knowledge on the Uptake of Penta Vaccine in Six Northern Nigerian States

2. Please specify if you have, or think you might have, any bias or conflict of interest in reviewing this manuscript? *

a. Conflict of Interest

Answer Type 1:

No Conflict of Interest - "I do not have any personal, financial, or professional relationships with the authors of this manuscript that could affect my impartiality. Therefore, I do not believe there is any conflict of interest."

Answer Type 2:

No Conflict of Interest - One of the authors is a researcher I met once at a conference, but I do not have a personal or professional relationship with him. I believe this will not affect my ability to provide an objective and unbiased review."

Answer Type 3:

Conflict of Interest - "I have previously collaborated with one of the authors on a project related to this topic, and this could potentially influence my objectivity in reviewing this manuscript."

Answer Type 4:

Conflict of Interest – "I work in the same institution as one of the authors, though I am not directly involved with their research. While I don't believe this will affect my ability to provide an unbiased review, I want to disclose this potential conflict so the editor can decide if it is appropriate for me to continue as a reviewer."

Answer Type 5:

Conflict of Interest – "I work in the same research group as one of the authors, which could influence my ability to provide an impartial review. Given our close professional relationship, I want to disclose this so the editor can determine whether it is appropriate for me to continue reviewing the manuscript."

Answer Type 6:

Conflict of Interest – "I was the PhD supervisor of one of the authors, which establishes a close professional relationship. Given this prior mentorship, I believe it could impact my ability to provide an entirely unbiased review".

NOTE: *As a reviewer, when answering a question like this, it is important for you to have an in-depth understanding of what conflict of interest (COI) means.*

COI occurs when a person's personal or professional interests could potentially compromise their objectivity in evaluating or making decisions about a manuscript or preprint. *This can arise due to past, current, or expected relationships, personal relationships, same institution, same research group, financial interests, or other factors that could influence their judgment.*

COIs can be particularly problematic because reviewers are expected to provide unbiased assessments of scientific work. If a reviewer has a personal or professional interest in a manuscript, it may cloud their judgment and lead to biased or unfair evaluations.

It is important to note that COIs can exist at various levels, including peer reviewers, editors, and editorial board members. *All participants in the peer-review process should be aware of potential COIs and take steps to mitigate their influence.*

b. Bias

Answer Type 1:

No Bias – "I do not have any personal biases regarding the topic of this manuscript and the authors, and I believe I can review it objectively."

Answer Type 2:

Potential Bias – "The strong reputation of the author's research institution and the numerous publications by the corresponding author make me feel confident about the accuracy and reliability of the data and conclusions in the study."

Answer Type 3:

Potential Bias - "The authors' race, country of origin and their institution makes me question the accuracy, reliability of the study and their ability to conduct this type of research."

NOTE: ***Bias in peer review refers to any personal views or professional factors that could compromise a reviewer's objectivity and impartiality in evaluating a manuscript or preprint.*** *These factors can include strong opinions about the research topic, personal beliefs, professional competition, or other influences that could lead to a skewed or unbalanced judgment.*

3. Please give a brief description of the topic, objective and main findings of the study. Briefly highlight the strength(s) of the study *

Answer:

a. Brief Description of the Topic

The study focuses on the uptake of the Pentavalent 3 (Penta-3) vaccine, used as a measure of child vaccination coverage in Nigeria. Despite the national immunization program, the Penta-3 coverage in the country remains low, particularly in Northern Nigeria. It evaluates the influence of counseling quality, caregivers' knowledge, and their exposure to vaccination messages on the uptake of the Penta vaccine in children aged 2-24 months in six Northern Nigerian states.

b. Objective of the Study

The main objective is to investigate the impact of the quality of counseling caregivers receive, their exposure to vaccination messages, and their knowledge regarding child vaccination on the uptake of the Penta vaccine. The study aims to identify factors that can improve vaccination rates and overcome barriers to the successful implementation of Nigeria's immunization program.

c. Main Findings of the Study

- 56% of caregivers received adequate counseling from healthcare providers.
- A significant proportion (86%) of caregivers correctly knew when a child should receive the first vaccination, though fewer knew how many vaccinations were required in the first year of life.
- Only 43% of children aged 12-24 months received all three doses of the Penta vaccine, indicating low coverage.
- Although 70% of caregivers were aware of child vaccination, only 34% had sufficient exposure, defined as receiving messages from at least three different sources. Common sources included health workers, radio, and community health workers.
- Higher Penta uptake was associated with caregivers' correct knowledge of when to vaccinate, receiving vaccination messages from places of worship, community leaders, and community health workers.

d. Strength(s) of the Study

- The use of a two-stage stratified sampling procedure ensures a good representative sample across the six states.
- The Use of Binary Logistic Regression provides a good analysis of the factors influencing Penta vaccine uptake, identifying key variables like caregiver knowledge, sources of vaccination messages, and counseling quality.
- The analysis of caregivers' exposure to vaccination messages through various community channels (e.g., health workers, religious leaders) adds to the understanding of how communication affects vaccination behaviors.
- The focus on specific factors like the role of community and religious leaders helps inform public health interventions aimed at improving vaccination coverage in a culturally appropriate manner.

NOTE: *When answering a question like this, begin by summarizing the topic explored in the research. Then, clearly articulate the primary objective or research question that the authors sought to investigate. Afterward, summarize the main findings or results, focusing on the most significant outcomes. Finally, highlight the strengths of the research, such as methodological rigor, innovative approaches, data reliability, or potential implications for future work.*

4. Does the abstract provide a concise summary of the study, including introduction, methods, results, and conclusions? *

Answer: Partially

Reasons:

- The abstract describes the importance of Penta-3 coverage in monitoring vaccination rates in Nigeria. It describes the low coverage rates and the role of caregiver-provider interactions and access to information, but there was no clear description of Pentavalent 3 (Penta-3). - **Reviewer 1**
- Pentavalent 3 (Penta-3) was not defined anywhere in the Abstract, and the Methods section was incomplete. - **Reviewer 2**
- The methods section of the abstract lacks completeness in several key areas. While it mentions that a cross-sectional study was conducted using quantitative data from a survey of caregivers and specifies the sample size (n=561) and the number of health facilities (n=163), the section fails to mention the time frame during which data was collected, specifically that exit interviews were conducted between March 14th and April 8th, 2022. - **Reviewer 1**
- Significant p-values should be added in the result reported in the abstract - **Reviewer 3**

NOTE: *As a reviewer when evaluating an abstract, consider whether it clearly explains the background and significance of the study while also presenting the research question or hypothesis in a clear way. Look for a brief description of the methods used, including the study design, sample size, and analysis. Check if it summarizes the main findings clearly and concisely, highlighting key data points or outcomes. Finally, assess whether the conclusion effectively reflects the implications and significance of the results.*

5. Do you have any concerns about the Introduction or Background to the study? These might include concerns about the literature review or the research question or hypothesis. *

Answer: Minor Concern

Reasons:

Reviewer 1

- The introduction hints at the research question but does not state it clearly.

Reviewer 2

- The research question was poorly defined and there was no stated hypothesis. The research question was defined as *'examined the influence of quality counseling, caregivers' exposure to vaccination messages, and uptake of Penta vaccine among caregivers of under-five children in Northern Nigeria'*. '*Examine the influence*' is very imprecise and does not reflect how the data would be collected and analysed.

Reviewer 3

- There should be more literature review on pentavalent vaccine. While the authors highlighted its use, they fail to describe what pentavalent vaccine is, when it should be administered, whether any doses can be skipped or taken in isolation and other important details that will give a good background on the vaccine? -
- There should be consistency in the use of nomenclature, for example Penta3 vs Penta vaccine 1 vs Penta vaccine.
- Information on obtaining the coverage information from the child's card should be moved to the appropriate method subsection.
- The statement '*The choice of northern Nigeria is because it has the lowest coverage of all vaccination coverage including Penta vaccine relative to the southern region of Nigeria*' seems redundant in its current position and should be moved at the appropriate place in the introduction.

6. Do you have any concerns about the Methods section of the paper? These might include concerns about selection, measurement or confounding biases or the statistical analyses. *

Answer: Major Concerns

Reasons:

Reviewer 1

- The stratified sampling procedure seems appropriate for ensuring coverage across different regions in the North. However, the specific allocation of sample sizes to each region was not provided.
- The statement "the majority of the children were in the younger age group (< 6 months of age)" lacks specificity without exact numbers or percentage.
- Additionally, it does not provide a clear reason for employing binary logistic regression analysis, which is crucial for understanding the choice of statistical method in relation to the study's objectives.
- While the cross-sectional design allows for efficient data collection, it limits the ability to establish causal relationships between variables.
- The age distribution is skewed toward younger children under 6 months, which limits the ability to analyze coverage for the 11-23 month age group effectively.
- The exclusion of some LGAs in Borno due to insecurity might lead to selection bias, as the situation in these areas could differ significantly from other regions. This could affect the representativeness of the study population.
- Caregivers might report socially desirable responses, such as having received counseling or having correct knowledge, to avoid negative perceptions.
- The study relied on caregivers' recall of vaccination history and counseling interactions. This could introduce recall bias.
- The impact of counseling quality might differ based on socioeconomic status or maternal education. The study did not explore potential interaction effects between explanatory variables.

Reviewer 2

- A visual or graphic representation (like a flow chart) of the sample selection process would help clarify how participants were chosen for the study.
- If the study selects only individuals who have already received a vaccine, it becomes difficult to treat "*receiving a vaccine*" as an outcome measure, because the participants are pre-selected based on the fact that they have already received it. In this case, receiving the vaccine is more of a pre-condition for inclusion in the study rather than a result or outcome that can be measured or analyzed.

- Measurement of the study variables is difficult to understand.
- The study references a published WHO questionnaire that was adapted, but there is no clarity on how the adaptation was done.
- The study includes several composite measures, but their validity was not tested or explored.
- The outcome variable is stated as "*uptake of any dose of the Penta vaccine*," but the sample selection is based on having already received a vaccine (561 caregivers of vaccinated children).

Reviewer 3

- There needs to be a clear sampling method on the caregivers recruited for the study. For example, is it based on sequential consenting hospital attendees or the recruitment is an integrated process for all who came for vaccination?
- It is important to clearly describe the role of the research assistants and supervisors. For example, who assisted persons with the mobile app? Who entered the data on the app?
- How was it possible to randomize 10 out of 20 LGAs that were sampled?
- How was the sample size calculated, and at what power and confidence level?
- Reconcile the study age group of the children as given in the introduction and method. Under 5 vs under 2.
- What does using 0 as a reference category mean exactly? It may be useful if analysis coding descriptions are added as supplementary files if they appear useful in anyway.
- There were a lot of cofounding factors for vaccine uptake which were not considered including access to health, parity and previous vaccination experience of Penta, other vaccination exposure other than Penta, and other socioeconomic factors. These should be highlighted in the study limitations. It is not clear how your analysis also adjusted for the ones you have data for like mobility, occupation and education. It would be helpful to answer this in your method section.
- Using median as the minimum value for a good exposure may be problematic in a population that does not follow a normal distribution. The current study population has a known low exposure to vaccination messages, hence their median may significantly vary with other population median, which makes their 'good' exposure questionable and non comparable with other studies.
- Why were the authors interested in under 2 and the current grouping of the children? Why were the age grouping of the children not based on expected vaccination milestones? For example: 2, 3, 4 and 5-12 months, which will align with the expected time each dose should have been completed.
- The occupation grouping seems inappropriate and may introduce bias if utilized in this manner.

7. Do you have any concerns about the Results section of the paper? These might include concerns about selection, measurement or confounding biases or the statistical analyses - or if each table, figure or graph is fully understandable as a standalone. *

Answer: Major concerns

Reasons:

Reviewer 1

- The figures and tables need to be redesigned for more clarity.

Reviewer 2

- There is no information provided about the response rate in the selection process.
- The study does not include an adequate breakdown or dissection of the composite scores used as outcome measures.
- The issue of using the Penta vaccine as both a selection criterion and an outcome measure, discussed earlier in the Methods section, remains unclear.
- Figure 2 is particularly unclear and lacks clarity in its presentation.
- Most of the tables are poorly labeled, and some abbreviations used in the tables are not defined.

Reviewer 3

- Omission in Page 8: The top three sources of child vaccination messages are health workers (67%), radio (41%), and community health workers (28%).
- Fig 2 is confusing. What exactly is the study's main focus? Uptake of all the doses? It may be helpful to retain only data for those who completed the vaccination.
- I am curious about the integrity of the data in Fig 2. Are there variations in the practice of when to administer the vaccines across the study centers? Why does it appear that children beyond 12 months were still given the vaccines?

8. Do you have any concerns about the Discussion or Conclusions section of the paper? These might include ethical concerns, usefulness or generalisability of the findings and if the study limitations have been adequately identified. *

Answer: Major Concerns

Reasons:

Reviewer 1

- The conclusion is concise and presents the study's findings, but it could place more emphasis on the study's limitations and strengthen the need for further research that addresses the study's limitations.

- "*In some cases, all caregivers who met the inclusion criteria were sampled due to low numbers at health facilities, which may have introduced bias*". The conclusion should have more clearly called for future research to address this limitation, for example, a study that could employ a more balanced and randomized sampling methods.

Reviewer 2

- In the discussion section, while some study limitations are mentioned, the age distribution issue is not clearly described, even though it's identified as a concern.
- There is concern about the uncritical use of composite scores. Some of these scores, like place of worship, seem to have been unpacked as separate outcome variables, which then appear independently in the analysis. This highlights the need for a more precise and clear definition of the research question and a well-defined study hypothesis.

Reviewer 3

- Discussion should be more nuanced in comparative analysis of other studies with regards to context variation and should also be tailored for deeper analysis of the findings and the justifications for them.
- The authors should justify why awareness is high even when the counseling is poor.
- The limitations were repeated in the discussion section.
- When using terms like 'recent findings' or 'previous studies,' more than one reference is required. The author should revise this accordingly.
- The authors should justify why multiple sources of information was positively associated with vaccination uptake in other studies unlike theirs.

9. Transparency and Reproducibility: Is the research process transparent, and are data or code available for others to reproduce your findings? *

Answer: Partial

10. Language: Do you have any concerns about the writing style or use of language?

Answer: No

The manuscript is generally well-written [Reviewer 1, 2, and 3]

NOTE:

*(a) It is important for reviewers to **focus on clarity and readability of the manuscript rather than nitpicking minor grammatical errors**. The key is to assess whether the language used conveys the study's concepts clearly and effectively. It is not the reviewer's role to correct grammar, punctuation, or syntax unless these issues **significantly** affect comprehension.*

*(b) As a reviewer, when reviewing papers authored by researchers whose first language is not English, **avoid the common bias of equating language mistakes with poor research quality**. Instead, concentrate on whether the science is communicated effectively.*

*(c) Use constructive and respectful language, particularly when addressing language challenges faced by **non-native English speakers**.*

(d) As a reviewer, you should only flag significant issues that impact readability or meaning, leaving language refinement and grammatical error correction to professional journal copy editors.

11. What is your recommendation? *

Answer: Approve, require major revision

12. Final comments: please add any final comments that you think would be helpful to the authors. If you have recommended Approve but require minor or major revisions, or Reject, please give your reasons. *

Answer: Approve, require major revision

Reasons:

Final Comments [Reviewer **1**, **2**, and **3**]

This study has significant potential, as it utilizes a population base and partially relies on records rather than recall. The concerns raised can be addressed through more thorough descriptions, and the authors are encouraged to revise the manuscript in line with the detailed feedback provided in this review:

- The literature review could be strengthened by including more recent studies on Penta vaccine uptake in Nigeria and neighboring countries. This would provide a more up-to-date understanding of the current trends and challenges in the country.
- The authors should refine the research question for more clarity. A more precise research question could be: "*How do quality counseling, caregivers' exposure to vaccination messages, and provider-client interactions influence Penta vaccine uptake among caregivers of children under five in Northern Nigeria*?" This redefinition will help sharpen the study's focus and ensure the objectives are clearly aligned with the variables being investigated.

- In the method section of the abstract, the authors should specify the data collection period, indicating that exit interviews were conducted between March 14th and April 8th, 2022.
- Although the stratified sampling procedure seems appropriate for ensuring coverage across different regions, a more detailed breakdown of the sample size allocation to each region would be beneficial for evaluating the representativeness of the sample.
- The study would have benefited from analyzing gender-based differences in uptake to highlight if there is a culturally perceived preferential care for any gender.
- It is important for authors to ensure a more balanced age distribution, particularly by increasing the sample size for children aged 11-23 months. Without this, the study lacks the depth needed for a thorough analysis of coverage within the age group.
- The statement "the majority of the children were in the younger age group (< 6 months of age)" lacks specificity without exact numbers. Providing figures, such as "x% of the 561 children were under 6 months," would offer clearer insight into the age distribution. This will also facilitate a statistical comparison of age distribution between this study and previous studies, so as to determine consistency or differences.
- The study was conducted in six northern Nigerian states. Given the significant regional variations in healthcare infrastructure, cultural norms, and socioeconomic factors across Nigeria, the findings may not be generalizable to the entire country. This should be clearly stated in the limitation section.
- Compare the findings of this study with recent similar research from other regions in Nigeria to identify common challenges.
- Although it is stated that all relevant data can be obtained upon reasonable request from the Population Council, the authors should provide supplementary materials, such as detailed questionnaires and additional analysis outputs, to enhance the understanding of the study. If there are any restrictions on data access (e.g., ethical or privacy concerns), the authors should clearly state these. Alternatively, they should consider making anonymized datasets publicly available through an open repository to improve reproducibility, rather than relying on the obscure statement of data being available upon reasonable request.

NOTE: *When providing final comments or feedback that you think would be helpful to authors, ensure your comments are* ***constructive*** *and* ***actionable****. Make sure that the feedback addresses* ***specific concerns****, providing* ***concrete suggestions for improvement*** *and* ***clear recommendations*** *that the authors can implement to strengthen their analysis. Use a constructive tone, avoiding personal attacks or judgmental language.*

Case Scenario on Constructive and Negative Comments or Feedback

In the study on Penta vaccine uptake, the statement ***"the majority of the children were in the younger age group (< 6 months of age)"*** *lacks specificity without exact numbers.*

(a) Constructive Feedback:

"While it is mentioned that the majority of children were under 6 months old, providing the exact percentage of children in this age group would offer a more precise understanding of the age distribution. This would facilitate a more accurate comparison with previous studies and potentially reveal any differences in the age-specific uptake of the Penta vaccine."

- This feedback is constructive and actionable.

(b) Negative Feedback:

"*The age distribution is completely off. The authors clearly didn't bother to provide any specific numbers. They clearly have no idea what they're doing. "*

- This feedback is overly harsh, dismissive, and does not provide any specific guidance for improvement. It is likely to be perceived as unprofessional and unhelpful by the authors.