PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (**http://bmjopen.bmj.com/site/about/resources/checklist.pdf**) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Vaccination Assessments using the Demographic and Health Survey, 2005-2018; A Scoping Review
AUTHORS	Shenton, Luke; Wagner, Abram; Ji, Mengdi; Carlson, Bradley; Boulton, Matthew

VERSION 1 – REVIEW

REVIEWER	Marco Villa ATS della Val Padana Italy
REVIEW RETURNED	10-Jun-2020

GENERAL COMMENTS	The authors use a score to assess the quality of the studies (rows 190-214) but then such a score is cited only in the first sentence of the results (never in the discussion). A table showing the distribution of the items would be valuable and is missing. Furthermore, most of the items seems statistical, the mean QS is 6.48 but the authors claim that they were unable to perform a meta-analysis (rows 403-405): please explain why. My impression is that the paper does not clearly address the research question. Details: Row 214: There are 9 items and the quality score range from 0 to 10. Please explain how the QS is built. Figure 1 has wrong numbers compared to rows 239-244 Figure 2: it's not clear if it shows how often a country has been studied or something else (the caption is not clear) Row 354-355: Not true. What about odds ratios?

REVIEWER	Jessica Cataldi University of Colorado School of Medicine, USA
REVIEW RETURNED	14-Jun-2020

GENERAL COMMENTS	This is a thorough and well-organized review. It was a pleasure to read and will be a welcome addition to global health literature on childhood vaccination. I've included some suggestions, mostly related to improving readability / addressing typographic errors. Strengths/Limitations: Line 80: I'm somewhat confused by "Other national-level vaccination surveys are also used". If the scope of your review is DHS-focused, this limitation seems obvious. If wishing to include, suggest rewording to "Studies using other national-level vaccination surveys were not included" Introduction:

Line 89: suggest rewording to improve readability: "…die from acute illnesses caused by common vaccine preventable diseases". Avoids use of word 'diseases' twice in one sentence.
Line 106: please spell-out GAVI with first use of the abbreviation.
Line 117: suggest rewording to "vaccination programs" – I think this should be plural.

Methods:
Line 172: suggest rewording to "removed all duplicates"- I think this should be plural
Line 209: please define DAG abbreviation

Results
In most of this section, n and percent are both presented, however in some cases they are not and only either number of studies or percent is stated. Recommend being consistent.

Discussion
Line 315: suggest rewording to "A common marker of routine immunization initiation", missing the word 'of' or 'for'
Line 334: suggest rewording "polio was targeted for elimination by 2018". Current wording of "is targeted" is a bit awkward since that date has come and gone (sadly).
Line 340: typo- remove the letter 'j' after "potential"
Lines 397-399: Consider adding a phrase/sentence here to explain why DHS is still so important (and was your focus) despite existence of these other surveys. Are these other surveys less consistent in their data collection country-to-country? Used in fewer countries?

Figure 1
I'm confused about how you get from 318 pubmed citations to then increase to 551 non-duplicate citations screened. Where did the additional citations come from between those first two boxes? Upon reading the text in the manuscript, it's clearly described- suggest adding boxes to the figure showing the number of papers coming from EBSCOhost, POPLINE, and searching references. Tables and figures are otherwise great and the inclusion of the PRISMA checklist is a strength.

VERSION 1 – AUTHOR RESPONSE

Reviewer# 1
The authors use a score to assess the quality of the studies (rows 190-214) but then such a score is cited only in the first sentence of the results (never in the discussion). A table showing the distribution of the items would be valuable and is missing. Furthermore, most of the items seems statistical, the mean QS is 6.48 but the authors claim that they were unable to perform a meta-analysis (rows 403-405): please explain why.

Authors' response: As we state in the limitations (line 404): "Because the study populations, use of explanatory variables, and definitions of outcomes differed among studies, we were unable to conduct a meta-analysis to compare the association of various explanatory variables on outcomes." Basically, a meta-analysis would be difficult given the different strategies for developing their respective models. Just computing an average quality score was much simpler. We now state in methods:

line 216: "The quality score could range from 0-10, and we describe the average values with a mean and median quality score among all studies."

My impression is that the paper does not clearly address the research question.

Authors' response: We appreciate the reviewer's comment. We modified the aims slightly (line 134): "The purpose of this scoping review was to characterize studies which have used DHS datasets to evaluate childhood vaccination status. Specifically, we report on the global distribution of studies, list the predictors used in multivariable regression models, and examine the different definitions of "full vaccination" across studies and how these relate to the WHO EPI recommendations."

And the results as shown starting line 256 follow these aims.

Row 214: There are 9 items and the quality score range from 0 to 10. Please explain how the QS is built.

Authors' response: Item H has a total of 2 possible points. This is explained in the methods:
Line 209: "H. Does the paper describe how the researchers arrived at the final list of confounders? (2=a priori knowledge or used directed acyclic graph (DAG), 1=used P-values from crude analysis or used stepwise technique, 0=did not describe or did not use multivariable analysis)"

Figure 1 has wrong numbers compared to rows 239-244

Authors' response:
Thank you for your detailed review of the figure. There was a formatting issue and not all of the numbers were displayed in the box in the figure when the PDF was created. We have corrected that issue.

Figure 2: it's not clear if it shows how often a country has been studied or something else (the caption is not clear)

Authors' response: We have changed the caption to be clearer:

"Figure 2. Map of countries by the number of published studies using Demographic and Health Survey (DHS) datasets. Shading corresponds to number of studies using DHS data from only one country; hash marks indicate a study using multiple countries."

Row 354-355: Not true. What about odds ratios?

Authors' response: We have changed this sentence to read (line 358):

"Since DHS is a cross-sectional study it cannot be used to investigate the effect of an exposure which could vary across time, such as education or urbanicity."

Reviewer# 2

This is a thorough and well-organized review. It was a pleasure to read and will be a welcome addition to global health literature on childhood vaccination. I've included some suggestions, mostly related to improving readability / addressing typographic errors.

Authors' response: We appreciate the reviewer's thoughtful comments.

Strengths/Limitations:
Line 80: I'm somewhat confused by "Other national-level vaccination surveys are also used". If the scope of your review is DHS-focused, this limitation seems obvious. If wishing to include, suggest rewording to "Studies using other national-level vaccination surveys were not included"

Authors' response: We agree with the change in wording. Line 80 now reads:

"- Studies using other national-level vaccination surveys were not included."

Introduction:
Line 89: suggest rewording to improve readability: "…die from acute illnesses caused by common vaccine preventable diseases". Avoids use of word 'diseases' twice in one sentence.

Authors' response: We agree and have made this change (line 87):

"Nevertheless, every year, more than 2.7 million individuals die from acute illnesses caused by common vaccine-preventable diseases [3]."

Line 106: please spell-out GAVI with first use of the abbreviation.

Authors' response:
Gavi is the name and not an acronym (previously it did stand for something, but has since been rebranded as Gavi The Vaccine Alliance). This was incorrectly written in all capital letters. That has been corrected.

Line 117: suggest rewording to "vaccination programs" – I think this should be plural.

Authors' response:
Thank you for the suggestion. The change has been made.

Methods:
Line 172: suggest rewording to "removed all duplicates"- I think this should be plural

Authors' response:
Thank you for the suggestion. The change has been made.

Line 209: please define DAG abbreviation

Authors' response: DAG refers to directed acyclic graph, which we have now written out.

Results
In most of this section, n and percent are both presented, however in some cases they are not and only either number of studies or percent is stated. Recommend being consistent.

Authors' response: We appreciate the comment and have gone through the results section to now be sure to include percentages in every location. An exception is in the third paragraph (line 255) where we instead just refer to counts when referring to some multi-country studies, because it is unclear if the denominator should be 125, the total number of studies, or 23, the number of multi-country studies.

Discussion
Line 315: suggest rewording to "A common marker of routine immunization initiation", missing the word 'of' or 'for'

Authors' response:
Thank you for the suggestion. The change has been made.

Line 334: suggest rewording "polio was targeted for elimination by 2018". Current wording of "is targeted" is a bit awkward since that date has come and gone (sadly).

Authors' response:
Thank you for the suggestion. The change has been made.

Line 340: typo- remove the letter 'j' after "potential"

Authors' response:
Thank you for the suggestion. The change has been made.

Lines 397-399: Consider adding a phrase/sentence here to explain why DHS is still so important (and was your focus) despite existence of these other surveys. Are these other surveys less consistent in their data collection country-to-country? Used in fewer countries?

Authors' response: We have slightly modified this paragraph. We hesitate to do a broad contrast with these other sources, because they can also provide very high quality data.

(line 397): "The DHS provides national estimates from politically neutral sources over time, in countries where USAID operates. Its continued existence ensures that reliable, comparable, and nationally representative data sources are publicly available. Other surveys, like the District Level Household Survey (DLHS) and the Annual Health Survey (AHS) in India and the Multiple Indicators Cluster Survey (MICS) in over 100 countries, are developed in close collaboration with DHS [152,153]. "

Figure 1
I'm confused about how you get from 318 pubmed citations to then increase to 551 non-duplicate citations screened. Where did the additional citations come from between those first two boxes? Upon reading the text in the manuscript, it's clearly described- suggest adding boxes to the figure showing the number of papers coming from EBSCOhost, POPLINE, and searching references.

Tables and figures are otherwise great and the inclusion of the PRISMA checklist is a strength.

Authors' response:Thank you for your detailed review of the figure. There was a formatting issue and not all of the numbers were displayed in the box in the figure when the PDF was created. We have corrected that issue.

VERSION 2 – REVIEW

REVIEWER	Jessica R. Cataldi University of Colorado School of Medicine
REVIEW RETURNED	15-Nov-2020

GENERAL COMMENTS	I appreciate the author's thoughtful response to reviewer comments. They have incorporated all suggested changes and I have no additional concerns or suggestions.