PEER REVIEW HISTORY

This paper was submitted to a another journal from BMJ but declined for publication following peer review. The authors addressed the reviewers' comments and submitted the revised paper to BMJ Open. The paper was subsequently accepted for publication at BMJ Open.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Comparison of ultrasound-guided and traditional localization in intraspinal anesthesia: a systematic review and network meta-analysis
AUTHORS	Zhang, Yinzhou; Peng, Mingling; Wei, Junying; Huang, Jieling; Ma, WuHua; Li, Yuhui

VERSION 1 – REVIEW

REVIEWER	Belo, Camila Instituto Nacional de Câncer, Education and Scientifical Information Service
REVIEW RETURNED	28-Jan-2023

GENERAL COMMENTS	First, I would like to thank for the opportunity to review this manuscript and clarify that my contributions, as an information specialist, are centered on the evidence search area. The manuscript is well-written and organized, in addition to presenting interesting findings. Some details need to be clarified or adjusted such as: 1) Abstract: (line 44) there is a sentence without context or finalization about subgroup analysis. 2) complete search strategy: authors must present the complete search strategy (search strings) of each database according to PRISMA 2020 checklist item 7. The search strategy report must follow PRISMA-S guidelines (doi: 10.1186/s13643-020-01542-z). Complete search strategies can be submitted via a persistent link (DOI or handle) from an open access repository such as Searchrxiv. The processing of these data can be done through the collaboration of a librarian or information specialist. 3) List of excluded studies: another recommendation is to provide a list of excluded studies during the selection process, which is also available on platforms such as the Open Science Framework. 4) Study selection process: it is not clear whether there was automation of the study selection process or if it was done manually. If any tool has been used, it must be reported in the manuscript. 5) participation of the authors in the design of the studies: inform who evaluated the titles and abstracts and who resolved disagreements. 6) selection of clinical trials: inform if they were applied and which validated search filter used to identify RCT in the search strategy.

	Some RCT filters are available in the literature. This must be reported according to PRISMA-S in the design of the search strategy. 7) record of the review protocol: I request adjustment in the item corresponding to the research question informed on the PROSPERO platform so that there is compatibility between the protocol and the manuscript. 8) study selection flowchart: I request adjustment of the diagram, especially in the study identification area. I suggest using one of the templates available on the website: https://prisma-statement.org/PRISMAStatement/FlowDiagram

REVIEWER	Alrayashi, Walid Boston Children's Hospital
REVIEW RETURNED	05-Feb-2023

GENERAL COMMENTS	Appreciate the effort and attempt here. However, the reviewer had difficulty following along as the syntax, grammar, and overall style of writing were below the norm of this particular journal. Would recommend careful language assistance prior to submission.

REVIEWER	Berde, Charles Harvard University
REVIEW RETURNED	26-Mar-2023

GENERAL COMMENTS	The authors have conducted a very thoughtful review of use of ultrasound guided spinal anesthesia. This will be useful to the community of anesthesiologists, but should also influence practice of lumbar puncture in a wide range of other settings.

REVIEWER	Friedrich, Sarah University of Augsburg
REVIEW RETURNED	08-May-2023

GENERAL COMMENTS	Statistical reviewer report for 'Comparison of ultrasound-guided and traditional localization in intraspinal anesthesia: a systematic review and network meta-analysis' (Manuscript ID bmjopen-2022-071253) The paper presents results of a meta-analysis comparing three different interventions for intraspinal anesthesia. There are several issues with the presentation of the results, especially concerning effect measures and aspects of reproducibility. Moreover, the language is not sufficient for publication, as several sentences are incomplete and thus make it hard to read the paper. Specific comments 1. Search strategy: The search strategy is not described in enough detail. What is the exact time frame for which publications were included? When were the databases last searched? How where the search terms combined? And which filters etc. were applied? 2. Data extraction: It should be specified, which values for age and BMI were extracted (mean ± sd?). How are the main outcomes reported? As

Odds Ratios, log Odds Ratios, risk ratios, ...? Was this consistent across
studies? What does the sentence 'When it comes to transforming continuous variables that do not conform to normal distribution into the form
of mean and standard deviation, we make the transformation according
to the corresponding method.' mean? Which method? And why do data
have to be normally distributed to be able to calculate mean and standard
deviation?

3. Statistical analysis: The statistical methods are not described in enough
detail. Which models were assumed for the respective outcomes? How
was the heterogeneity addressed?

4. Study characteristics: 'Among them, 13 studies compared ultrasoundassisted localization with traditional localization, 5 studies compared ultrasoundassisted localization with traditional localization, and 3 studies compared
the application of ultrasound-assisted localization and real-time guidance
in intraspinal anesthesia.' The comparison ultrasound vs. traditional localization is mentioned twice, while the comparison between real-time and
traditional is not mentioned?!

5. Table 1: The most important information is missing: Effect estimates for
the respective outcomes!

6. Table 1: The entries with superscript a are described as 'range'. But
what are the corresponding numbers in brackets? If they are minimum
and maximum (as one would expect for the range), then the values don't
fit, e.g. 65.8-52.3 = 13.5 not 59.5.
1

7. Section 3.2: 'Incomplete outcome data was also difficult to achieve,...'
What is this supposed to mean? Why would we want to achieve incomplete
data? Do you mean it's difficult to access? I still don't see how that could
be the case.

8. No assessments of the certainty of the results is presented.

9. Availability of data, code, extraction forms etc. is not specified.

10. Figures 3-7 are very difficult to read, since they are so small. Consider
presenting only the ones for the main outcome and move the others to a
supplemental material.

11. The results presented in the abstract (mean differences and Crl) are not
reported in the main text.

Minor comments and major typos

1. page 2, line 31: 'no significant difference...'

2. Abstract: Several sentences are incomplete, e.g. 'In the subgroup analysis,

	first puncture success rate in pregnant women and obese patients.' 3. Abstract: Abbreviation CrI is not defined. 4. Table 1: What do the entries 'No' mean? Not reported? 5. page 7: 'Draw a cumulative sorting chart to calculate the SUCRA probabilities of traditional positioning, auxiliary positioning and real-time guidance (Fig. 6A)' This sentence is incomplete. 6. page 8: 'In the first subgroup, we included nine studies of pregnant women and obese people with an average age of less than 60 years and a BMI greater than 33' Are these values for all studies separately or combined for the whole cohort?

REVIEWER	Yan, Guohua University of New Brunswick
REVIEW RETURNED	19-May-2023

GENERAL COMMENTS	The authors have conducted a systematic review and network meta-analysis to compare two ultrasound-guided techniques with traditional localization in intraspinal anesthesia. The statistical methods used are appropriate, and the results have addressed their research question. While it falls outside my area of expertise to comment on the subject matter, I believe the statistical aspects are adequate, although I would suggest that the authors present their statistical methods more clearly. I have a few specific questions: 1. Line 35 of page 2 and similar instances: I interpret "CrI" as "credible interval." However, in line 35 of page 4, it mentions "based on a frequentist framework." Could you clarify if you performed a Bayesian or frequentist network meta-analysis? If it is a frequentist analysis, please spell out "confidence interval (CI)" in the first instance. 2. Line 9 of page 3: "... superior to real-time guidance...". In what aspect is ultrasound-assisted spinal anesthesia considered superior? 3. Line 22 of page 4: "... make a transformation according to the corresponding method." It would be helpful to provide a brief description of the method you used for this transformation. 4. Section 3.1 provides summaries of the characteristics of studies included in your analysis. However, I noticed that there are no summaries of the primary outcome variable: the success rate of the first puncture. It would be beneficial to include some summaries of this variable as well."

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
1) Abstract: (line 44) there is a sentence without context or finalization about subgroup analysis.
Answer : Incomplete sentences have context added.

2) complete search strategy: authors must present the complete search strategy (search strings) of each database according to PRISMA 2020 checklist item 7. The search strategy report must follow PRISMA-S guidelines (doi: 10.1186/s13643-020-01542-z). Complete search strategies can be submitted via a persistent link (DOI or handle) from an open access repository such as Searchrxiv. The processing of these data can be done through the collaboration of a librarian or information specialist.
Answer: The full search strategy can be found in the supplementary file.

3) List of excluded studies: another recommendation is to provide a list of excluded studies during the selection process, which is also available on platforms such as the Open Science Framework.
Answer: Excluded studies have been detailed in the manuscript section.

4) Study selection process: it is not clear whether there was automation of the study selection process or if it was done manually. If any tool has been used, it must be reported in the manuscript.
Answer: Whether the study selection process was automated or done manually has been reported in detail in the manuscript section.

5) participation of the authors in the design of the studies: inform who evaluated the titles and abstracts and who resolved disagreements.
Answer: This part has been reported in the manuscript.

6)selection of clinical trials: inform if they were applied and which validated search filter used to identify RCT in the search strategy. Some RCT filters are available in the literature. This must be reported according to PRISMA-S in the design of the search strategy.
Answer: This section has been revised in the manuscript.

7) record of the review protocol: I request adjustment in the item corresponding to the research question informed on the PROSPERO platform so that there is compatibility between the protocol and the manuscript.
Answer: The project corresponding to the research question has been adjusted on the platform.

8) study selection flowchart: I request adjustment of the diagram, especially in the study identification area. I suggest using one of the templates available on the website: https://prisma-statement.org/PRISMAStatement/FlowDiagram
Answer: The flowchart in the manuscript has been adjusted.

Reviewer: 2
Dr. Walid Alrayashi, Boston Children's Hospital
Comments to the Author:
Appreciate the effort and attempt here. However, the reviewer had difficulty following along as the syntax, grammar, and overall style of writing were below the norm of this particular journal. Would recommend careful language assistance prior to submission.
Reviewer: 3
Dr. Charles Berde, Harvard University
Comments to the Author:
The authors have conducted a very thoughtful review of use of ultrasound guided spinal anesthesia. This will be useful to the community of anesthesiologists, but should also influence practice of lumbar puncture in a wide range of other settings.
Answer: Formatting and grammatical issues throughout the manuscript were handed over to a colleague fluent in written English for revision

Reviewer: 4

Specific comments

1. Search strategy: The search strategy is not described in enough detail. What is the exact time frame for which publications were included? When were the databases last searched? How where the search terms combined? And which filters etc. were applied?
Answer : Sections of the manuscript have been revised and the full search strategy can be found in the supplementary file.

2. Data extraction: It should be specified, which values for age and BMI were extracted (mean ± sd?). How are the main outcomes reported? As Odds Ratios, log Odds Ratios, risk ratios, ...? Was this consistent across studies? What does the sentence 'When it comes to transforming contin- uous variables that do not conform to normal distribution into the form of mean and standard deviation, we make the transformation according to the corresponding method.' mean? Which method? And why do data have to be normally distributed to be able to calculate mean and standard deviation?
Answer: Extracted data for age and BMI are mean ± standard deviation and median (interquartile range).The outcome index uses RR value for the effect value of the dichotomous variable, and SMD as the effect value for the continuous variable.When it comes to the interquartile range of the outcome indicator data in the study, we converted according to the corresponding method, and finally used the form of mean ± standard deviation for statistical analysis.

3. Statistical analysis: The statistical methods are not described in enough detail. Which models were assumed for the respective outcomes? How was the heterogeneity addressed?
Answer: It has been reported in detail in the manuscript.See Statistical Analysis(2.6).

4. Study characteristics: 'Among them, 13 studies compared ultrasound- assisted localization with traditional localization, 5 studies compared ultrasound- assisted localization with traditional localization, and 3 studies compared the application of ultrasound-assisted localization and real-time guidance in intraspinal anesthesia.'The comparison ultrasound vs. traditional lo-   calization is mentioned twice, while the comparison between real-time and traditional is not mentioned?!
Answer: Here is a writing error, the correct expression should be the five real-time guides and traditional positioning.

5. Table 1: The most important information is missing: Effect estimates for the respective outcomes!
6.Table 1: The entries with superscript a are described as 'range'. But what are the corresponding numbers in brackets? If they are minimum and maximum (as one would expect for the range), then the values don't fit, e.g. 65.8-52.3 = 13.5 not 59.
Answer: The information in Table 1 in the manuscript has been adjusted.

7. Section 3.2: 'Incomplete outcome data was also difficult to achieve,...' What is this supposed to mean? Why would we want to achieve incomplete data? Do you mean it's difficult to access? I still don't see how that could be the case.
8. No assessments of the certainty of the results is presented.
Answer: It is not clear here that the five studies have not reported whether there are incomplete data on the results.Changes have been made in the manuscript.

9. Availability of data, code, extraction forms etc. is not specified.

10. Figures 3-7 are very difficult to read, since they are so small. Consider presenting only the ones for the main outcome and move the others to a supplemental material.
11. The results presented in the abstract (mean differences and CrI) are not reported in the main text.
Answer: The above questions have been revised in the manuscript. Figure 3-7 has been put in the supplementary document.Figures have been adjusted and the content of secondary results has been placed in the supplementary file.

Minor comments and major typos

1. page 2, line 31: 'no significant difference...'

2. Abstract: Several sentences are incomplete, e.g. 'In the subgroup analysis, first puncture success rate in pregnant women and obese patients.'

3. Abstract: Abbreviation CrI is not defined.

4. Table 1: What do the entries'No'mean? Not reported?

Answer: Note that the study did not report this data

5. page 7: 'Draw a cumulative sorting chart to calculate the SUCRA proba- bilities of traditional positioning, auxiliary positioning and real-time guid- ance (Fig. 6A)' This sentence is incomplete.

6. page 8: 'In the first subgroup, we included nine studies of pregnant women and obese people with an average age of less than 60 years and a BMI greater than 33'Are these values for all studies separately or combined for the whole cohort?

Answer: These values are pooled for the entire cohort, including obese adults and pregnant women (obese with or without).The rest of the questions have been revised in the manuscript.

Reviewer: 5

1. Line 35 of page 2 and similar instances: I interpret "CrI" as "credible interval." However, in line 35 of page 4, it mentions "based on a frequentist framework." Could you clarify if you performed a Bayesian or frequentist network meta-analysis? If it is a frequentist analysis, please spell out "confidence interval (CI)" in the first instance.

Answer：Modifications have been made in the manuscript.

2. Line 9 of page 3: "... superior to real-time guidance...". In what aspect is ultrasound-assisted spinal anesthesia considered superior?

3. Line 22 of page 4: "... make a transformation according to the corresponding method." It would be helpful to provide a brief description of the method you used for this transformation.

4. Section 3.1 provides summaries of the characteristics of studies included in your analysis.

However, I noticed that there are no summaries of the primary outcome variable: the success rate of the first puncture. It would be beneficial to include some summaries of this variable as well."

answer: The above issues are similar to those raised by other peer reviews and have been modified accordingly based on comments.

VERSION 2 – REVIEW

REVIEWER	Belo, Camila Instituto Nacional de Câncer, Education and Scientifical Information Service
REVIEW RETURNED	02-Aug-2023

GENERAL COMMENTS	For the standard of acceptable translation into English for publication the authors the authors still need to make adjustments as in the title of the section data extration. Take the opportunity to carry out the last English review. Otherwise, the authors met the requirements reported in the review process.

REVIEWER	Friedrich, Sarah University of Augsburg
REVIEW RETURNED	17-Jul-2023

GENERAL COMMENTS	The paper has improved greatly through the revision. I have no further comments.

REVIEWER	Yan, Guohua
	University of New Brunswick
REVIEW RETURNED	28-Jul-2023

GENERAL COMMENTS	The authors have revised their manuscript according to the reviewers' comments.