PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	International prevalence of consultation with a naturopathic practitioner: a systematic review and meta-analysis
AUTHORS	Steel, Amie; Redmond, Rebecca; Schloss, Janet; Cramer, Holger; Goldenberg, Joshua; Leach, Matthew; Harnett, Joanna; Van de Venter, Claudine; McLintock, Andy; Bradley, Ryan; Hawrelak, Jason; Cooley, Kieran; Leung, Brenda; Adams, Jon; Wardle, Jon

VERSION 1 – REVIEW

REVIEWER	Patel, Asmita South Pacific College of Natural Medicine, Research
REVIEW RETURNED	01-Nov-2021

GENERAL COMMENTS	Comments to the Authors This study reports the findings of a systematic review and meta-analysis of studies that describe the global prevalence of consultation with a naturopathic practitioner by the general population over a 12-month period since 2010. The findings from this study are relevant and will add to the naturopathic body of literature. Title The title is appropriate and reflects what the study is about. Abstract The abstract reflects what the study is about, however some clarification is required regarding the number of studies that were included in this review. Edits 1. Page 3, lines 37-41 (the Abstract's results section) reads: "The literature search identified eight manuscripts summarizing 13 studies reporting prevalence for inclusion in this review." Clarification is required regarding how many studies were included in this review, as the number stated in the Abstract does not line up with the number of studies reported in Table 3 (page 17), which reports the studies included in this review. 2. Strengths and limitations of this study section, page 4, line 10, the word 'includes' is repeated. Introduction Relevant background information and a rationale for the study are provided. Methods The Methods section is clearly organised and provides relevant

	information under each section. Detailed information of the analysis process is provided. Results The Results section provides detailed information regarding both the search and study characteristics. Risk of bias, summary of findings and meta-analyses of results are also discussed. Tables and Figures provide relevant information. Discussion The main study findings are discussed in detail. Findings are discussed in relation to legislative and policy factors that can affect naturopathic consultation/utilisation in individual countries, such as the United States. Detailed discussion regarding the limitations of prevalence studies in the context of naturopathy is provided. Future directions for naturopathic research are highlighted.

REVIEWER	Lorenc, Ava University of Bristol
REVIEW RETURNED	16-Dec-2021

GENERAL COMMENTS	Very comprehensive review in terms of methodology and it is well written, but the results are quite limited. Overall I feel like you put a lot of work into identifying and analysing the papers, but all we get is a vague range of %s for naturopathy use which isn't really that interesting. Could you do more with the content e.g. collate factors affecting use, or do further analysis of the situation in each country and how that might affect the prevalence reported? Or even try to identify more papers/data as I suggest below. • I am not qualified to comment on the stats involved in a meta-analysis so please make sure someone else has reviewed this part. • It would be good to have an overview of regulation in the Background, or at least something about whether naturopaths practice as mainstream/statutorily regulated practitioners? You mention the need for further research into regional variations, but would it be possible to incorporate that into your review? It is difficult to interpret the results with no context for each country in terms of regulation, payment, access etc. • You mention there being less known about factors associated with use but surely many of the surveys you included assessed this? Can this be reported? Then you could definitively say what the factors might be? • I am not sure about your use of the broad WHO regions given that you only have papers from one or two countries in each region? It might be a bit of a leap to use figures from one country to generalize to a region? • I would be careful making claims about conclusion re the need to integrate naturopathy into healthcare systems as you haven't really discussed this in this paper. • It is probably too much work but you could have contacted authors of papers measuring CAM

	use (e.g. from Suppl file 1) to get the data for naturopaths if available? For example my UK survey I could have done this for you. • Maybe make more of a point about how few studies you found – 8 studies out of 98 countries is really low! Would you be able to comment on geographic regions where you didn't identify any papers? • It is great that all studies had low risk of bias – can you make more of this? Maybe in the abstract or strengths/limitations? Minor points: • In Table 2 I think point 3 needs t be on a new line

REVIEWER	Mayer, Benjamin University of Ulm
REVIEW RETURNED	13-Jan-2022

GENERAL COMMENTS	I would like to thank both the editor as well as the authors for letting me review this paper. I read it with interest, since also in Germany naturopathic practitioners are common. I think overall the authors did a good job in precisely describing their attempt to estimate the prevalence of consultation with a naturopathic practitioner based on an evidence-based research approach. The writing is clear and esay to follow, and I was happy to see the adherence to the PRIMSA checklist. I have some minor issues to be addressed by the authors concerning some methodological aspects which either were not completely clear to me or were missing: - page 6, lines 35/36: you wrote that "the search targeted contries where according to the WHO naturopathic practitioners provide care...". However, on page 5, lines 53/54 (aim) you state that "the study aims to describe the global prevalence of...". This seems contradictory to me, since you either can have a look at the global level (all countries), or you focus on specific countries. Can you explain how these two citations come together? - page 6, line 38: are the search terms mentioned in adherence with the MeSH coding system? - page 7, lines 16-28: you state that a random effects model was used in general. Although the results suggest that this is a reasonable choice, I was wondering why you state in general to use a random effects model while describing the thresholds of study heterogeneity a few lines below. If you would have found only low heterogeneity (0-30%), wouldn't you have used a fixed effects model instead? - I missed a statement concerning the assessment of possible publication bias in the methods section (as well as in the discussion). Wasn't publication bias checked?

	- Figures 2 and 3: Is there a reason why only subtotal estimates are provided, without having an overall estimate including all countries/region?

VERSION 1 – AUTHOR RESPONSE

Reviewer 1

Reviewer: Page 3, lines 37-41 (the Abstract's results section) reads: "The literature search identified eight manuscripts summarizing 13 studies reporting prevalence for inclusion in this review." Clarification is required regarding how many studies were included in this review, as the number stated in the Abstract does not line up with the number of studies reported in Table 3 (page 17), which reports the studies included in this review.

Response: Thank you for identifying this error. We had failed to count the study reported in Table 4 by Srinivasan and Raji Sugumar in our count of total studies, despite counting the manuscript. We have now addressed this in the text as follows (change is underlined):

"*The literature search identified eight manuscripts summarizing 14 studies reporting prevalence for inclusion in the review*."

Reviewer: Strengths and limitations of this study section, page 4, line 10, the word 'includes' is repeated.

Response: Thank you for identifying this typo. The text has now been edited.

Reviewer: 2

Reviewer: It would be good to have an overview of regulation in the Background, or at least something about whether naturopaths practice as mainstream/statutorily regulated practitioners? You mentioned the need for further research into regional variations but would it be possible to incorporate that into your review? It is difficult to interpret the results with no context for each country in terms of regulation, payment, access, etc.

Response: We agree this information is very useful to the reader, and have added a table outlining types of occupational regulation known to apply to naturopathy by WHO Region and Member State. This edit is also reflected in the text of the introduction, as follows (underlined):

"Despite similarities in the content of these training programs, naturopathic scope of practice varies considerably across jurisdictions due to differences in regulation and legislative requirements ranging from voluntary certification, co-regulation, negative licensing, and statutory registration/occupational licensing, as seen in Table 2 [6]."

Reviewer: You mention there being less known factors associated with use but surely many of the surveys you included assessed this? Can this be reported? Then you could definitively say what the factors might be?

Response: We agree that such information would be useful. Unfortunately, there was insufficient detail provide across the included studies on this point. We have further strengthened the paragraph in the discussion that deals with this gap but adding an explicit recommendation to develop such knowledge through future research (as follows, underlined):

"By focusing on general population utilization, this study may also not reflect differences in prevalence of use for different clinical conditions. For example, Australian studies published before 2010 show a self-reported prevalence of naturopathic use among the general population of mid-aged women to be 8.7%, while rates for cancer (15.7%) and depression (22.2%) were significantly higher [9]. Similar variations were seen in insurance data from Washington state in the US, where 7.1% of insured cancer patients made claims for naturopathic treatment, compared to 1.6% of general enrollees [32]. With this in mind, future research should examine the characteristics of users of naturopathy in different countries and world regions more closely for both the general population and within subpopulations."

Reviewer: I am not sure about your use of the broad WHO regions given that you only have one or two countries in each region? It might be a bit of a leap to use figures from one country to generalise to a region?

Response: Thank you for this suggestion. We have ensured the limitations of the regional aggregate data are emphasised to the reader in the first paragraph of the discussion as follows:

"This review presents the most recent synthesis of evidence of the global prevalence of consultations with naturopaths/naturopathic doctors. The prevalence of naturopathy/naturopathic medicine use was reported in seven countries, across five WHO designated regions of the world. However, it should also be acknowledged that data were only available for a small number of countries in each world region. Intra-region variability limited the overall generalisability of such findings to the relevant region and, as such, aggregate regional results should be interpreted with caution."

Reviewer: I would be careful making claims about conclusion re the need to integrate naturopathy into healthcare systems as you haven't really discussed this in this paper.
Response: Thank you for this suggestion. This issue was raised in the introduction and is important context to the justification for this review. However, we agree that this context was not as clearly positioned as it should have been for the reader. As such, we have edited the conclusion to more explicitly situate the call for integration as it relates to the World Health Organisation Traditional Medicine Strategy:
"Differences in naturopathic utilization in these regions may be indicative of a range of policy, legislative and social factors impacting the naturopathic profession. Despite these ongoing factors, further research attention is warranted to develop evidence-based responses to the WHO recommendation that naturopathy and other traditional medicines be integrated, where appropriate, into healthcare systems so that consumers have access to safe and effective multi-disciplinary care."

Reviewer: Maybe make more of a point about how few studies you found – 8 studies out of 98 countries is really low! Would you be able to comment on geographic regions where you didn't identify any papers?
Response: We appreciate this suggestion and have made two changes in response. The first is an additional Figure (to support the previous supplementary file) which depicts the availability of national health survey data regarding the prevalence of consultations with a naturopath. This is now presented in Figure 4. The second is expanded text in the Discussion section further emphasising the significant omission of such data from government national health surveys globally. The amended text is underlined below:
"Further, an examination of government administered national health surveys of the general population in the countries represented by WNF member organisations, found only Switzerland, Northern Ireland, USA, Mexico and India currently included items that specifically measured consultations with a naturopath/naturopathic doctor (see Supplementary File 2 and Figure 4). While some non-government research has measured the prevalence of naturopathy use in additional countries, available data is not available in more than 90% of countries with WNF member organisations, and 95% of all countries reported by the WHO as having a naturopathic profession. To evaluate the potential role of naturopaths in care delivery, it is imperative that naturopathic health services and workforce research data is captured in all countries where there is a significant naturopathic presence."

Reviewer: It is great that all studies have low risk of bias – can you make more of this? Maybe in the abstract or strengths/limitations?
Response: Thank you for this suggestion. We have now made edits to the strengths/limitations section of the manuscript as suggested.

Reviewer: 3

Reviewer: page 6, lines 35/36: you wrote that "the search targeted contries where according to the WHO naturopathic practitioners provide care...". However, on page 5, lines 53/54 (aim) you state that "the study aims to describe the global prevalence of...". This seems contradictory to me, since you either can have a look at the global level (all countries), or you focus on specific countries. Can you explain how these two citations come together?
Response: We are happy to provide this clarification. The targeted country-based search was only undertaken for countries known to have naturopathic practitioners providing care in the community as it was deemed unlikely that a major report would be prepared for countries with no known presence of the naturopathic profession. This still includes 98 countries listed in the WHO Global Report so we

assert this can still be considered a ‘global’ investigation.

Reviewer: page 6, line 38: are the search terms mentioned in adherence with the MeSH coding system?
Response: Yes, MeSH coding was used alongside other non-MeSH keywords. This has now been made explicit in the text within the Search Strategy subsection as follows (edits underlined):
“The complete search strategy for MEDLINE, using Medical Subject Headings (MeSH) terms where appropriate, is presented in Table 2”

Reviewer: page 7, lines 16-28: you state that a random effects model was used in general. Although the results suggest that this is a reasonable choice, I was wondering why you state in general to use a random effects model while describing the thresholds of study heterogeneity a few lines below. If you would have found only low heterogeneity (0-30%), wouldn't you have used a fixed effects model instead?
Response: Thank you for raising this question. We have followed the guidance of Cochrane collaboration with regards to the effects model applied to our meta-analysis, namely that “the choice between a fixed-effect and a random-effects meta-analysis should never be made on the basis of a statistical test for heterogeneity” (Deeks et al, 2022; reference below). A fixed effect model assumes that a single parameter value is common to all studies, and a random effects model that parameters underlying studies follow some distribution. Perfect homogeneity as a prerequisite for a fixed effect model cannot normally be assumed in medical science even if I-squared is low (Higgins et al. J R Stat Soc Ser A Stat Soc. 2009;172(1):137-159.). Moreover, in fixed effects models, the results can only be applied to the current set of studies, while the random effects model aims to generalize beyond the current data and to make estimates for the general population (Tufanaru C, et al. Int J Evid Based Healthc. 2015;13(3):196-207). For both of these reasons we chose to employ a random effects model in our analysis.

Further details with regards to our approach are available here:
Deeks JJ, Higgins JPT, Altman DG (editors). Chapter 10: Analysing data and undertaking meta-analyses. In: Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, Welch VA (editors). Cochrane Handbook for Systematic Reviews of Interventions version 6.3 (updated February 2022). Cochrane, 2022. Available from www.training.cochrane.org/handbook.

Reviewer: I missed a statement concerning the assessment of possible publication bias in the methods section (as well as in the discussion). Wasn't publication bias checked?
Response: We discussed publication bias when designing this meta-analysis but finally decided not to test for publication bias because such a test would be hard to interpret in a prevalence meta-analysis. Publication bias is normally defined as the selective non-publication of (small sample) studies with a non-favorable effect. While 'non-favorable' can be easily defined in clinical or experimental studies (e.g. as small or non-significant intervention effects), it is less clear what a 'non-favorable' prevalence of consultations with a naturopath would be, particularly as the definition of ‘favourable’ may be subjectively different for naturopaths, other health professionals (e.g., medical doctors) and health researchers (e.g., epidemiologists). Therefore, we decided to abstain from analyzing publication bias and hope this is acceptable.

Reviewer: Figures 2 and 3: Is there a reason why only subtotal estimates are provided, without having an overall estimate including all countries/region?
Response: Yes, this was intended. Given that naturopathy is the traditional medicine system in some regions (mainly the German-speaking part of Europe), quite common in other regions (mainly the English-speaking part of the world and India) and essentially unknown in other regions, we expected and found a substantial heterogeneity between regions and therefore decided not to calculate a likely biased world-wide prevalence.

VERSION 2 – REVIEW

REVIEWER	Lorenc, Ava

	University of Bristol
REVIEW RETURNED	13-Apr-2022

GENERAL COMMENTS	Very happy with how they have addressed my comments