# Review of: "Influencing variables of health: dimensions and their determinants – A systematic review"

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**Potential competing interests:** No potential competing interests to declare.

The background section of your article lays out the rationale and context for your research effectively. It touches on the importance of defining and measuring health in a precise and quantifiable way, which is crucial for any scientific study related to health. Here are some comments and suggestions for improvement:

**Clarity and Conciseness**: The background section is quite lengthy and somewhat repetitive. While it's essential to provide context, it might be beneficial to condense some parts for a more concise presentation.

**Citation Style**: Ensure consistent citation style throughout the text. For example, in the section mentioning Dhar, Chaturvedi, & Nandan (2011), the citation style is different from that used for Pineo et al. (2018) or other references. Consistency in citation style is vital for the overall professionalism of the paper.

**Specificity**: When you mention that "The state of scientific research gives an orientation towards relevant dimensions of health," it would be helpful to provide specific examples or references to recent research that demonstrate this. It makes the statement more concrete and supports your argument.

**Research Gap**: While you state that "there is no clear compilation of the relevant determinants and influencing factors that depend on these dimensions," it would be beneficial to highlight this as a research gap that your systematic review aims to address. This can help readers understand the significance of your study in the broader context of health research.

**Use of References**: The references you've cited are relevant, but you might consider incorporating more recent studies to support the relevance and timeliness of your research. This is especially important in a rapidly evolving field like health research.

Regarding the section on the theoretical foundation of your research, this provides a comprehensive overview of the health dimensions, interactions between dimensions, determinants of health, and the proposed multilevel model. It offers a strong foundation for your study, but there are a few areas where further clarity and detail could enhance the reader's understanding:

**Clarity of Health Dimensions**: The section does a good job of introducing the dimensions of health and their origins.

**Citation and Attribution**: The section frequently references various models and definitions of health, which is valuable. However, the text could be improved by providing the publication years for these models and definitions (e.g., WHO,

1948; Engel, 1977) as it adds context and indicates the currency of the references.

**Interactions Between Dimensions**: The section discusses the interactions between health dimensions effectively.

**Determinants of Health**: The introduction of determinants of health is well-done, but it would be helpful to provide more context or examples for the determinants of each dimension, making it more relatable to readers. Additionally, clarifying that determinants can have both positive and negative effects on health could be beneficial.

**Multilevel Model of Determinants of Health**: The description of the multilevel model is informative.

**Relationships Within the Model**: The section effectively describes the four relationships within the model.

**Research Objectives**: The explicit formulation of the research objectives is clear and informative. However, you might consider breaking down the objectives into a bulleted list to provide a more structured presentation.

With regards of the methods section of your research, the article provides a comprehensive overview of the processes you followed for conducting the systematic review. Here are some comments and suggestions to enhance the clarity and transparency of this section:

**Eligibility Criteria**: You clearly define the eligibility criteria for your systematic review, focusing on Western living conditions and the five health dimensions. However, it would be helpful to specify what "quantified statement of health" entails, perhaps by providing an example or further clarification.

**Search Strategy**: The description of your search strategy is clear and includes the databases used, search domains, and the date of the last search. However, for greater transparency, consider providing the actual search terms or a brief example to give readers a better sense of how you conducted the search.

**Study Selection**: The step-by-step process of study selection is well-documented, from duplicate removal to full-text screening. However, it might be beneficial to present this information in a tabular format, indicating the number of studies excluded at each stage. This visual aid can provide a quick overview of the screening process.

**Data Collection**: The data extraction sheet is a crucial component of your methodology. However, it's advisable to include an example of this sheet or provide further clarification on what specific data points were collected for each study. This will help readers understand the information you extracted from the included studies.

**Synthesis of Results**: The description of how you integrated the instruments into a new multilevel health model is clear. You mention "Table 4 – see additional file 1," which is great, but it would be helpful if you could briefly summarize the key findings from Table 4 in the main text to give readers a sense of the model's content.

**Quality Appraisal**: The quality appraisal tool and scoring system are well-defined. However, you might consider providing a brief example of how the tool was applied to a sample instrument to illustrate its practical use.

**Transparency of Additional Files**: You reference additional files throughout the methods section, such as "additional file 1" and "Appendix I." It's important to ensure that these additional files are easily accessible to readers, whether in the

article itself or as supplementary materials.

**Flowchart or Diagram**: Consider including a flowchart or diagram summarizing the systematic review process, from study selection to the synthesis of results. This visual representation can help readers visualize the steps involved.

**Dates and Currency**: It's essential to mention when the systematic review was conducted, as you note that the last search was performed on October 30, 2021. This provides context for the currency of the included studies.

**Referencing Specific Tools**: When you reference tools like "Bös (2001), Freire & Lopez (2017), and Hesselink et al. (2013)" for your quality appraisal tool, it would be helpful to include full citations in your references section, ensuring that readers can find these sources easily.

With regards of your results section, this provides a clear overview of the study characteristics, risk of bias within the studies, and the synthesis of results for each of the five health dimensions in your multilevel health model. Here are some comments and suggestions to enhance the clarity of the results:

**Data Presentation**: You present the results in a well-organized manner, using figures to depict the models for each dimension. This visual representation is helpful for readers. However, it might be beneficial to include captions under the figures explaining what they represent.

**Study Characteristics**: The summary of study characteristics is informative, providing the number of studies found, the reasons for exclusion, and the number of studies included for analysis. Consider presenting this information in a table to make it more concise and visually appealing.

**Risk of Bias**: The presentation of the risk of bias within studies is clear. The division into "weak," "medium," and "strong" ratings is helpful. You might consider including a brief explanation of what these ratings mean in terms of instrument quality, as it may not be immediately clear to all readers.

**Synthesis of Results**: The synthesis of results for each dimension is informative. However, when you mention specific figures, such as "Figure 4" for the mental health model, you could briefly describe the key findings from that figure in the main text to give readers an idea of what the figure represents.

**Unclassified Items**: You mention "unclassified" items that could not be categorized due to not belonging to one of the health dimensions. It might be helpful to provide a few examples of such items to clarify this concept for readers.

**Instrument Coverage**: You mention the number of instruments that measure each determinant, but it would be beneficial to include a table summarizing this information for all dimensions. This can help readers quickly assess the instrument coverage across dimensions.

**Environmental Health Model**: In the environmental health model, you state that "level 2 'media' is not a level 3 influence factor or level 4 variable." This suggests that there may be an issue or gap in the model. It would be valuable to discuss this discrepancy in the discussion section.

**Clarity of Tables**: Ensure that readers can easily access the tables and additional files you reference throughout the results section. Make sure these files are appropriately labeled and accessible.

**Referencing Instruments**: When you reference specific instruments in your models, it would be helpful to provide a list of these instruments and their citations in a separate section or table within the article.

Your discussion section provides an in-depth analysis of the study's findings and their implications. Here are some comments and suggestions to further improve the clarity and comprehensibility of the discussion:

**Summary of Evidence**: Your summary provides a clear overview of the key findings, particularly the expansion of the multilevel health model and the number of instruments used. It is well-structured and serves as a helpful introduction to the discussion section.

**Gaps in the Model**: Discussing gaps in the model is crucial for transparency. It's important to highlight areas where the model might be incomplete or where further research is needed. You've identified some gaps, such as the lack of risk factors for "cognition" in the mental health model. Consider discussing potential reasons for these gaps and their implications.

**Density at Level 4**: You mentioned that the density at level 4 is low, primarily due to the methodology and search terms. It would be beneficial to clarify what level 4 represents in your model for readers who might not be familiar with the multilevel structure. Additionally, you can discuss the potential impact of these limitations on the model's comprehensiveness.

**Overlap with Existing Literature**: Your discussion effectively highlights the overlaps between your multilevel health model and existing literature on determinants of health. This comparison adds credibility to your model. You might consider briefly discussing how your model expands upon existing literature and provides a more comprehensive framework.

**Dimension Classification**: The discussion mentions that some determinants can apply to multiple dimensions but are placed under a single dimension in your model for simplicity. This is a practical choice, but it might be helpful to provide examples of such determinants for clarity.

**Integration of Missing Determinants**: You mentioned that some determinants mentioned in the literature couldn't be extracted from measurement tools. It would be valuable to discuss potential strategies for integrating these missing determinants into the model and their significance in understanding health comprehensively.

**Naming of Dimensions**: Discuss the rationale behind the naming of dimensions, especially considering the overlap of determinants across dimensions. For example, you mentioned that the "financial" determinant could apply to both the existential and social dimensions. Explain why it was placed under one dimension and how this decision was made.

**Implications for Future Research**: It's important to discuss the implications of your findings for future research. What research questions or areas should be prioritized based on the gaps and overlaps identified in your multilevel health

model? This can help guide future studies in the field.

Your "Limitations" and "Conclusion" sections provide essential context and insights into the study's constraints and future directions. Here are some additional points and suggestions:

**Limitations:**

**Incompleteness of the Search**: Acknowledging that not all relevant instruments may have been found is a common limitation in systematic reviews. However, you might consider discussing potential reasons for missing instruments, such as variations in terminology and indexing in different databases.

**Instruments with Items Crossing Dimensions**: Your mention of instruments that measure multiple dimensions highlights the complexity of defining and categorizing health dimensions. You could discuss how the multidimensionality of these instruments might impact the accuracy of your model and potential strategies for handling this in future research.

**Access to Full Instruments**: Limited access to full measurement instruments is a common challenge in systematic reviews. Discuss how this limitation might affect the comprehensiveness of your study and whether there were any efforts made to contact authors or institutions for full access.

**Publication Year Discrepancy in Environmental Dimension**: You pointed out that the environmental dimension literature is more recent compared to other dimensions. It might be interesting to explore why there's this difference in publication years and whether this impacts the comprehensiveness of the environmental health model.

**Unclassifiable Items**: Some items couldn't be classified within the multilevel health model. It would be valuable to discuss why these items couldn't be categorized and whether they represent unique aspects of health that need further investigation.

**Quality Appraisal**: While you mentioned the limitations of the quality appraisal tool, you might also discuss any potential biases or shortcomings that could result from this method of assessing the instruments' validity and reliability. This is essential for readers to understand the degree of confidence they can have in the results.

**Conclusion:**

**Future Directions for Validation**: You mentioned the need for further investigations, such as empirical validation of the multilevel health model. Consider expanding on what an empirical validation process might entail, including study design and data collection methods.

**Interplay of Dimensions**: Discuss the potential interplay between different health dimensions and determinants. In real-life situations, these dimensions might not act independently, and understanding their interrelationships could provide a more holistic view of health.

**Development of a Multidimensional Health Score**: Explain how the creation of a multidimensional holistic health score can be practically achieved. What are the key steps involved, and what challenges might be encountered during this

process?

**Psychometric Properties of the Derived Instrument**: Elaborate on the steps required to create a derived instrument from the model and how you envision this process in practice. Discuss the importance of testing the psychometric properties of this instrument.

**Policy and Clinical Relevance**: In future research, consider discussing the potential policy and clinical implications of your work. How can the multilevel health model be applied in healthcare settings or public health policy to improve health outcomes?

**Scaling of Protective and Risk Factors**: Explain how you intend to scale protective and risk factors to create a quantifiable health score. This is a crucial step in the practical application of your model.