

# Comments on “Reliability and Validity of an Adapted Questionnaire Assessing Occupational Exposures to Hazardous Chemicals among Health Care Workers in Bhutan”

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Dear Editor,

We read with great interest the article recently published in *The IJOEM* by Rai, *et al*, on the reliability and validity of a questionnaire for assessing occupational exposures to hazardous chemicals among health care workers in Bhutan.<sup>1</sup> We really appreciate the efforts put by the authors for undertaking such a thought-provoking study that have pivotal role in occupational health of the developing countries. This paper well explained the importance of collecting valid and reliable occupational history data in estimating occupational exposures and work-related health effects. However, there are certain issues that need to be addressed.

The title of the study creates a curiosity to learn about the reliability and validity of an adapted questionnaire. As the study process, the method tapers down the study into two stages (1) adaptation of the National Institute for Occupational Safety and Health (NIOSH) questionnaire, and (2) test-retest reliability assessment

that leads to the missing of the major half portion—the questionnaire validity. The process of adaptation of the questionnaire has to follow the specific recommended steps that cannot be purely expert-guided.<sup>2</sup> Rai, *et al*, confirm that questions on automated disinfection systems from the original NIOSH questionnaire were excluded whereas health care job module in occIDEAS were included to structure the pre-final version of the questionnaire.<sup>1</sup> The pre-final version of the modified questionnaire was then reviewed by the experts to assess the validity of the instrument, a method just enough for face validity. The method of rating the items or the scoring criteria for the questionnaire used by the authors was not revealed. Item rating and scale rating have been proposed to be integral components of content validity.<sup>3</sup> The final stage of the adaptation process should be a field test of the new questionnaire that seeks to use the pre-final version in people from the target setting that provides insight into how a person interprets the items on the questionnaire so as to measure quality in the content validity.<sup>2</sup> These

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Received: Sep 10, 2020  
Accepted: Sep 19, 2020

Cite this article as: Dutta P, Chorsiya V, Rai R, *et al*. Comments on “reliability and validity of an adapted questionnaire assessing occupational exposures to hazardous chemicals among health care workers in Bhutan”. *Int J Occup Environ Med* 2020;11:215-217. doi: 10.34172/ijoem.2020.2196

aspects remained untouched in the study for validity; however, the other forms of validity are included to strengthen the validity of the adapted questionnaire, in spite of using the umbrella term “validity.” This makes the validation very subjective.

The test-retest reliability is well-described with supporting statistical analysis presented. The reliability is calculated based on the questionnaire filled by the subject and completely explained in the result section, again not highlighting the validity of the questionnaire.

In the Discussion section, the authors emphasize on testing the validity and exhibit good content validity of the adapted questionnaire. The statistical analyses to reach such a conclusion, however, are not presented, which is a weak side of the study. The purpose of the study was the most needed in the occupational health domain of the developing countries and provides valuable insight, but the above-mentioned points need to be considered for justifying the title of the study.

## References

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## Authors' Reply

*Dear Editor,*

We thank the authors of this letter for expressing interest in our article,<sup>1</sup> and for appreciating the need for such studies to be conducted in developing countries to promote occupational health, which is a largely neglected public health issue in these countries.

The authors have raised concerns about the assessment of the validity of the questionnaire since we did not conduct statistical tests to assess content validity. We acknowledge that we assessed only face validity and this type of validity is often seen as a weak form of construct validity owing to its subjective judgement. We could have tested for content validity using statistical tests, as suggested by the authors, however, the assessment of content validity is still fundamentally a subjective process.<sup>2</sup> Criterion-related validity assessment was not possible since there is no gold-standard questionnaire to compare ours with.<sup>3</sup> Similarly, construct validity, which is the best method for testing validity,<sup>2</sup> could not be assessed, because we were not testing a theoretical construct or a psychosocial scale. Additionally, we were assessing whether participants undertook particular tasks, not whether they were exposed to a single chemical where it would potentially be possible to assess the validity by comparing the questionnaire to biomonitoring results of that chemical.<sup>3</sup>

With regards to the cross-cultural adaptation process,<sup>4</sup> as we discussed in the paper, the questionnaire did not need to be translated in the local language as tertiary education in Bhutan is in English. For cultural adaptation, each item of the questionnaire was assessed by the expert committee for comprehensiveness and relevance to the Bhutanese context, and for comprehensibility to the Bhutanese health

care workers. In addition, the participants were asked whether they had difficulties in understanding the questionnaire and to provide reasons, if so. Only one participant had difficulty with one question and changes were made to the questionnaire accordingly, which we have described in the paper.

In conclusion, we thank the author for raising these important points which should be considered when adapting questionnaires between countries.

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