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LETTER TO THE EDITOR

WILEY

Response to the letter entitled: Developing an adherence in hypertension questionnaire short version, MUAH-16: Statistical and methodological issues

To the Editor:

Although we do not agree with their criticism, we would like to thank the interest showed by Salimi and Abdollahpour in our study.[1]

Several scale reduction techniques to obtain short versions of questionnaires are described,[2] being the most prevalent those that maximize the scale's internal consistency. Important limitations of these approaches exist, because choosing items to maximize internal consistency may lead to highly redundant items, narrowing content, and potentially making it low in validity.[3,4] Stanton et al[4] suggested that researchers may also need to examine other criteria beyond statistical relations to determine which items should remain in an abbreviated scale (eg, judgmental item qualities). Beaton et al[5] evaluated 3 item-reduction techniques to develop a short and reliable version of the 30-item DASH (disabilities of the arm, shoulder, and hand) outcome measure, concluding that the concept-retention technique, which allows for the selection of items based on their clinical relevance rather than on statistical testing alone, produced a comparable, if not slightly better, instrument than statistically driven approaches. Other researchers had used this methodology, reinforcing that the short versions obtained are more similar to the original instrument.[6] Our development of the short version of MUAH was based on a process that integrates both theoretical and statistical decisions, associating the concept-retention technique to the results of an exploratory factor analysis (EFA). Thus, for each item, we considered not only its loading factor, but also its clinical relevance.

Salimi and Abdollahpour's statement about convergent validity is misleading because they mention only the correlation coefficients between the subscale "active coping with health problems" of MUAH-16 with the global scores of MMAS-8 and MAT. It is important to note that MMAS-8 and MAT are instruments that result in overall adherence scores that positively and significantly correlate with overall MUAH-16 scores (0.45 and 0.41, respectively). Neither MMAS-8 nor MAT has items that address "active coping with health problems," so small correlation with this domain is expected. When assessing convergent validity, domain description should be taken into consideration.

A simple arithmetic calculation explains why reducing the number of items is always associated with a reduction in internal consistency coefficients.[7-9] As we explained in the Study Strengths and Limitations section, measures of unidimensionality, such as factor analysis, are equally important to Cronbach alpha for homogeneity assessment of the instrument in shorter scales. Although with lower Cronbach alpha, confirmatory factor analysis for both models shows that MUAH-16 has a better fit to the data than the original MUAH (χ^2 [100] = 171.07, $P < .001$, CFI = 0.92, RMSEA = 0.04, vs χ^2 [269] = 663.41, $P < .001$, CFI = 0.695, RMSEA = 0.06), suggesting that MUAH-16 better represents each adherence dimension.

CONFLICT OF INTEREST

There are no conflicts of interest to disclose.

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