Author's response to reviews

Title: Factor analysis of self-treatment in diabetes mellitus: a cross sectional study

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Author's response to reviews: see over
Dear Mr Silvestre

Hello and How are you

Thank you for your messages and recommendations. The following changes were made to the article “MS: 5869416548149202 - Factor analysis of self-treatment in diabetes mellitus: a cross sectional study”

1. As we believe and dear reviewer may also accept, designing a questionnaire is a process that needs different steps and for having a standard questionnaire, you need to examine it in different researches and settings and compare it to the same questionnaires. Unfortunately there is no standard questionnaire about self-treatment in diabetes mellitus and in spite of its importance, this common behavior has received very little attention.

This research along its previous qualitative research tried to address this issue. When we designed the questionnaire, we started the usual process of determining the validity and reliability of the questionnaires. We started with the experts' approval and face validity of the questionnaire, and then we carried out a pilot study and examined its feasibility and calculate its alpha cronbach and its internal consistency. We extracted the items with low internal consistency. The final questionnaire was studied in 398 patients, which you can see the results in this article.

In this stage, we thought the item analysis and factor analysis is the best method for studying the questionnaire and the behavior that it is evaluating. Since there was no other questionnaire to compare the results, we could have some imaginary cut-off points and change the score to the ordinal variables as low, moderate and high self treatment behavior (which is easier to understand) or we could use the summative score. We chose the second option, as we believe it is a better representative of data in this stage.

The results of the pilot study and the main study showed that this is a valid and reliable questionnaire. The relationships that have been shown are all rational. The questionnaire successfully distinguished that self treatment is more common among women, which is a real situation and practical experience and the researches in other settings confirm it. It also showed the relationship between self treatment and some other variables such as education, hyperlipidemia and hypertension. What else can we expect from a questionnaire?

We think if we had used the ordinal variables instead of summative score, maybe these relationships could not be shown. We also showed that there is a medium tendency to self treatment among the subjects, which we think represents the real situation and patients that we encounter, more or less practice self treatment. The results make us believe that we are in a write route and the questionnaire that has been designed really examines the self treatment behaviors. Maybe in next studies we will be able to determine the cut-off points, or some other researchers may do that.

2. The relationships that have been significant are based on differences in about 2 score in the mean, which shows that the questionnaire has been able to differentiate the small differences. I think it shows that it is precise enough to distinguish the differences but we think the difference between the ranks can explain the significance of relationships better.
Dear reviewer asked: **What magnitude of a difference is considered clinically relevant, not just statistically significant.** This is a 1 million dollar question that with current knowledge may not be addressed well. I as a researcher that is working in this subject for 5 years, can answer you that every diabetic patients should be carefully assessed for his/her self treatment habits and practices. This questionnaire may help to have a general view of this behavior and the factors that can affect it.

In this stage, we don’t recommend it for individual assessment of the patients as a regular assessment form but we think this is a reliable and valid questionnaire for research purposes.

Maybe later we will be able to develop a tool for clinical purposes. In this regard we are more relying on the results that factor analysis has been revealed (Table 2).

3. Analysis of covariance used to adjust for possible confounders of age and education. The results can be seen in table 1.

Sincerely Yours
Dr Negin Masoudi Alavi