Reviewer's report

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

Version: 1 Date: 25 March 2011

Reviewer: Fernando Rubinstein

Reviewer's report:

1. Major Compulsory Revisions

Introduction

1) Introduction does not provide an adequate level of information about the topic. It does not provide a hypothesis or specific aims for the study. An appropriate justification of the methods used and the goals to be achieved with factor analysis are not clearly stated.

Methods

2) Questionnaire development (2nd paragraph): The authors do not include a description of the instrument used. It describes that it was created by one of the researchers and it contains 25 questions, each with a 4 option ordinal likert scale is added up to a summary score which provides a measure of “self treatment” behavior in diabetic patients with higher scores meaning greater tendency for self treatment. It is not clear if this study is part of the evaluation process of that instrument or if it has been previously validated beyond the face validity assessment by a panel of experts in the field.

3) Please provide references which describe with further detail the development and validation of the instrument, the selection of the questions of the survey, the psychometric properties and the foundation to be used as a test to assess self treatment behavior based on a summary score. Please clarify how reliability was evaluated in the pilot study and the full sample.

4) Please clarify if the survey was self administered or obtained through patient interviews.

5) Statistical analyses (last sentence) Please include a brief explanation of the assessment of the distribution of the scores and the statistical test used to evaluate mean score differences by the different characteristics.

6) Methods should include a detailed explanation of the factor analysis and how it was carried out.

Results

7) Authors should include more detailed information about the participants, comorbidities, disease severity and treatments received to facilitate a comparison
with other diabetic patients.

8) (second paragraph: Self treatment behaviors): Authors describe that 50% of the patients reported self-treatment while 21.7% chose practicing self treatment always or most of the time. Please clarify the options.

9) Also the mean self-treatment score of the participants was reported as 45.8 ± 8.8, but no information is provided regarding distribution of scores or theoretical different categories of self treatment behavior based on the scores. The reported associations between self treatment behavior and education or the presence of hypertension or hyperlipidemia are based on a difference of 2.5 points. Readers should be aware of the scoring system and what magnitude of a difference is considered clinically relevant (and why), not just statistically significant. Please clarify

10) Results of Factor analysis: It is not clear how the items in the questionnaire or other characteristics relate predominantly to the factors described in table 2. A factor loading matrix (showing only significant ones) and a scree plot may be helpful to show this more clearly, especially if a clear break in the plot is found after a number of factors.

Discussion

11) The study reports results of a “medium tendency” for self treatment in these patients based on the summary score. This may also be explained by a tendency of the respondents to avoid the extreme options (such as never or always) in these types of scales, and this possible bias should be mentioned.

12) It should be noted that the participants of this study were diabetic patients seeking care at the ambulatory clinic or admitted to the hospital due to complications. Since the instrument of data collection is a questionnaire, patients may respond differently than diabetic patients in the community.

13) Patients included are mostly type 2 diabetes, roughly 50% ambulatory and 50% in patients, and 30% on insulin vs 70% on oral hypoglycemic drugs. Although mean scores do not show a difference between inpatients and outpatients or insulin vs. non insulin treated patients, it is likely that the patients included may differ on the severity of diabetes.

14) The administration of the survey in different contexts (ambulatory vs. hospital) may influence the responses. Please comment

15) The selection of participants was based on convenience sampling. Please comment if that may or may not be a potential source of bias.

Minor Essential Revisions

16) Results/Factor analysis (third paragraph): The reported value of the Kaiser-Mayer-Olkin measure of sampling adequacy of 0.618, may be considered “mediocre” to summarize the global partial correlation among variables and is sometimes used to consider eliminating those showing poor correlation. Please include a brief comment on this. Also include in methods when explaining factor analysis. When used for the first time please use the full name and later use the
initials KMO.

17) Results of the tests belong in the results section (i.e. reliability).

18) Last sentence of the results section: There is a statement about patients seeking formal health care in certain severe conditions. This particular finding deserves more detailed report to describe those particular situations.

19) Tables
Table 1: Please add the definitions of clinical problems such as renal problems, hypertension, cardiac disease and hyperlipidemia.
Table 2. Authors could present this table with headings for factor/ description/ eigenvalue/percent of variance, cumulative variance.

20) Please consider revising the overall writing of the manuscript and general use of English

Comment:
This is an important topic since the different underlying reasons for self-treatment behavior are considered a barrier to seek timely health care, especially among the most vulnerable patients with limited access to health services. Health seeking behaviors in general and self treatment in particular are complex and multifactorial, and research on this subject matter is welcome.

This study adds a factor analysis to data already published by the authors (Iranian Journal of Endocrinology and Metabolism, Volume 12, number 3, (9-2010), in which they report the association of several characteristics to the self treatment score obtained by diabetic patients surveyed using the 25 item questionnaire referred to in this present study.

To make this a valuable contribution, authors should offer more information on the methods to develop and validate the instrument used, provide grounds for the use of factor analysis and emphasize the findings and how results should be applied in practice.

Summary review: Questions asked by BMC
1. Is the question posed by the authors well defined?
No, the main objective of the study is not clearly stated in the introduction
2. Are the methods appropriate and well described?
Although an exploratory factor analysis might be of value to explore dimensions related to self treatment, the methods are not well described or reported
3. Are the data sound?
There is not enough information about the development and validation of the instrument. Statistical methods need to be expanded as well as the report of the factor analysis.
4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
5. Are the discussion and conclusions well balanced and adequately supported
by the data?

The authors need to discuss possible sources of selection and response bias, explain in more detail the basis to use and the goals to be achieved with the factor analysis and include the limitations of the present study.

6. Are limitations of the work clearly stated?
No

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?
There is a previous article recently published by the authors apparently using the same instrument and patients’ results, (but without the factor analysis) that is not discussed in this paper.

8. Do the title and abstract accurately convey what has been found?
The conclusions in the abstract only mention the mean score obtained by the participants, but results of factor analysis, the main objective of the study, are not discussed.

9. Is the writing acceptable?
The writing needs improvement

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests