Author’s response to reviews

Title: Prevalence of depression in adults with type 2 diabetes in the Basque Country: relationship with glycaemic control and health care costs.

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Version: 3
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Author’s response to reviews: see over
Dear Editor:

Thank you for giving us the opportunity to revise the paper entitled “Prevalence of depression in adults with type 2 diabetes in the Basque Country: relationship with glycaemic control and health care costs” (MS: 8293380421204119). The review article is submitted through the electronic system of the Journal.

The authors have answered point by point all questions suggested by reviewer. You can find information on the second page of this letter.

Correspondence regarding this submission should be directed to me at the following address:

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Thank you very much for all your comments about our submission.

Yours sincerely,

Edurne Alonso Morán.
Reviewer's report

Title: Prevalence of depression in adults with type 2 diabetes in the Basque Country: relationship with glycaemic control and health care costs.

Version: 2

Date: 9 May 2014

Reviewer: Tiago N N Munhoz

Reviewer's report:

Research article

Prevalence of depression in adults with type 2 diabetes in the Basque Country: relationship with glycaemic control and health care costs.

Edurne Alonso Morán, Altnai Satylganova, Juan F Orueta and Roberto Nuño-Solinis

BMC Public Health (Submitted:2014-02-03)

General Comments

Thank you for the modifications that the authors provided about my first review. However, some topics were not modified / checked or were partially modified.

Major Compulsory Revisions

1.- First revision: one decimal places is enough for prevalences and means.

Author’s reply: We have changed by one decimal

Second revision: No, you have not. Look at your tables and text, with attention and careful.

Two decimal places is enough for OR and CI95%. . Look at your tables and text, with attention and careful.

Second answer: We have changed prevalences and means by one decimal and OR and CI95% by two decimal.

METHODS

• 2, 3 and 4 paragraphs
  o You excluded individuals under 35 years old. You should, at least, discuss the implications and limitations about it. Depression onset, usually, occur before this age.
    Yes, but the study centers on people who have diabetes type 2. Second, we check how many of them have also depression.
    You still have not discussed the implications and limitations about it.
We have added to limitations that “Moreover, in this study, the age was limited to equal or more than 35 years and thus we have not estimated the prevalence of depression among patients with diabetes type 2 in younger ages. Ganasegeran et al. [33] have showed that this prevalence is higher in older ages but Zhao et al. [46] have demonstrated that diabetes is significantly associated with depression, particularly in young adults”

- 8 paragraph
  - Please explain how "low educational attainment among young people (16–29 years)" was used to create the deprivation index when your studied sample included only those who were 35 years and older.
    
    We have changed the definition to be more understandable
    “The deprivation index of the census tract (median population size is equal to 1,200 inhabitants) of residence proposed by the MEDEA project [26] was used as a proxy for individual socioeconomic position. Its design allows for the estimation of socioeconomic and environmental inequalities among inhabitants by census code in Spain. Its calculus takes into account the percentages of residents who are manual workers, unemployed, temporary employees, or have not finished primary school, overall and also specifically among young people, given the most recent Census (2001) available. The first quintile is richest people and the fifth quintile is poorest people. The deprivation index was elaborated and published in 2008”

    My question is about the age band that you used. You have not modified anything about it. Your deprivation index variable was generated using “low educational attainment among young people (16–29 years)” – at least it was what you mentioned. If your population under study is 35 years old or more, you have no information for your deprivation index regarding this variable (which composes your index). This fact could bias your deprivation index variable. If I am wrong, explain why.

    - Is this index generated with information measured in 2001? If yes, some population characteristics should be different from the study period. You should, at least, discuss the implications and limitations about it.
      
      We have added as limitation that “Another limitation refers to the social variable used (deprivation index) which, given its ecological character, may underestimate the contribution of individual socioeconomic characteristics. Such index was used to classify geographic areas in quintiles and, although is probable that actual data relative to unemployment and others have changed since last census, we consider that the relative situation of each area with respect has to the other ones has not suffered a substantial alteration.”

      You should, at least, discuss the implications and limitations about it. You should discuss it taking in to account epidemiological knowledge.

We have rewritten this paragraph for better understanding: “The deprivation index of the census tract (median population size is equal to 1,200 inhabitants) of residence proposed by the MEDEA project [27] was used as a proxy for individual socioeconomic position. Its calculus takes into account the percentages of residents who are manual
workers, unemployed, temporary employees, or have not finished primary school, overall and also specifically among young people, given the most recent Census available. According to such index, tracts are ordered and categorized into quintiles (the fifth one corresponds to the most deprived areas and the first one to the less unfavourable conditions). This index is not specific to the ages groups observed in this study; however, it provides a measure of the level of access to material and social resources in a community and has been shown to be correlated with general rates of mortality [28] and morbidity, even in particular population groups, as the elderly [29]. Although been elaborated in 2008 (from Census data collected in 2001), and from then it is likely that the values of the observed variables percentages have experienced variations, it is conceivable that the relative position of each area in respect to the others have not suffered relevant alterations; in fact, in recent years it has been proved that the deprivation index is related to the health of the resident inhabitants [30, 31].

- 9 paragraph
  - If mental health services were excluded, you should, at least, discuss the implications and limitations about it on your “health costs” variable, analysis and results.

  We have included this in limitation of the study “The non-acute mental health services are not included so this could affect the total cost estimated.”

  How?

  You should, at least, discuss the implications and limitations about it. You should discuss it considering epidemiological knowledge.

  The non-acute mental health services are not included. These services account for 2% of the budget of the Basque Health Service and that have not been considered in our cost estimations.

- 11 paragraph
  - It is not clear why and when you used Wilcoxon Mann Whitney test.

    To check if there are differences, in the comorbidity distribution of depression and type 2 diabetes, between genders. Wilcoxon Mann Whitney test is used when the categorical variable (in this case gender) is two groups (males and females)

    Let me explain it further: Why did you use Wilcoxon Mann Whitney test instead of the Chi squared test, for example? I am talking about underlying assumptions between parametric and non-parametric statistic. You have to make it clear for your readers.

    We have calculated Chi-squared test and we have changed the lines related to: “There was a relationship between genders and comorbidity (p value of Pearson$^2$<0.001)”

  - If socioeconomic status (SES) are in quintiles, why to use Kruskal Wallis test?

    To check if there are differences, in the comorbidity distribution of depression and type 2 diabetes, between SES groups. If categorical variable (in this case SES) was only two groups it uses Wilcoxon Mann Whitney test but if there are more than 2 groups, we have to use Kruskal Wallis test.
Let me explain it further: Why did you use Wilconxon Mann Whitney test instead of the Chi squared test, for example? I am talking about underlying assumptions between parametric and non-parametric statistic. You have to make it clear for your readers.

We have calculated Chi-squared test and we have changed the lines related to, "there was a relationship between socioeconomic level and the comorbidity (p value of Pearson*"<0.001)"

- Comorbidity between which variable? Depression and diabetes? Depression, diabetes and SES?
  Between depression as comorbidity of type 2 diabetes and SES groups.
  To my knowledge, there is only comorbid between diseases.
  I am sorry; I meant that we checked the relationship between the comorbidity (DM2 and depression) and SES.

RESULTS

- Why you change age bands in your Table 2 and 3?
  Because the other reviewer suggested us to do only two ranges <65 years and ≥ 65 years.
- You should report the prevalence of type 2 diabetes AND depression [0,8% CI95% ? (12,393 / 1,473,943).
  I did it. “12,392 patients had both diagnoses at the same time in the period analyzed (prevalence 0.84%, CI 95% [0.826, 0.856])”
  The prevalence of depression among patients with type 2 diabetes was 9.77% (CI 95% [9.6, 9.93]).
  The mean age between patients who have the comorbidity was 72.9 (CI 05% [72.7, 73.09]).
  We have deleted “12,392 patients had both diagnoses at the same time in the period analyzed (prevalence 0.84%, CI 95% [0.826, 0.856])” because it can make confusion.
- 7, 8 paragraph
  There is no table 4 and 5?
  We have corrected the names of the tables in results section
- 6 paragraph
  “The R2 of the model was 0.4125 (41.25% of the variance explained)”. Please explain to your readers what it means to your results.
  We have explained what this means “The __, which indicates how well data points fit a statistical model, was 0.413. Then, independent variables explained the 41.25% of the total variance.”
  And what does 41.25% of the total variance mean to your results (prevalence between diabetes and depression?). That explanation that you gave is not enlightening. You have to explain this information for your readers. I mean, explain for someone who does not know what total variance is and, fundamentally, what this total variance mean for your result.
  We replace the sentence by “The R^2 was 0.41. R^2 is a statistic that will give some information about the goodness of fit of a model. In regression, the R^2 coefficient of
determination is a statistical measure of how well the regression line approximates the
real data points. An $R^2$ of 1 indicates that the regression line perfectly fits the data.
Then, independent variables explained the 41.2% of the total variance.

• “Moreover, women spent 164€ less than men, being this difference statistically
  significant (p<0.001).”

  We have added to discussion that “It is interesting to say that: although women
  showed more percentage of having depression than men, women, on average, spent
  less.”

  The correct value is -179.48. At least it is the value in your table 3.

  We have changed by the correct value

  “Although women showed more percentage of having depression than men, women,
  on average, spent less. “ It is not a discussion, it is a statement. For example, you
  should address this question: if women usually look for health services more
  frequently than men and depression is twice common in women than men, why / how
  did women spend less? You have to find some explanation based on public health
  publications.

  We have discussed this issue: “In our study the comorbid women accounted for less
  healthcare costs than men. A study carried out by Burns et al., total health care costs
  were higher for males than females [40]. In addition, Orueta et al. [31] demonstrated
  that once adjusted per number of chronic conditions and socioeconomic
  characteristics, individual cost for females was lower than for males for all ages but in
  the range of 18–44 years old, as expected due to obstetric care.”

DISCUSSION

Discussion is insufficient. You have to explain your findings. To me, it is not acceptable to
publish one paper without discussing your results.

We have extended the discussion comparing to other studies our findings.

Conclusions

“Our research has allowed us to obtain an accurate picture of the prevalence of depression
among patients with diabetes type 2 in the Basque Country. It has also allowed us to test the
relationship between glycaemic control and incidence of depression as comorbidity, and its
influence to healthcare costs. Based on our research we can conclude that poor glycaemic
control is not directly associated with incidence of depression as comorbidity, but it can be an
important predictor of poorly controlled diabetes. Later can increase risk of having depression,
diabetes complications and disability, and result in higher associated healthcare costs.”

Are you talking about INCIDENCE again? It is unbelievable.

We have changed the words by prevalence.

“but it can be an important predictor of poorly controlled diabetes”. How?
Based on our research we can conclude that poor glycaemic control is not directly associated with incidence of depression as comorbidity, but it can be an important predictor of poorly controlled diabetes.

Your study design is cross-sectional. This sentence is wrong.

We have rephrased the sentence by: “Based on our research we can conclude that poor glycaemic control is not directly associated with prevalence of depression as comorbidity, but it can be an important factor of healthcare costs.”