Author's response to reviews

Title: Orthodontic Treatment Needs in the Western Region of Saudi Arabia: a research report

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Author's response to reviews: see over
Response to Prof. Carlos Flores-Mir:

The suggested changes by Prof. Carlos Flores-Mir are interesting and considered most of them in this revised manuscript. My response to his suggested changes are as follow:

1. Abstract
   1. By convention "t" is not the letter that represents Pearson's correlation test value but "r".
   2. By convention "EC" does not represents the Aesthetic Component of the IOTN but "AC".
   3. The statement of having to use the IOTN is not supported by the current research methodology. Why are not other indexes also valid?

Response:
Spelling mistakes were corrected regarding the correlation test (r and not t) and the AC instead of EC.
Support for using the IOTN was discussed in details in the background and discussion.

2. Background:
   1. There is no justification why the IOTN was selected instead of the ICON, DAI or other also commonly used indexes. What had the IOTN that the other indexes did not have? Was the IOTN specifically better for this population because a previous validation?

Response:
I agree ICON is a more recent index to assess the need and outcome of treatment, but IOTN has been selected in this study for the following reasons: IOTN is the most popular index used world wide, although it was developed originally based on British dental opinion. It is highly acceptable as a research tool to assess treatment need and in large agreement with ICON. It is also very popular tool in the Middle East. In addition, this kind of research is in primitive stages in Saudi Arabia, therefore, it should be started using a standard tool used internationally and then based on the results, modifications or other indices could be recommended. Finally, IOTN is adequate to measure treatment need, unlike ICON, which is more appropriate to assess need and outcome at the same time which is not the case in the present study.

A statement was added to clarify why IOTN was used in the introduction and recommendation was added in the discussion to validate the use of IOTN or ICON in future studies.

2. In the second paragraph second sentence should be changed for "Different studies have shown the differences between the patient's and the professional's perception on the orthodontic treatment need". As currently written it is not true that the results of the referred study were controversial but that they agree that there are differences in the perceptions between lay persons and professionals.

Response:
Suggestion was added

3. In the last sentence of page 4 it may be better if the explanation for DHC includes: "...assesses 10 traits of malocclusion which are related to the treatment priority."
Response:
Similar statement is in the background

3. Methods:
1. Was the sample representative? How was the sample calculated? Was there any randomization in the selection process?
Response:
The sample selected was consecutive sample of patients attending either KAAU or PDP within certain time limit (August- November 2004). The sample size was determined according to the time limit and it is proportional to the normal trend of patient's flow in Saudi Arabia, more in Governmental dental clinics than private clinics. It was recommended in the discussion to conduct a larger scale study to assess treatment needs in Saudi Arabia using larger and random sample, considering the current study as a pilot study.

2. It would be nice to put 15000 SR in the general cost of living in Saudi Arabia. The number per se does not mean anything for the general reader.
Response: A statement was added to indicate that this amount is quite expensive for the general Saudi population

3. How was the calibration made? Who was the gold standard?
Response
Two examiners were involved in the study, one for the DHC and the other for the AC. Examiners were trained to use the IOTN following the instructions provided with the IOTN materials under the supervision of the author who is a graduate of University of Illinois at Chicago.

4. When using the AC the index developers were specific in suggesting that the evaluated subjects should had specific indications to select the picture that had the same level of aesthetic appeal as their own teeth instead of selecting the one most resembling to their own teeth. In other words, subjects should not select the picture that looks most closely to their anterior occlusion. It is not clear how the process was followed in this report.
Response:
Of course patients were asked to select the picture that reflects the severity of their malocclusion which is very obvious. To clarify this, the statement was changed to severity of malocclusion.

5. Regarding the statistics why were parametric tests (Z, Pearson's correlation) used? Were suppositions of normality, homoscedasticity and linearity proved? If not then non-parametric test should be used.
Response:
Normality test was performed and showed that the sample is distribution free therefore, non-parametric tests were used in the present study; Chi-Square and Spearman's tests.

4. Results:
1. Again AC should be consistently used and not EC and r should be used to state Pearson's correlation values.
2. Exact p-values should be stated to allow readers to make their own conclusions if
they decide to use a different p-value cut-off point.

**Response:**
All corrections were made and the exact p values were added.

5. Discussion:
1. Current results should be compared and analyzed based on previous similar reports throughout the world. Just a description of the results is not enough for a well written discussion. Currently there are only comparisons with previous findings for the correlation between the self-perceived and the professional determined need.

**Response:**
More discussion was added

2. AC not showing open bite or anterior cross bites is not so important if the AC is used appropriately. It is not about finding a photo that most resembles the actual occlusion but about where in the scale the occlusion is perceived.

**Response:**
The reason I mentioned this because some patients found it difficult to evaluate their teeth as compared to the 10 scales of the AC. This group although were asked to select the picture that shows the severity of their teeth, they found it difficult to rank themselves. These patients mostly had either anterior crossbite or open bite. Openbite represents a relatively high percentage 20% in the studied population and this may suggest the need to study the use of IOTN or ICON for the Saudis who represent a different population than British population.

3. The recommendation of using the DHC of the IOTN is valid although it is not clear why for this population it would be better that ICON or DAI indexes. A proper justification in the background and discussion sections would be appropriate.

**Response:**
Changes were added

6. Tables:
1. Again use AC and not EC.
2. State the actual p-values and not only if they were less or more than 0.005.

**Response:**
Changes were made

**Response to Prof. Tarek EL-Bialy:**
1. Sample distribution should be discussed in the discussion

**Response:**
A statement was added regarding the sample distribution.

2. Spelling mistakes:
All were corrected.

3. Abbreviations:
All were clarified at the beginning