Test-retest reliability and responsiveness of a Malay tinnitus questionnaire

Mohd Normani Zakaria, PhD, Wan Suhailah Wan Husain, MSc(Aud), Nik Adilah Nik Othman, MMed(ORL)

Audiology and Speech Pathology Programme, School of Health Sciences, Universiti Sains Malaysia, Kubang Kerian, Kelantan, Malaysia

INTRODUCTION

The prevalence of tinnitus among adults can be as high as 25.3%. To avoid the negative impacts of tinnitus, thorough assessments and treatments by relevant clinical professionals are required. As such, validated tinnitus questionnaires have been widely used to quantify the effect of tinnitus on the patients’ life. Recently, a Malay tinnitus questionnaire, known as the “Borang Evaluasi Soal selidik Tinnitus” (BEST) had been developed and validated among Malay-speaking population. It is a self-reported questionnaire that utilises a five-point Likert scale and has 25 items categorised under “3M” domains (mind, main and mental). Its content validity and overall internal consistency (reliability) were reported to be excellent. More research is required to further explore the usefulness of the BEST questionnaire. The aim of the present study, therefore, was to determine the external (test-retest) reliability and responsiveness of the BEST questionnaire (i.e., its ability in detecting changes after a specific treatment is given).

MATERIALS AND METHODS

In the present study that employed a repeated measures design, 46 eligible subjects were selected randomly among patients of Tinnitus Clinic, Hospital Universiti Sains Malaysia (Hospital USM). All of them reported tinnitus (at least in one ear) and had no dizziness, neurological or psychiatric disorders. After undergoing the standard otological and audiological tests, the participants were required to fill in the BEST questionnaire accordingly. Of 46 subjects, 21 (aged 23-74 years) were involved in determining the test-retest reliability of the BEST questionnaire. The 25-item BEST questionnaire that utilised a five-point Likert scale was developed to cover the relevant and important aspects related to tinnitus. The mind domain of BEST questionnaire consists of seven items and covers the emotional impacts of tinnitus. The main domain is comprised of 14 items that deal with the effects of tinnitus on the main daily life activities. The mental domain of the BEST questionnaire has four items that cover the extreme consequences of tinnitus.

The subjects were instructed to complete the BEST questionnaire again about one week after its first administration. Within this period, no intervention was given to the subjects. The responsiveness of the BEST questionnaire was determined in the other 25 subjects (aged 23-74 years). After completing the questionnaire, the intervention commenced. In the present study, the conventional intervention method offered by the Tinnitus Clinic, Hospital USM (i.e., educational counselling and sound therapy) was given to each participant for three months. In the counselling session, they were given information on the fundamental aspects of tinnitus and relevant coping strategies. They then underwent sound therapy that employed broadband (“white”) noise with the partial masking method. They were required to listen to the prescribed noise stimulus using a dedicated MP3 player for at least two hours daily. After the
three-month period, they were required to fill in the BEST questionnaire again. The pre- and post-intervention results were then compared and analysed. All procedures performed were approved by Human Ethics Committee of USM (USM KK/PPP/JEPeM [258.3.7]).

Since the data were found to be normally distributed (p>0.05 in Kolmogorov-Smirnov test), the test-retest reliability of the BEST was assessed using intraclass correlation (ICC) with a two-way mixed effects and absolute agreement type. The responsiveness of the BEST questionnaire was determined using paired t-test and effect size (with pooled standard deviation). The p values of less than 0.05 were considered statistically significant. All data analyses were carried out with the SPSS software version 20 (SPSS Inc, Chicago, IL).

RESULTS
In the test-retest reliability task, of 21 subjects (mean age of 54.5±12.5 years), 10 were men, and 11 were women. Overall, the ICC values obtained were acceptably high. Specifically, the ICC values were 0.73, 0.90, and 0.70 for mind, main and mental domains, respectively. For the composite score, the ICC was 0.88.

To determine the responsiveness of the BEST questionnaire, 25 adults (12 men and 13 women) with a mean age of 52.0±13.2 years were enrolled. As revealed in Table I, significant differences in the score were found in the mind domain, main domain and composite score of the mental domain of the BEST questionnaire. These findings might be related to the nature of treatment given (broadband noise masking). On the other hand, if a structured psychological treatment is given (e.g. cognitive behavioural therapy), bigger effect sizes (better improvements) might be seen in the mental domain of the BEST questionnaire.

In conclusion, the external reliability and responsiveness of the BEST questionnaire have been proven to be good. Herein, the BEST can be used reliably to document the treatment progress of patients with tinnitus for research and clinical purposes. Nevertheless, future bigger scale studies are encouraged to further verify the present study findings.

REFERENCES

Table I: Responsiveness of Borang Evaluasi Soal selidik Tinnitus (BEST) among tinnitus patients (n = 25)

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Pre-intervention score</th>
<th>Post-intervention score</th>
<th>P value</th>
<th>Effect size (d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEST Domain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mind (%)</td>
<td>37.0 (21.0)</td>
<td>22.8 (19.5)</td>
<td>0.009*</td>
<td>0.70</td>
</tr>
<tr>
<td>Main (%)</td>
<td>28.7 (23.6)</td>
<td>16.9 (13.9)</td>
<td>0.010*</td>
<td>0.61</td>
</tr>
<tr>
<td>Mental (%)</td>
<td>20.0 (13.6)</td>
<td>16.1 (13.8)</td>
<td>0.227</td>
<td>0.29</td>
</tr>
<tr>
<td>Composite (%)</td>
<td>29.6 (19.7)</td>
<td>18.5 (14.3)</td>
<td>0.009*</td>
<td>0.65</td>
</tr>
</tbody>
</table>

*Statistically significant at p < 0.05