

# Translation and Adaptation of Hyperacusis Questionnaire into Malay Language

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## ABSTRACT

**Background:** A reduction in sound tolerance may result in considerable adverse effects for both the individual and their family. Individuals with limited tolerance may experience anxiety and fear when hearing such sounds, potentially leading to stress avoidance behaviours. Hyperacusis, defined by an excessive sensitivity to commonplace noises, can profoundly affect an individual's quality of life, resulting in anxiety or stress and avoidance of sound-dense surroundings. Standardized questionnaires, such as the Hyperacusis Questionnaire (HQ), are commonly used in clinical settings to assess and diagnose hyperacusis. Originally created in French and then translated into many languages, including English, Dutch, Swedish, and Japanese, the HQ allows clinicians to assess sound tolerance thresholds and the psychological impacts of hyperacusis. Despite the prevalence of hyperacusis in Malaysia, a validated Malay version of the HQ is not yet available. This situation poses challenges in accurately assessing and treating hyperacusis within the Malay-speaking population. The aim of this study is to translate and adapt the HQ into Malay. **Methods:** Translation process was conducted in 3 stages, including forward and backward translation, content and face validation, and reliability testing. In the translation phase, two bilingual translators independently performed forward translation from English to Malay, and two others conducted backward translation to English. Discrepancies were discussed and harmonized to produce a linguistically accurate Malay version. Content validation involved a panel of 7 experts who assessed item relevance, clarity, and cultural appropriateness using the Content Validity Index (CVI). Reliability check was calculated with Cronbach Alpha on 103 participants. **Results:** The item-level CVI (I-CVI) achieved a score of 0.83, while the scale-level CVI average (S-CVI/Ave) was 0.92, indicating strong content validity. For face validation, ten lay individuals evaluated the questionnaire's readability and cultural suitability, leading to minor modifications for enhanced clarity. Reliability testing was conducted with a sample of 103 participants from the target population, resulting in a Cronbach's alpha of 0.89, demonstrating high internal consistency. **Conclusion:** The findings suggest that the Malay version of the HQ is a valid, reliable, and culturally appropriate instrument for assessing hyperacusis.

## Keywords:

translation; adaptation; validation; hyperacusis

## Article history:

Received: 15 June 2024

Accepted: 27 November 2024

## INTRODUCTION

According to Baguley (2003), hyperacusis has been described as 'exceptional intolerance to common environmental sounds' and, alternatively, as 'consistently exaggerated or inappropriate responses to sounds that are neither dangerous nor unpleasantly loud to a typical person' (Journal of the Royal Society of Medicine, p.582). Many classifications of hyperacusis have been proposed because of its subjectivity. According to Baguley (1995), the most basic classification divides the presentation into four categories: loudness, annoyance, pain, and fear. The impression of moderately powerful sounds as unbearably loud is known as loudness hyperacusis. Anger, anxiety and stress are the main symptoms of irritation hyperacusis, which is a negative emotional response. Avoidance actions are a symptom of fear hyperacusis, while stabbing pain in the ear is a symptom of pain hyperacusis. All cases of

hyperacusis are bilateral in nature (Coe & Orlando, 2023).

The pathophysiological mechanism that may explain this aberrant reaction during stress involves the release of endogenous dynorphins into the synaptic area beneath the inner hair cells. As a result of this mechanism, glutamate neurotransmitter activity is increased, resulting in excessive loudness of perceived sound (Fioretti, Tortorella, Masedu, Valenti, Fusetti & Pavaci, 2015). To assess reduced tolerance, an individual's subjective description of discomfort is the primary factor in the diagnosis. Due to its subjectivity and often associated with other diseases, those who have hyperacusis may not receive a prompt diagnosis. This delay may increase the severity of their pain and complicate the treatment of the illness. In fact, a study has shown that continuous exposure

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to extreme high-frequency noise causes hyperacusis as one of their main discoveries (Radziwon, Auerbach, Ding, Liu, Chen & Salvi, 2019).

A decline ability to endure sounds may cause significant negative consequences to the individual as well as their family (Baguley, 2014). The auditory landscapes are rapidly evolving in the modern era. With modernization, diverse types of sounds which were rarely reverberated previously, have emerged and are becoming typical sounds that we hear every day such as the sound of traffic, trains, lawn mowers and phone ringing. When someone with low tolerance hears such noises, it may trigger their fear and anxiety, which could involve avoiding stressful situations. Clinical evidence suggests that some patients with hyperacusis experienced sound-induced ear pain, which manifests as a burning sensation in the ear (Baguley, 2014).

Currently, hyperacusis cannot be measured objectively without any participation from patient (Am Alkharabsheh & Alaqrabawi, 2021). In a clinical setting, hyperacusis is assessed using questionnaires and the uncomfortable loudness level (ULL) test (Am Alkharabsheh & Alaqrabawi, 2021). According to their study, patients who report having reduced tolerance to certain sounds usually have lower ULLs than 90 dB HL. To date, a few validated questionnaires have been published in English literature to help distinguish patients with hyperacusis from the general population. These include the multiple activity scale for hyperacusis (MASH) (Dauman & Bouscau-Faure, 2005), the hyperacusis questionnaire (HQ) created by Khalfa (Khalifa, Dubal, Veuillet, Perez-Diaz, Jouvent & Collet, 2002), and the questionnaire on cite (Am Alkharabsheh & Alaqrabawi, 2021). Among all existing questionnaires, the HQ is commonly used to detect and assess hyperacusis. The Hyperacusis Questionnaire (HQ) is a standardized self-assessment instrument utilized in clinical settings to assess an individual's tolerance to typical everyday sounds (Khalifa et al., 2002). It encompasses questions that focus on evaluating emotional, social, and functional reactions to sound, facilitating the identification of the degree of distress that results from sound sensitivity. Responses are frequently evaluated to categorize the severity of hyperacusis, assisting clinicians in diagnosis and management. The HQ has been translated into many different languages to effectively serve different population demographics. Despite initially created in French, the original report included an English translation. Until recently, the English version of the HQ has been the basis for other translations, including Dutch, Swedish and Japanese (Am Alkharabsheh & Alaqrabawi, 2021).

However, the Malay version is yet available. This study aims to close a significant gap in the field of auditory research by translating and validating a Malay version of the Hyperacusis Questionnaire that is culturally and linguistically appropriate, that can be used in audiology clinic in the future. Therefore, it is a need to establish a standardized tool that can accurately diagnose and treat hyperacusis in the Malay-speaking population.

## **MATERIALS AND METHODS**

### **Study Design**

This study was conducted using a cross-sectional approach (Forogh Karimipur Davaninezhad, 2009). The data was collected at one point in time using a questionnaire. This study intended to translate, measure the validity and reliability of Malay version of Hyperacusis Questionnaire (HQ-M). The questionnaire was given to qualified translators for the translation process, before being handed out to the panels for the content validation assessment and subsequently distributed to the laypeople from various occupation and education backgrounds for face validation and reliability tests. This research has been reviewed and approved by the IIUM Research Ethics Committee (IREC). All subjects' details and information were kept confidential.

### **Study Population and Sample Size**

Four translators were involved in the translation process: two translators for forward and two translators for backward translation. For forward translation, the translators were selected based on these criteria; (i) possess the audiological knowledge; (ii) good grasp in both Malay and English language; and (iii) fulfil IIUM English Test up until level 5, or score band 6 and above for International English Language Testing System (IELTS). For the backward translation, the translators were selected based on these criteria; (i) blinded to the existence of the original Hyperacusis Questionnaire (HQ); and (ii) possess the Bachelor of Education with Honours in Teaching English as a Second Language (TESL). Neither must not know the original version of the instrument's intent to avoid information bias (Guillemin, Bombardier & Beaton, 1993).

In the reviewed process of the forward and backward translation, the expert committees which consists of three individuals with vast knowledge on Audiology were set up. This expert committee overseen the questionnaires to review and detect any discrepancies on the items. Next, seven panels were recruited in the content validity stage. These panels qualifications are (i) can read and understand Malay; (ii) an audiologist, speech therapist or a

questionnaire expert; and (iii) possess the knowledge of hyperacusis. In the face validity stage, ten laypeople from various occupations and education backgrounds were involved. The reliability test was conducted on 103 adults' participants who have concerns with their reduce tolerance towards normal daily sounds level. The sample size of at least 50 is sufficient to assess the reliability of a translated questionnaire, particularly using Cronbach's alpha (Bujang, Omar & Baharum, 2018). However, larger sample sizes are often preferred to ensure stable reliability results. The 103 participants who met both criteria were asked to fill up the questionnaire (HQ-M) based on their daily experience, and the scores will be analysed with Cronbach's alpha for reliability check.

### Sampling Method

This study used purposive and convenience sampling techniques across the phases as respondents participated based on their convenient accessibility and proximity to the research. The samples were chosen according to their availability and capacity to participate in the study, along with the inclusion and exclusion criteria. The subjects were recruited through e-advertisement blasted in social media such as linked-in and Facebook where individuals who volunteered were asked to answer the questionnaire in the online platform.

### Instrumentation

The English version of the Modified Khalfa Hyperacusis Questionnaire (Khalifa, 2002) was used as the main item in this study. The questionnaire consists of twenty items with functional, social, and emotional dimensions. The response for this questionnaire is using a scale of a three-point scoring system with the options being "no" (scoring 0 point), "sometimes" (scoring 2 points), to "yes" (scoring 5 points) (Am Alkharabsheh & Alaqrabawi, 2021). It was interpreted as 0-10 (normal), 12-40 (mild), 42-60 (moderate) and 62-100 (severe) (Maqbool, Deekshith & Hemaraja, 2022).

### Study Procedure

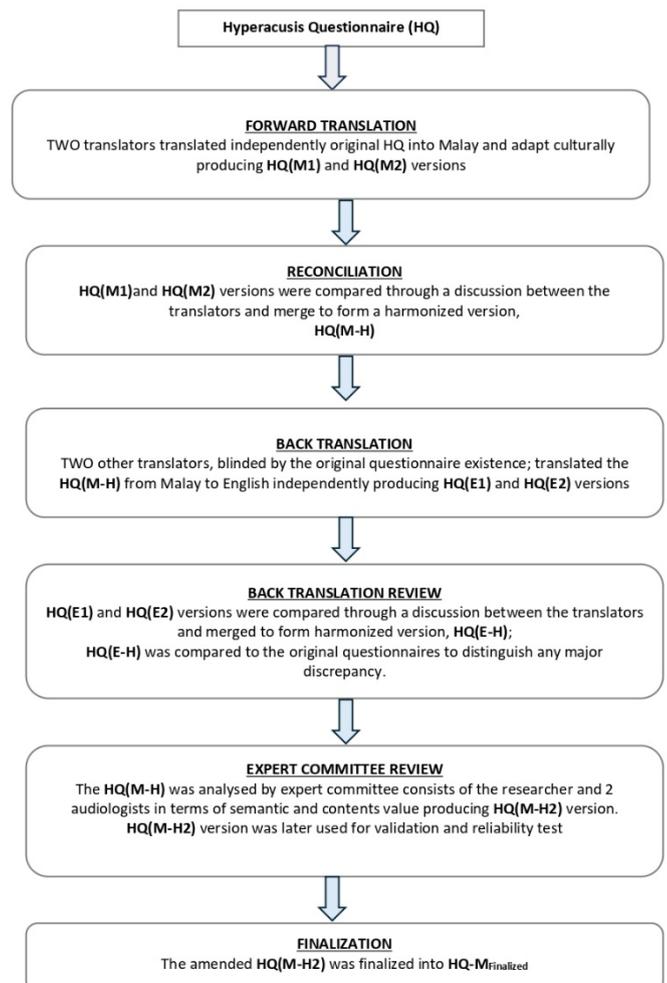
#### Translation Process

The translation process followed by forward-backward method suggested by the Guillemin's guidelines (Guillemin, Bombardier & Beaton, 1993) for translation as summarized in the Figure 1.

#### Forward Translation and Reconciliation

Both translators were asked to translate the questionnaire to Malay independently and produced two initials Malay

instrument HQ(M1) and HQ(M2). The translators then discussed together with the researcher and compiled both HQ(M1) and HQ(M2). Since both translators lived in different states, the discussion was mediated by the researcher through email conversations. The compiled version of HQ was finalized by assessing word ambiguities and inconsistencies. Amendments were made by the researcher with the consensus of both translators (Beaton, Bombardier, Guillemin & Ferraz, 2000). The result of the forward translation produced the Harmonized HQ-M, HQ(M-H).



**Figure 1:** Graphic presentation of the flowchart of the translation and adaptation conducted for HQ

#### Backward Translation and Review

Another two translators were asked to back-translate the HQ(M-H) into original language independently, producing HQ(E1) and HQ(E2). Then, comprehensive review and discussion were mediated by the researcher where amendments and edits were made as needed with consensus of both translators (Beaton et al., 2000), to produce a harmonized back-translated instrument. The wording and language flow were reviewed by both translators were via email conversations, before being finalized into the Harmonized English HQ-M, HQ(E-H).

### Expert Committee Review

The original instrument and the harmonized backward translation, HQ(E-H) were then compared to detect discrepancies. The researcher with another two experts in audiology were responsible to review all the items based on a few categories; no changes in words, changes in words but do not affect meaning, changes in words that may affect meaning and total changes in words. Then, the word or sentence was either maintained, or amended based on the committees' comments, including adding, omitting and changing terms. Another version of Harmonized HQ-M, HQ(M-H2) was then created following expert reviews' recommendations.

### Content Validity

Seven panels were recruited in this study. All panels that fulfil the inclusion criteria involved for this stage were asked to rate the relevancy of HQ(M-H2) in terms of the readability, clarity, and suitability of the item in the cultural context. The 4-likert scale was used; 1-irrelevant, 2-quite relevant, 3-relevant, 4-very relevant. Content Validity Index (I-CVI) at item level and at scale level (S-CVI) was calculated using formula that will be further explain in the results section. The panels were also asked to give some remarks or recommendations for improvement of the items. Finally, the researcher reviewed each comment

given and amended the items based on the panels' recommendations if necessary and relevant.

### Face Validity

A face validity form was distributed to ten lay people that come from various occupations and education backgrounds. They were asked whether all the items in HQ(M-H2) were based on the suitability of the item to be asked, the readability of the sentence, the proper sentence structure and word choice. This process was evaluated using 'YES' or 'NO' answers. The subjects were also asked if they have any comments for any modifications.

### Reliability

Reliability check was done in this study to measure the internal consistency of the HQ-M<sub>Finalized</sub> by analysing how well the items fit each other conceptually. The internal consistency between items in each scale was evaluated with Cronbach's Alpha to determine the questionnaire stability and responses' reliability within the given domain (Bujang, Omar & Baharum, 2018). This is to ensure that the items that measure the same construct formulate the corresponding scores. Analysis of the questionnaire reliability was conducted using SPSS 20. The final version of the Malay Hyperacusis Questionnaire or HQ-M<sub>Finalized</sub> has been labelled as HQ-M.

## RESULTS

### Translation Process

The forward translation, backward translation, and harmonized version of forward and backward translation following expert review. Changes were made to some of the items with experts' recommendations were compiled in Table 1.

**Table 1:** Original HQ, HQ(M-H), HQ(E-H), HQ(M-H2) and HQ-M<sub>Finalized</sub> following expert reviews

Item	Original HQ	HQ(M-H)	HQ(E-H)	HQ(M-H2)	HQ-M <sub>Finalized</sub>
1.	Do you have trouble concentrating in a noisy or loud environment?	Adakah anda menghadapi masalah untuk menumpukan perhatian dalam persekitaran yang berbunyi bising dan kuat?	Are you having difficulty concentrating in a noisy and loud environment?	Adakah anda menghadapi masalah untuk menumpukan perhatian dalam persekitaran yang berbunyi bising dan kuat?	Adakah anda menghadapi masalah untuk menumpukan perhatian dalam persekitaran yang berbunyi bising dan kuat?
2.	Do you have trouble reading in a noisy or loud environment?	Adakah anda menghadapi masalah untuk membaca dalam persekitaran yang bising dan kuat?	Are you having difficulty reading in a noisy and loud environment?	Adakah anda menghadapi masalah untuk membaca dalam persekitaran yang bising dan kuat?	Adakah anda menghadapi masalah untuk membaca dalam persekitaran yang bising dan kuat?

3.	Do you ever use earplugs or earmuffs to reduce your noise perception? (Do not consider the use of hearing protection during abnormally high exposure situations)	Adakah anda pernah menggunakan penyumbat atau penutup telinga untuk mengurangkan bunyi bising? (Tidak termasuk penggunaan alat pelindung pendengaran semasa situasi bising yang luar biasa)	Do you ever use earplugs or earmuffs to reduce the loud noise? (Does not include the use of hearing protection devices during exceptionally noisy situations)	Adakah anda pernah menggunakan penyumbat atau penutup telinga untuk mengurangkan persepsi hingar? (Tidak termasuk penggunaan alat pelindung pendengaran semasa situasi bising yang luar biasa)	Adakah anda pernah menggunakan penyumbat atau penutup telinga untuk mengurangkan persepsi persekitaran terlalu bising? (Tidak termasuk penggunaan alat pelindung pendengaran semasa situasi bising yang luar biasa)
4.	Do you find it harder to ignore sounds around you in everyday situations?	Adakah anda berasa semakin sukar untuk tidak menghiraukan bunyi-bunyian di sekeliling anda setiap hari?	Do you find it increasingly difficult to ignore the noises around you everyday?	Adakah anda berasa sukar untuk mengabaikan bunyi-bunyian di sekeliling anda setiap hari?	Adakah anda berasa sukar untuk mengabaikan bunyi bising di sekeliling anda setiap hari?
5.	Do you find it difficult to listen to speaker announcements (such as airports, airplanes, trains, etc.)?	Adakah anda mengalami kesukaran untuk mendengar pengumuman dari pembesar suara (seperti di lapangan terbang, kapal terbang, kereta api, dll.)?	Do you have difficulty hearing announcements from loudspeakers? (e.g. at the airports, on airplanes, trains, etc.)?	Adakah anda mengalami kesukaran untuk mendengar pengumuman dari pembesar suara (seperti di lapangan terbang, kapal terbang, kereta api, dan lain-lain)?	Adakah anda mengalami kesukaran untuk mendengar pengumuman dari pembesar suara (seperti di lapangan terbang, di dalam kapal terbang dan di dalam kereta api)?
6.	Are you particularly sensitive to or bothered by street noise?	Adakah anda agak sensitif atau terganggu dengan bunyi-bunyian di jalan raya?	Are you somewhat sensitive or easily bothered by road noises?	Adakah anda agak sensitif atau terganggu dengan bunyi-bunyian di jalan raya?	Adakah anda sensitif atau mudah terganggu dengan bunyi-bunyian di jalan raya?
7.	Do you "automatically" cover your ears in the presence of somewhat louder sounds?	Adakah anda secara spontan menutup telinga sejourus mendengar bunyi yang agak kuat?	Do you spontaneously cover your ears when you hear loud noises?	Adakah anda secara spontan menutup telinga apabila mendengar bunyi yang agak kuat?	Adakah anda secara spontan menutup telinga apabila mendengar bunyi yang agak kuat?
8.	When someone suggests doing something (going out, to the cinema, to a concert, etc.), do you immediately think about the noise you are going to put up with?	Apabila seseorang mencadangkan untuk melakukan sesuatu aktiviti (seperti keluar bersiar-siar, menonton wayang, konsert, dsb.), adakah anda serta-merta terfikirkan kebisingan bunyi yang bakal anda hadapi?	When someone suggests doing an activity (e.g. going out for a walk, watching a movie, attending a concert, etc.), do you immediately think of the noise you might encounter?	Apabila seseorang mencadangkan untuk melakukan sesuatu aktiviti (seperti keluar bersiar-siar, menonton wayang, konsert, dan lain-lain), adakah anda serta-merta terfikirkan kebisingan bunyi yang bakal anda hadapi?	Apabila seseorang mencadangkan untuk melakukan sesuatu aktiviti (seperti keluar bersiar-siar, menonton wayang dan konsert), adakah anda serta-merta terfikirkan kebisingan bunyi yang bakal anda hadapi?

9.	Do you ever turn down an invitation or not go out because of the noise you would have to face?	Adakah anda pernah menolak pelawaan untuk tidak keluar kerana risaukan bunyi bising yang bakal anda hadapi?	Have you ever declined an invitation to go out because of the noise you are about to encounter?	Adakah anda pernah menolak pelawaan untuk tidak keluar kerana risaukan bunyi bising yang bakal anda hadapi?	Adakah anda pernah menolak pelawaan untuk keluar kerana risaukan bunyi bising yang bakal anda hadapi?
10.	Do you find the noise unpleasant in certain social situations (e.g., nightclubs, pubs or bars, concerts, fireworks displays, cocktail receptions)?	Adakah anda mendapati bunyi bising di sesetengah aktiviti sosial tidak menyenangkan (cth, kenduri, majlis keramaian, konsert, pertunjukan bunga api, dsb.)?	Do you find the loud noise in certain social activities unpleasant? (e.g. gatherings, concerts, fireworks display, etc).	Adakah anda mendapati bunyi bising di sesetengah aktiviti sosial tidak menyenangkan (seperti kenduri, majlis keramaian, konsert, pertunjukan bunga api, dan lain-lain)?	Adakah anda mendapati bunyi bising di sesetengah aktiviti sosial tidak menyenangkan (seperti, kenduri, konsert dan pertunjukan bunga api)?
11.	Has anyone you know ever told you that you tolerate noise or certain kinds of sounds badly?	Adakah sesiapa pernah mengatakan bahawa toleransi anda terhadap bunyi bising atau bunyi tertentu adalah sangat teruk?	Has anyone ever said that your tolerance for loud or certain sounds is really poor?	Adakah sesiapa yang anda kenali pernah mengatakan bahawa toleransi anda terhadap bunyi bising atau bunyi tertentu adalah sangat rendah?	Adakah sesiapa yang anda kenali pernah mengatakan bahawa toleransi anda terhadap bunyi bising atau bunyi tertentu adalah sangat rendah?
12.	Are you particularly bothered by sounds others are not?	Adakah anda berasa terganggu dengan sesuatu bunyi yang tidak menjadi gangguan kepada orang lain?	Do you feel bothered by a sound that does not bother others?	Adakah anda berasa terganggu dengan sesuatu bunyi yang tidak menjadi gangguan kepada orang lain?	Adakah anda berasa terganggu dengan sesuatu bunyi yang tidak menjadi gangguan kepada orang lain?
13.	Are you afraid of sounds that others are not?	Adakah anda berasa takut atau gusar pada sesuatu bunyi yang tidak menjadi masalah kepada orang lain?	Do you feel afraid or anxious by a sound that is not a problem to others?	Adakah anda berasa takut pada sesuatu bunyi yang tidak menjadi masalah kepada orang lain?	Adakah anda berasa takut pada sesuatu bunyi yang tidak menjadi masalah kepada orang lain?
14.	Do noise and certain sounds cause you stress and irritation?	Adakah bunyi bising dan bunyi tertentu menyebabkan anda berasa tertekan dan jengkel?	Do loud and certain sounds make you feel stressed and annoyed?	Adakah bunyi bising dan bunyi tertentu menyebabkan anda berasa tertekan dan rengsa?	Adakah bunyi bising dan bunyi tertentu menyebabkan anda berasa tertekan dan tidak senang?
15.	Are you less able to concentrate in noise toward the end of the day?	Adakah kemampuan anda untuk menumpukan perhatian dalam suasana bising semakin berkurangan menjelang penghujung hari?	Does your ability to concentrate in a noisy environment decline towards the end of the day?	Adakah kemampuan anda untuk menumpukan perhatian dalam suasana bising semakin berkurangan menjelang penghujung hari?	Adakah kemampuan anda untuk menumpukan perhatian dalam suasana bising semakin berkurangan menjelang penghujung hari?

16.	Do stress and tiredness reduce your ability to concentrate in noise?	Adakah tekanan dan keletihan mengurangkan kemampuan anda untuk menumpukan perhatian dalam persekitaran yang bising?	Does stress and fatigue reduce your ability to focus in a noisy environment?	Adakah tekanan dan keletihan mengurangkan kemampuan anda untuk menumpukan perhatian dalam persekitaran yang bising?	Adakah tekanan dan keletihan mengurangkan kemampuan anda untuk menumpukan perhatian dalam persekitaran yang bising?
17.	Do you find sounds annoy you and not others?	Adakah anda berasa rimas pada bunyi-bunyian yang tidak merimaskan untuk orang lain?	Do you feel irritated by sounds that are not bothering others?	Adakah anda berasa jengkel pada bunyi-bunyian yang tidak menjengkelkan untuk orang lain?	Adakah anda berasa jengkel pada bunyi-bunyian yang tidak menjengkelkan untuk orang lain?
18.	Are you emotionally drained by having to put up with all daily sounds?	Adakah anda berasa keletihan emosi kerana perlu menghadapi bunyi-bunyian dalam kehidupan seharian?	Do you feel emotionally exhausted from dealing with noises in your everyday life?	Adakah kemampuan anda untuk menumpukan perhatian dalam suasana bising semakin berkurang menjelang penghujung hari?	Adakah anda berasa keletihan emosi kerana perlu menghadapi bunyi-bunyian dalam kehidupan seharian?
19.	Do you find daily sounds having an emotional impact on you?	Adakah anda mendapati bunyi-bunyian seharian memberi kesan emosi kepada anda?	Do you find that everyday sounds have an emotional impact on you?	Adakah anda mendapati bunyi-bunyian seharian memberi kesan emosi kepada anda?	Adakah anda mendapati bunyi-bunyian seharian memberi kesan emosi kepada anda?
20.	Are you irritated by sounds others are not?	Adakah anda berasa jengkel dengan sesuatu bunyi yang tidak menjengkelkan kepada orang lain?	Do you feel annoyed by sounds that are not annoying to others?	Adakah anda berasa terganggu dengan sesuatu bunyi yang tidak merangsakan kepada orang lain?	Adakah anda berasa tidak senang dengan sesuatu bunyi yang tidak menjadi masalah kepada orang lain?

**Table 3:** Changes in semantics and word choice

Item	HQ(M-H2)	HQ-M <sup>Finalized</sup>	Changes		Justifications
			From	To	
3	Adakah anda pernah menggunakan penyumbat atau penutup telinga untuk mengurangkan persepsi hingar? (Tidak termasuk penggunaan alat pelindung pendengaran semasa situasi bising yang luar biasa)	Adakah anda pernah menggunakan penyumbat atau penutup telinga untuk mengurangkan persepsi persekitaran terlalu bising? (Tidak termasuk penggunaan alat pelindung pendengaran semasa situasi bising yang luar biasa)	hingar	persekitaran terlalu bising	The word ' <i>hingar</i> ' may be difficult to be understood for some speakers.
6	Adakah anda agak sensitif atau terganggu dengan bunyi-bunyian di jalan raya?	Adakah anda mudah sensitif atau terganggu dengan bunyi-bunyian di jalan raya?	agak	mudah	In the original HQ, the word ' <i>particularly</i> ' is used. ' <i>mudah</i> ' was decided to be more suitable in this context which to emphasize the sensitivity

14	Adakah bunyi bisung dan bunyi tertentu menyebabkan anda berasa tertekan dan rengsa?	Adakah bunyi bisung dan bunyi tertentu menyebabkan anda berasa tertekan dan tidak senang?	rengsa	tidak senang	The word 'merengaskan' may be difficult to be understood for some speakers.
20	Adakah anda berasa tidak menyenangkan dengan sesuatu bunyi yang tidak merengaskan kepada orang lain?	Adakah anda berasa tidak senang dengan sesuatu bunyi yang tidak menjadi masalah kepada orang lain?	terganggu, merengaskan	tidak senang, tidak menjadi masalah	The word 'merengaskan' is difficult to understand especially for the public and 'tidak senang' was used to fit the correct meaning of the question

## Content Validation

The content validity was determined based on the viewpoint of seven panels on the HQ(M-H2). It was calculated using two forms of validity index which were item (I-CVI) and scale-level (S-CVI). The recommended item level content validity index (I-CVI) score that was considered excellent is 0.78 or higher (Shi et al., 2021). An item with a score of 3 or 4 was deemed relevant and equal to value 1, while an item with a score of 1 or 2 was deemed irrelevant which equal to value 0. The I-CVI was calculated using equations below (Saiful, 2019).

Equation for I-CVI:

$$I - CVI = \frac{\text{The sum of relevant rating given by panels for each item}}{\text{The number of panels}}$$

Equation for S-CVI/Ave:

$$S - CVI = \frac{\text{The sum of I - CVI scores}}{\text{Total number of items}}$$

**Table 2:** I-CVI for 20 Items

Items	I-CVI
1, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18	1.0
2, 6, 17	0.86
19, 20	0.71

Scale level content validity index (S-CVI) was calculated by the average of the I-CVI scores for all items on the scale (S-CVI/Ave), calculation shown as follows. The acceptable value for S-CVI/Ave was recommended of 0.9 or higher (Shi et al., 2021). The obtained value in this study was 0.95, which is over the acceptable value.

During this stage, panels made recommendations on the semantics (study of meaning) and words choice to ensure

their suitability with the target population. All stated as Table 3.

## Face Validation

In this process, all ten panels voted 'YES' for all the items in the HQ-M<sub>Finalized</sub> which indicates that the panels find the translated items clear, culturally appropriate, and understandable. The items were improved based on the suggestions to allow better understanding of the questionnaire. The finalized version of HQ-M shown in Appendix I.

## Reliability

The internal consistency reliability was determined by using Cronbach's Alpha in which the  $\alpha$ -value of at least 0.78 or higher was considered acceptable (Shi, Mo & Sun, 2021). However, a small number (close to 0) indicates that some or all the items are not measuring the same dimension (Bujang et al., 2018). The  $\alpha$ -value for the HQ-M was 0.898, suggests good reliability in measuring the same thing in the item. Table 4 shows Cronbach's Alpha value for each item if each one of them was deleted.

## DISCUSSION

In this study, the primary objective is to provide a final output that maintains meaning, is comprehensible to the intended audience and accurately captures any detail in the source and target language (Hall, Zaragoza & Hamdache, 2017). In the translation process, some of the words from the forward translation were changed in harmonized forward-backward translation after the researcher found the word discrepancies. For example, the word 'automatically' in item 14 was forward-translated as 'secara spontan' which was translated back to English by backward translator as 'spontaneously'. According to Dewan Bahasa dan Pustaka Edisi Keempat (2005), the

word ‘automatic’ means something that moves by itself that mostly referred to machines.

**Table 4:** Cronbach’s Alpha if item deleted

Item	Cronbach’s Alpha if item deleted
1	0.894
2	0.899
3	0.894
4	0.892
5	0.897
6	0.890
7	0.899
8	0.891
9	0.893
10	0.894
11	0.896
12	0.892
13	0.896
14	0.890
15	0.891
16	0.893
17	0.888
18	0.888
19	0.887
20	0.889

While ‘spontaneous’ is more suitable to describe human’s behavior which done without thoughts or intention. The choice of word is crucial during the translation process to avoid misinterpretation of the item. For example, the examples of social situations in item 10 were changed according to cultural appropriateness. ‘Nightclubs, pubs or bars, cocktail receptions’ were changed to ‘*kenduri, majlis keramaian*’ as it was more suitable in Malay culture context. Many of the items in the backward translation were structured differently but implied the same meaning as the original version. For example, in item 18, the sentence ‘Are you emotionally drained by having to put up with all daily sounds?’ became ‘Do you feel emotionally exhausted from dealing with noises in your everyday life?’ in which both carried the same meaning. It is acceptable if the sentence structure in the backward translation differs from the original form, if it conveys the same ideas and have the same effect on the reader (PacTranz, n.d.).

The result of this study showed only two items with I-CVI value of 0.71, which according to Lynn (1986), acceptable CVI value when six to eight experts were involved should be at least 0.83. However, according to Zamanzadeh, Ghahramanian, Rassouli, Abbaszadeh, Alavi-Majd & Nikanfar (2015), items with I-CVI values 0.7 to 0.79 need to be revised, while items with I-CVI values less than 0.7 need to be eliminated. Therefore, the items were improved following suggestions from the panels to improve the questionnaire and their comments were addressed. S-CVI/Ave of this instrument scored a 0.95 which was above

the acceptable value. This suggested that the contents were highly relevant to represent the measured outcome and the target population (Liong, Sie, Lau, Saiful, Yusoff, Lee, Choi, Rashid, Wahid & Xiao, 2017). During face validation, there was not much modification made as most of them agreed that all items appear to flow logically in terms of grammar, syntax, organization, appropriateness and literally the validity of the measurement procedure as recommended by Liong et al. (2017). For internal consistency, our results showed that the Bahasa Malay version of questionnaire had high internal consistency. The overall Cronbach’s Alpha of the HQ-M<sup>Finalized</sup> or finally labelled as HQ-M was 0.898, was considered statistically acceptable. Cronbach’s Alpha varied between 0.887 and 0.899 when each one of the 20-items was deleted implying every item is equally important in the instrument as shown in Table 4.

There are several limitations to this study, including the complexity of translating between English and Malay. Some English words have multiple Malay equivalents, creating ambiguity that requires clarifications to from translators throughout the process. Additionally, the purposive and convenience sampling method which involves selecting participants based on their accessibility and willingness to participate, can limit research findings as it may not accurately represent the broader population. Hence, lacking in generalizability and subsequently limiting the applicability of findings to wider, more diverse groups. Future research would benefit from a larger sample size that includes all races in Malaysia for more comprehensive psychometric analysis. Using HQ-M in clinical settings with patients exhibiting hyperacusis symptoms, even if they are unaware of the condition, can help clinicians raise awareness and provide targeted assistance to Malaysian patients suffering from this problem.

**CONCLUSION**

The findings of this study showed that the Malay version of HQ is valid, reliable, simple, easy to understand and use for the assessment of hyperacusis in Malay-speaking populations. The future direction of study will be to psychometrically evaluate the severity level of HQ scoring.

**ACKNOWLEDGEMENT**

This research would not have been possible to complete without the participation and help from several individuals. I would like to express my deep appreciation and gratitude to all parties that were involved in this study for the guidance and endless support throughout this research journey, including representatives from Polyplastics Kuantan. Next, I would like to thank the

translators, experts and panels who willingly participated in this study. May Allah bless everyone involved with abundance of happiness and blessings in this world and hereafter.

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**APPENDIX 1****THE MALAY HYPERACUSIS QUESTIONNAIRE (HQ-M)**

Tandakan (v) pada ruangan “YA”, “KADANG-KADANG”, atau “TIDAK” mengikut pengalaman seharian anda.

Item	Soalan	YA (5m)	KADANG-KADANG (2m)	TIDAK (0m)
1	Adakah anda menghadapi masalah untuk menumpukan perhatian dalam persekitaran yang berbunyi bising dan kuat?			
2	Adakah anda menghadapi masalah untuk membaca dalam persekitaran yang bising dan kuat?			
3	Adakah anda pernah menggunakan penyumbat atau penutup telinga untuk mengurangkan persepsi persekitaran terlalu bising? (Tidak termasuk penggunaan alat pelindung pendengaran semasa situasi bising yang luar biasa)			
4	Adakah anda berasa sukar untuk mengabaikan bunyi bising di sekeliling anda setiap hari?			
5	Adakah anda mengalami kesukaran untuk mendengar pengumuman dari pembesar suara (seperti di lapangan terbang, di dalam kapal terbang dan di dalam kereta api)?			
6	Adakah anda sensitif atau mudah terganggu dengan bunyi-bunyian di jalan raya?			
7	Adakah anda secara spontan menutup telinga apabila mendengar bunyi yang agak kuat?			
TOTAL MARKS FOR SUBSCALE F: _____				

Item	Soalan	YA (5m)	KADANG-KADANG (2m)	TIDAK (0m)
8	Apabila seseorang mencadangkan untuk melakukan sesuatu aktiviti (seperti keluar bersiar-siar, menonton wayang dan konsert), adakah anda serta-merta terfikirkan kebisingan bunyi yang bakal anda hadapi?			
9	Adakah anda pernah menolak pelawaan untuk keluar kerana risaukan bunyi bising yang bakal anda hadapi?			
10	Adakah anda mendapati bunyi bising di sesetengah aktiviti sosial tidak menyenangkan (seperti, kenduri, konsert dan pertunjukan bunga api)?			
11	Adakah sesiapa yang anda kenali pernah mengatakan bahawa toleransi anda terhadap bunyi bising atau bunyi tertentu adalah sangat rendah?			
12	Adakah anda berasa terganggu dengan sesuatu bunyi yang tidak menjadi gangguan kepada orang lain?			

13	Adakah anda berasa takut pada sesuatu bunyi yang tidak menjadi masalah kepada orang lain?			
TOTAL MARKS FOR SUBSCALE S: _____				

Item	Soalan	YA (5m)	KADANG- KADANG (2m)	TIDAK (0m)
14	Adakah bunyi bising dan bunyi tertentu menyebabkan anda berasa tertekan dan tidak senang?			
15	Adakah kemampuan anda untuk menumpukan perhatian dalam suasana bising semakin berkurangan menjelang penghujung hari?			
16	Adakah tekanan dan keletihan mengurangkan kemampuan anda untuk menumpukan perhatian dalam persekitaran yang bising?			
17	Adakah anda berasa jengkel pada bunyi-bunyian yang tidak menjengkelkan untuk orang lain?			
18	Adakah anda berasa keletihan emosi kerana perlu menghadapi bunyi-bunyian dalam kehidupan seharian?			
19	Adakah anda mendapati bunyi-bunyian seharian memberi kesan emosi kepada anda?			
20	Adakah anda berasa tidak senang dengan sesuatu bunyi yang tidak menjadi masalah kepada orang lain?			
TOTAL MARKS FOR SUBSCALE E: _____				

\*\*12-40 (mild), 42-60 (moderate) and 62-100 (severe)